FORMATION EN CHIRURGIE CARDIO-VASCULAIRE ET THORACIQUE /

TRAINING PROGRAM FOR CARDIO-VASCULAR AND THORACIC SURGERY

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Session scientifique de Chirurgie Thoracique et Cardio-Vasculaire / Thoracic and Cardio-Vascular Surgery scientific session
49ème Conférence du Collège Ouest-Africain des Chirurgiens /
49th Annual Conference of West African College of Surgeons
7-13 Février 2009 /February, 7th-13th, 2009 Conakry (Guinée)

INTRODUCTION

Prof. Koffi Hervé YANGNI-ANGATE, MD, FWACS, FICS

Président de l'Association Africaine des Chirurgiens Thoraciques et Cardio-vasculaires

Le 12 février 2009, au cours de la conférence annuelle du Collège Ouest-Africain des chirurgiens, s'est tenue une session sur l'harmonisation du programme de formation en chirurgie cardio-vasculaire et thoracique. Cette réunion académique s'est déroulée en présence de plusieurs Chirurgiens cardio-vasculaires et thoraciques francophones et anglophones (cf. Appendix I, II) sous les auspices de l'Organisation Ouest-Africain de la Santé (OOAS) représentée par les Professeurs A. Diallo et H. Odulami ; du Conseil Africain et Malgache de l'Enseignement Supérieur (CAMES) représenté par le Secrétaire Général, Professeur MM. Sall ; du Collège Ouest-Africain des Chirurgiens (COAS) et de l'Association Africaine des Chirurgiens thoraciques et cardio-vasculaires (AACTCV) représentés par les Professeurs K H. Yangni-Angaté , R.O. Ofoegbu, O. Adebo, S. Adebonojo, Y. Tanauh et M. N'Diaye.

Cette séance présidée par le Professeur YANGNI-ANGATE Hervé, Président de l'AACTCV, a permis d'écouter 4 présentations dont 3 publiées dans ce numéro des Annales Africaines de Chirurgie Cardio-vasculaires et thoraciques (AACCVT). La première présentation a été donnée par le Professeur MM. SALL ; sa communication s'intitulait ″ Le CAMES et l'Accréditation des Formations Diplômantes″ ; la deuxième a été prononcée par le Professeur A. Diallo sur le thème ″Harmonisation des Programmes de Formation″; la troisième a été dite par le Professeur O. Adebo sur le sujet : ″Proposition d'un Programme de formation en chirurgie cardio-vasculaire et thoracique ″ ; le quatrième a émané du Professeur M. N'Diaye sur le thème : ″Harmonisation du programme de formation en chirurgie cardio-vasculaire et thoracique en Afrique de l'Ouest : Point de vue d'un francophone″.

A la fin de cette session, un comité de travail sur la confection d'un curriculum de formation en chirurgie cardio-thoracique et vasculaire en Afrique de l'Ouest présidé par le Prof. R. O. Ofoegbu a été mis en place.

A la suite de la réunion de Conakry 2009, les chirurgiens francophones de chirurgie thoracique et cardio-vasculaire, sous l'impulsion de l'OOAS, ont tenu une rencontre à Dakar les 22-23 Mars 2009. Au terme de cette rencontre, un programme commun de formation en chirurgie cardio-vasculaire et thoracique dans l'espace francophone CEDEAO a été adopté ; ce programme inspiré de la communication du Professeur M. Ndiaye à Conakry 2009 fait l'objet d'une communication publiée dans ce numéro.

En s'appuyant sur le document des chirurgiens cardio-vasculaires et thoraciques francophones adopté en Mars 2009 à Dakar, le groupe de travail composé de francophones et d'anglophones et présidé par le Professeur R.O. Ofoegbu, a émis une proposition à l'adresse du Collège Ouest-Africain des Chirurgiens que nous publions dans ce numéro.

"Harmonization of Training Program in Cardiovascular and Thoracic Surgery".

This academic meeting took place in the presence of several French and Anglophone speaking cardiovascular and thoracic surgeons. (Appendix I , II) and on behalf of : 1) West African Health Organization (WAHO) represented by professors A. Diallo and H. Odulami ; 2) African and Malgache Council of Higher Education (CAMES) represented by Professor MM. Sall, Secretary General ; 3) West African College of Surgeons(WACS) and African Association of Thoracic and Cardiovascular Surgeons (AATCVS) represented by Professors KH. Yangni-Angate, RO. Ofoegbu, S. Adebonojo, Y. Tanauh and M. Ndiaye.

At this meeting chaired by Professor KH. Yangni-Angate, President of AATCVS, 4 papers were presented. Three of them are published in this issue of African Annuls of Thoracic and Cardiovascular Surgery.

The first presentation had been given by Professor MM Sall on "CAMES and Accreditation of Training Programs". The second had been pronounced by Professor A. Diallo on the topic: "Harmonization of Training Programs"; the third had been delivered by Professor O. Adebo on "Curriculum for the part II Final Examination in Cardiothoracic Surgery"; the fourth had been given by Professor M. Ndiaye on : "Harmonization of training program for Cardiovascular and thoracic Surgery in West Africa: "A Francophone Point of View".

At the end of this session, a working committee chaired by Prof RO. Ofoegbu was set up to propose an harmonized curricula for training in Cardiovascular and Thoracic Surgery in West Africa.

Following Conakry meeting 2009, on behalf of WAHO, the French speaking cardiovascular and thoracic surgeons attended another meeting in Dakar , on March 29th –23th, 2009 ; an uniform curricula of training based on Professors M. NDiaye's contribution, was adopted for ECOWACS francophone countries. Secondly, the francophone group's proposal "Harmonized WACS curriculum for Cardiothoracic Surgery" which is published with the francophone's point of view in this issue of African Annals of thoracic and Cardiovascular Surgery.

APPENDIX I : LISTE DES PARTICIPANTS / LIST OF PARTICIPANTS

1- Prof. K H. Yangni-Angaté (Côte d'Ivoire)
2- Prof. A. Diallo (OOAS / WAHO, Burkina-Faso)
3- Prof. M M. Sall (CAMES, Burkina-Faso)
4- Prof. O. Adebo (Nigeria)
5- Prof. H. Odulami (CAMES, Burkina-Faso)
6- Prof. Y. Tanauh (Côte d'Ivoire)
7- Prof. R O. Ofoegbu (Nigeria)
8- Prof. M. NDiaye (Sénégal)
9- Prof. S. Adebonojo (USA)
10- Dr. I Z. Dellia (Nigeria)
11- Dr. C. Ekwunife (Nigeria)
12- Dr. U. Onakpoya (Nigeria)
13- Dr. G. Chianakwana (Nigeria)
14- Dr. JC. Eze (Nigeria)
15- Dr. O. Diarra (Sénégal)

De la Droite à la Gauche/Right to Left : Prof. S. ADEBONOJO, Prof. A. DIALLO, Prof. K H. YANGNI-ANGATE, Prof MM. SALL, Prof M. NDIAYE

Prof. Y. TANAUH

De la Droite à la Gauche/Right to Left : Prof. H. ODULAMI, Prof. O. ADEBO

Vue de Participants à la Réunion de Conakry 2009 /View of some Participants at Conakry Meeting 2009

LE CAMES ET L'ACCRÉDITATION DES FORMATIONS DIPLÔMANTES

Prof. Mamadou Moustapha SALL

Secrétaire Général du Conseil Africain et Malgache
de l'Enseignement Supérieur (CAMES), Ouagadougou (Burkina-Faso)

Correspondance : Prof M. M. Sall
Centre Africain et Malgache de l'Enseignement Supérieur (Cames)
Ouagadougou (Burkina-Faso)
BP : 01 BP 134 Ouagadougou 01Burkina-Faso
E-mail : cames@bf.refer.org

Résumé

Depuis 1972, le CAMES assure, à l'échelle régionale, l'accréditation des formations diplômantes.
A cet effet, 4 grandes commissions d'accréditation et d'évaluation des programmes existent :
- Commission I : Lettres, Sciences Humaines et Grandes Ecoles.
- Commission II : Sciences, Médecine et Grandes Ecoles.
- Commission III : Sciences Juridiques, économiques, Gestion et Grandes Ecoles.
Commission IV : Evaluation des établissements, structures et équipes de recherche.
Les critères de reconnaissance et d'équivalence des diplômes sont relatifs :
- au niveau des études,
- à la qualification du personnel enseignant,
- aux conditions d'accès aux programmes d'études,
- au déroulement et au contenu des programmes,
- aux modalités du contrôle des connaissances,
- aux infrastructures, aux équipements, aux laboratoires aux ressources documentaires des établissements formateurs.
Après l'adoption en avril 2006 du système Licence-Maîtrise-Doctorat (LMD) par les pays membres du CAMES, d'autres critères supplémentaires d'évaluation ont été apportés ; ils tiennent compte :
- de la cohérence générale du projet d'établissement,
- de l'avenir des diplômes,
- des relations avec les milieux socio-économiques,
- et de l'ouverture internationale.

Summary

Since 1992, CAMES promotes, organizes and conducts undergraduate and postgraduate education and teaching human resources for university academic staff in francophone countries in Africa .For that purpose, 4 large committees for accreditation and evaluation of different programs are created:
- *Committee I: Human Sciences and University Colleges*
- *Committee II: Sciences, Medicine and University Colleges*
- *Committee III: Economic, Law and Management Sciences and University Colleges*
- *Committee IV: Accreditation of Training and Research Centres*

Criteria of accreditation are as follows :
- *Training duration*
- *Human ressources*
- *Requirement for admission into training program*
- *Courses of the program and examination*
- *Equipments, infrastructures, research team and library facilities*

After adoption in April, 2006 of LICENCE-MASTER-DOCTORAT (LMD) system, additional criterias were brought up:

assure à l'échelle régionale, l'accréditation des formations diplomantes. C'est ainsi que se sont tenus dans les pays membres 23 colloques ordinaires sur la reconnaissance et l'équivalence des diplômes qui ont permis d'évaluer 947 offres de formation pour en reconnaître 738. Ces diplômes qui ont été soumis au CAMES pour évaluation émanent des établissements publics et privés et sont réunis dans un répertoire régulièrement actualisé.
Deux colloques spéciaux ont également été organisés par le CAMES, à la demande de pays partenaires du Nord en vue d'établir un tableau synoptique des équivalences de diplômes.

I. Le programme Reconnaissance et Equivalence des diplômes

I.1 Origine : la convention de 1972

La convention générale relative à la validité de plein droit des diplômes d'enseignement supérieur a été signée par les Etats membres du CAMES à Lomé le 26 avril 1972. Par cette convention, «les parties contractantes affirment leur volonté de reconnaître les grades et diplômes délivrés par leurs établissements comme valables de plein droit ou équivalents sur le territoire de chacune d'entre elles. »
Le programme tient un colloque tous les deux ans, colloque auquel prennent part les experts en provenance des pays membres et de pays et organisations partenaires du CAMES.
Depuis le démarrage du programme, 22 colloques ont été organisés, 761 diplômes évalués dont 600 reconnus ou admis en équivalence.
Un tableau synoptique d'équivalence des diplômes étrangers a été préparé lors d'un colloque spécial tenu en 1993 à Niamey.

I.2 Ses commissions

Les évaluations sont menées au sein de quatre grandes commissions :
- *Commission I :* Lettres, Sciences humaines et Grandes Ecoles
- *Commission II:* Sciences, Médecine et Grandes Ecoles
- *Commission III:* Sciences juridiques,

La reconnaissance de la validité de plein droit ou de l'équivalence des grades et diplômes est subordonnée à la constatation de :
- l'identité dans le niveau des études
- l'égalité dans la qualification du personnel enseignant
- la similitude dans les conditions d'accès à l'enseignement supérieur
- l'analogie dans le déroulement et le contenu des études ainsi que dans l'organisation du contrôle des aptitudes et des connaissances.

Ainsi pour les formations médicales par exemple, le référentiel dispose :

II.1 pour les programmes

Les programmes doivent être fixés par des textes officiels
Le baccalauréat C, D, E ou la réussite à un examen spécial d'entrée est requis pour entreprendre ces études.

II.2 pour les horaires, différence entre les états (7 ans au Niger, Sénégal et Cote d'Ivoire, 6 ans au Mali, Cameroun et Togo, par exemple)

La commission a retenu que le nombre minimal d'années d'étude requise pour que le diplôme de Docteur en médecine puisse être validé est de 6 ans

II.3 pour les profils

- le *premier cycle* doit comprendre les matières fondamentales permettant à l'étudiant de s'orienter. Les soins infirmiers y sont inclus
- *Le deuxième cycle* doit être consacré à l'acquisition de connaissances relatives à la pathologie. L'étude des affections africaines les plus fréquentes doit y être menée
- *Le troisième cycle* dont la durée est très variable est consacré à la préparation et à la soutenance de la thèse

II.4 Pour les spécialités médicales, le référentiel retient :

- qu'elles sont obligatoirement post-doctorales
- qu'elles comprennent des Certificats d'Etudes Spéciales (durée des études entre 2 et 5 ans) et des Certificats d'Etudes supérieures (durée des études < 2 ans).

ressources documentaires, laboratoires (ces éléments sont maintenant évalués pour tout établissement demandeur avant la tenue des colloques).

III. L'adaptation du référentiel aux offres de formation dans le cadre du LMD

La résolution N° 4 de la 23 ème session du conseil des ministres d'avril 2006 à Libreville a confié au CAMES la gestion des accréditations dans le cadre du système LMD.

Pour prendre en charge cette mission qui n'est pas tout à fait nouvelle, le CAMES a été amené à concevoir, à partir du référentiel de 1991, modifié en 1993 et 2003, et en intégrant des éléments d'assurance qualité, un référentiel adapté à ces nouvelles offres de formation.

Par rapport au référentiel de 1991, le référentiel 2007 au format LMD insiste sur :

- *l'objectif de l'évaluation* : l'amélioration continue de l'offre de formation des établissements sur les trois grades
- *Une condition préalable* : l'habilitation nationale est une condition préalable à tout examen d'une demande de reconnaissance et d'équivalence de diplômes au niveau du CAMES
- *Une autre condition préalable* : l'établissement délivrant un diplôme de Master, de Licence ou de Doctorat doit bénéficier de la personnalité juridique, la formation supérieure doit être l'une de ses missions et il doit disposer en ce domaine d'une autonomie pédagogique et scientifique.

Les critères de l'évaluation au niveau des commissions nationales d'habilitation ou du CAMES doivent tenir compte outre de la qualité des formations et de leur adossement à la recherche :

- De la cohérence générale du projet de l'établissement dans le cadre de son approche de la politique de site,
- De l'avenir des diplômés,
- Des relations avec les milieux socio-économiques,
- Et de l'ouverture internationale.

Tout dossier LMD soumis à expertise au niveau du CAMES doit :

- *Etre accompagné* de dispositifs d'évaluation permettant de garantir la qualité.
- *S'inscrire* dans le projet global de l'établissement (présenter une forte cohérence avec la politique définie en matière de relations internationales).
- *S'attacher* à promouvoir l'utilisation et le développement de technologies d'enseignement et d'apprentissage aussi bien en situation présentielle qu'à distance.
- *Décrire avec précision* les domaines et les parcours de formation (ensembles cohérents d'unités d'enseignement capitalisables et transférables, organisant des progressions pédagogiques adaptées et impliquant une définition des objectifs en termes de métier ou de poursuite d'études, une définition des compétences attendues en fin de parcours et une déclinaison des contenus des UE avec une spécialisation progressive).
- *Comporter une annexe* descriptive au diplôme.

En conclusion, ce que le CAMES attend de ses commissions et dans le cadre de la réforme LMD, c'est une approche qui soit :

- plus stratégique,
- plus évaluative,
- et plus qualitative parce que devant permettre de labelliser une offre globale de formation en cohérence avec les directives des Ministères de tutelle de chaque pays.

HARMONIZATION OF TRAINING PROGRAMME

Prof. Abdoulaye DIALLO,
OOAS / WAHO (Burkina-Faso),
Professional Officer

Correspondence : Prof..A. DIALLO, WAHO / OOAS (Burkina-Faso)
BP : 01 BP 153 Bobo-Dioulasso 01 Burkina-Faso
E-mail : wahooas@fasonet.bf /wahooas@wahooas.org

Summary

The author reports WAHO'S goals and all the meetings organized by WAHO for harmonization of fellowship training programs in medicine and surgery. The duration adopted by consensus was 5 years for training in surgery.

Key words : Training-Surgery

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Résumé

L'auteur rapporte les objectifs de l'organisation Ouest-Africaine de la Santé (OOAS) et les différentes réunions relatives à l'harmonisation des programmes de formation dans les spécialités médicales et chirurgicales. La durée de formation admise par consensus en chirurgie est de 5 ans.

Mots clés : *Formation-Chirurgie*

COMMUNICATION

West African Health Organization (WAHO) Members represent 15 countries (Figure 1); WAHO is a fusion of 2 previous Institutions for Health in West-Africa : OCCGE and WAHC.WAHO is also approved by ECOWACS Council of Ministers of Health.

The Goal of WAHO is to mobilize adequate resources to improve health indices and achieve better control of major diseases through:

1) Coordination and harmonization
2) Capacity building and
3) Research and information management

Fields Training Program is one of the priorities of WAHO Strategic Plan;

To Achieve the vision of establishment of an Uniform curriculum in several medical specialties, workshops have been organized in West-Africa; such as:

a) Surgery, Internal Medicine, Gynecology and Obstetrics. (Bamako, September 5th – 7th 2005)

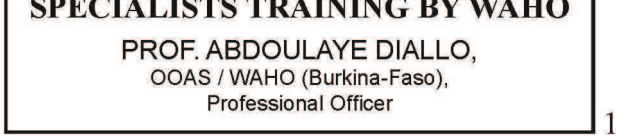
b) Anesthesiology, Ophthalmology, Psychiatry and Public Health (Ouagadougou, March 9th – 11th 2006)

5) Meeting for Training Program in Medecine in ECOWACS Francophone areas (Bobo Dioulasso, April 7th – 9th 2008)

6) A Session for Consensus with African council for High Education (CAMES) in ECOWACS Francophone Areas (Ouagadougou, October 20th 200

In Francophone Zone a consensus in the duration of the fellowship has been accepted: 4 years for all the specialties exepted 5 years for surgery; An uniq Teaching Program in each specialty has been also adopted among all francophone ECOWACS countries.

In future, WAHO will act for an extension of the Harmonization Process to all the specialties in Surgery and in Medicine and also WAHO will work for a closer partnership with all the Colleges and Professional Associations or Societies in West-Africa.



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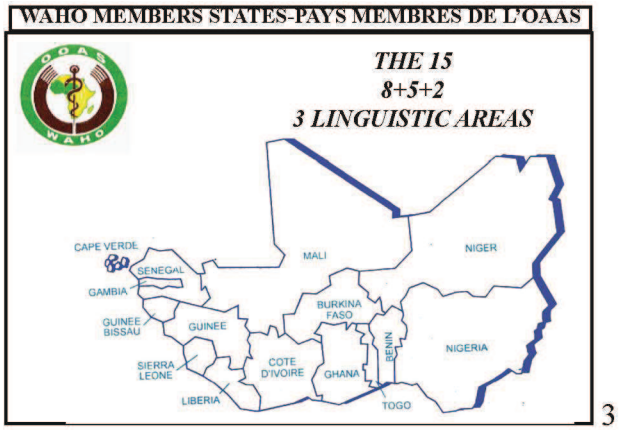

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■ **July 1987:** The Heads of State adopt protocol A/P2/7/87 (Abuja)

■ **October 1998:** The Heads of State adopt, by decision A/Dec.9/10/98, that
- The headquarters of WAHO be Bobo-Dioulasso, BF
- The DG and DDG be appointed.

Dec 2007 Appointment of New DG & DDG

P2/7/87 par les Chefs d'Etat (Abuja)

■ **Octobre 1998:** Les Chefs d'Etat adoptent par décision A/Dec. 9/10/98 Bobo-Dioulasso, BF soit le siège de l'OOAS

DG et DGA nommés

Dec 2007 Nomination de 2 nouveaux DG & DGA

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WAHO's political structures

Structures politiques de l'OOAS

■ **The authority of Heads of State and Governments** is the supreme decision-making body of ECOWAS and WAHO.

■ **The council of Ministers of ECOWAS** makes recommendations to the Authority of ECOWAS

■ **Conférence des Chefs d'Etat et de gouvernement** constitue l'instance de décision suprême de la CEDEAO et de l'OOAS

■ **Le Conseil des Ministres de la CEDEAO** formule des recommandations à l'intention de la Conférence

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WAHO's political structures (cont)

Structures politiques de l'OOAS

■ **The Assembly of Health Ministers**

the powers of this body are mostly limited to health matters, particularly the technical aspects thereof.

■ **L'Assemblée des Ministres de la Santé**

aux compétences portant principalement sur les les aspects techniques

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WAHO's political structures (cont)

Structures politiques de l'OOAS

■ The General Directorate is charged with executing the programmes and activities of the Organisation. It is headed by a **Director General**, assisted by a **Deputy Director General**. The Directorate also comprises technical and specialised **divisions**

■ **La Direction Générale** Elle assure la mise en oeuvre des programmes et activités de l'organisation. Elle est gérée par un Directeur Général, assisté d'un Directeur Général Adjoint.

La direction générale comporte des Départments Techniques & Spécialisés

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D - Human Resources Development
D - Primary Health Care & Diseases Control
D - Research & Health information System
D - Planning & Technical Assistance

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MISSION / **MISSION**

■ Ensure the highest possible health coverage for the 300 million inhabitants of the ECOWAS states by harmonizing health policies.

■ **Pool available resources**

■ Assurer aux 300 Millions d'habitants de l'espace CEDEAO une couverture sanitaire la plus totale possible par une harmonisation des politiques sanitaires des états membres.

■ **Mettre en commun les ressources disponibles**

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■ **Vision**
■ **Goal**

WAHO will mobilise adequate resources to improve health indices and achieve better control of major diseases, Through :
- co-ordination & harmonisation of health policies,
- capacity building,
- research and information management

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WAHO STRATEGIC PLAN
2003-2007 PRIORITY DOMAINS

1-HIV/AIDS/STI/TB
2-MALARIA
3-PREVENTION OF BLINDNESS
4-CHILD SURVIVAL / MATERNAL MORTALITY
5-NUTRITION
6-DRUGS & VACCINES
7-TRAINING
8-CONTROL OF DISEASES
9-INSTITUTIONNAL DEVELOPMENT

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▪ 1st Session of Expert's Committee
Bobo-dioulasso, 6-8th May 2004

▪ Francophone Consensus Workshops

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■ **2nd Session of Expert's Committee**

Bobo-Dioulasso, 22nd -24th February 2005

■ **Ad hoc Committee meeting**
Bobo-Dioulasso, 3rd -5th May 2005

■ **Multisectoral Meeting**
Ouagadougou 6th -8th July 2005

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I. Harmonisation of Medical Specialist's Curricula

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▪ **Workshop on Harmonisation on curricula in Surgery, Internal Medicine, Gynecology-Obstetrics & Pediatrics**
Bamako 5th - 7th September 2005

▪ **Workshop on Harmonisation on curricula in Anesthesiology, Ophthalmology, Psychiatry & Public Health**
Ouagadougou, 9th – 11th March 2006

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▪ **Finalisation Meeting on Harmonisation**
(2 Participants for each Speciality + Invited Specialists from Anglophone Colleges)
Ouagadougou, 18th – 20th October 2006

▪ **Special session for Medical Biology**
Bobo-Dioulasso 9th – 11th May 2007

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▪ **Meeting on Equivalences of Diplomas and Qualifications in ECOWAS Zone**
Lagos, 7th – 9th September 2007

▪ **Workshop on Uniformisation of Medical Specialists Training curricula In ECOWAS Francophone Area**
Bobo-Dioulasso, 7th – 9th APRIL 2008

▪ **Consensual session with CAMES**
(African Council for High Education)
Ouagadougou, 20th October 2008

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Established Facts (ACQUIS)

1. Consensus on:
- Denominations (DES)
- Duration (4 years, 5 for surgery)
- Propositions of Teaching Programs
- Finalisation on Harmonisation of Curricula in Francophone AREA

2. Adoption of a RESOLUTION on Harmonisation of Curricula in ECOWAS by the 7th Assembly of Health Ministers (AHM) in July 2006 (Abuja)

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Merci de votre très aimable attention
Thank you for your attention

Muite Obrigado

Together, We will succeed Integration
Ensemble, Nous Réussirons l'Intégration

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Right to Left : Prof A. Diallo and Prof. Fru Angwafor III

CURRICULUM FOR THE PART II FINAL EXAMINATION IN CARDIOTHORACIC SURGERY

Prof Oluwole ADEBO

Chairman Committee on Log-Book and Review of Curriculum Cardiothoracic Surgery,
Faculty of Surgery, West African College of Surgeons

Correspondence: Prof. Oluwole Adebo
PO BOX 15, Ogbomoso, OYO State (Nigeria)
E-mail : wole30067@yahoo.co.uk

Summary :
The West African College of surgeons as part of its mandate to provide Specialist surgeons for the sub-region established Residency training program to be effected in various accredited Hospitals in the sub-region. For each of the sub-specialties, a curriculum was established to guide both the trainers and trainees to by providing structure for contents and objectives for conduct of courses.
Despite the success recorded over the years in producing well training Specialist surgeons it has become apparent that there is a need to review the existing curriculum to make it more objective, more relevant and compliant with current standards. Furthermore modern education and assessment methods demands stricter adherence to a template that address desired outcome objectives in the products of Residency Training. The aim of this paper is to propose a ″new″ Wacs Curriculum for cardiothoracic surgery training program.

Key Words : Training Cardio-Thoracic Surgery

.....

Résumé :
Une des missions du Collège Ouest Africain des Chirurgiens est de former des spécialistes en Chirurgie générale et sous spécialités chirurgicales aux bénéfices des Hôpitaux de la sous- région ouest africaine à travers des programmes de résidence. Compte tenu des données nouvelles relatives aux progrès en chirurgie, il s'avère nécessaire de revoir nos programmes de formations en chirurgie et proposer un nouveau curriculum pour une meilleure performance de nos apprenants.

Mots clés : *Formation Chirurgie Cardio-Thoracique*

Residency Programme in Cardiothoracic Surgery (CTS) falls short of providing a well defined curriculum. Without the latter both the directors of Training (including trainers) and the trainees lack the template for appropriate instructions and assessment.

This report is an attempt to initially provide the core contents and objectives of the course for CTS. A substantive amount of data is burrowed from the "Blue Book" of the American Board of Thoracic Surgery.

General Requirements:

Candidates requesting for training leading to Certification in CARDIOTHORACIC SURGERY of the West African College of Surgeons (FWACS;CTS) should seek admission into an accredited hospital for training in this Specialty. The pre-requisites are as follows:

1) Successful completion with a passing grade at the Part I FWACS or Part I FMCS.

OR

2) Successful completion and certification at Part II Final of the FWACS or FMCS in General Surgery.

Specific Requirements:

• A minimum of 48 months (4years) of continuous training in an accredited Residency Training Programme in Cardiothoracic surgery.

Duration of period of training in each area of Cardiothoracic Surgery will be as outlined below:

1- General Thoracic Surgery ---------- 2 years.
2- Cardiac Surgery ---------- 1 year.
3- Vascular Surgery ----- ---------- 6 months.
4- Cardiology: Adult and
Paediatric ---------- 3months.
5- Cardio-pulmonary Imaging --------- 3months.

While it is possible for rotations to be integrated OAUTH, Ife; KBTH, Accra; UNTH, Cote d'Ivoire, UNTH, Senegal or other accredited francophone centre

B) Rotations 2 and 4.

• KBTH, Accra and UNTH, Cote d'Ivoire, UNTH, Senegal

Another possible option for fulfillment of Rotations 2 and 4 would be an accredited Medical Institution in South Africa, India, Egypt or Western Europe.

Dissertation in Cardiothoracic Surgery:

It is recommended that this be done during the period of General Thoracic Surgery rotations as little time would be available during the more intense and limited period of Cardiac Surgery rotations. This should be a prospective study of a relevant common clinical condition for which data can be readily collected over a 12 month period. The main goal of this aspect of training is to enable development of the following objective:

The resident

1. Understands scientific method applied to basic and clinical research.
2. Is able to critically interpret published data.
3. Knows how to formulate a research proposal directed to systematic problem solving.

In short, the main purpose is acquisition of research skills, though dissertation submitted may indeed be further developed for submission for award of a degree (e.g. MD or PhD.).

Each candidate should keep a daily and up to date record of operative procedures he/she participates in during this period of training, using the prescribed Logbook for Cardiothoracic Surgery published by the Faculty.

Competency is dependent not only on cognition but on acquisition of diagnostic and therapeutic skills for effective patient care. Adequate operative skill is determined by exposure to sufficient number and distribution (variety) of cases. Given the infrastructural limitations and the economic constraints in our sub-region, it is mandatory that the period of training should at the least provide opportunity for exposure that would at the minimal permit participation of the trainee in the care of a wide spectrum of disease pattern.

The cardiothoracic surgeon must demonstrate competence and proficiency in the surgical technical skills required to:

1) Understand the clinical presentations and interpretation of diagnostic modalities of cardio-vascular diseases in order to arrive at definitive diagnoses and choice of treatment options.
2) Treat diseases of the chest wall, mediastinum, lungs, trachea, pleura, esophagus, stomach and diaphragm.
3) Treat disease of the heart, aortic and major intra-thoracic vascular structures, and major peripheral vascular structures.

CORE CURRICULUM GENERAL THORACIC

I.General Principles

1. Historical perspective of surgery of pulmonary and major airway diseases.
2. History of cardiac, vascular surgery, vascular anastomosis and Cardiopulmonary Bypass (CPB)
3. Development of cardiac valves biological and mechanical
4. History of oesophageal surgery

II.Chest Wall

1. Anatomy, Physiology and Embryology of the Chest Wall.

■ **Contents:**

1. Chest wall embryology.
2. Chest wall anatomy.
3. Diagnostic tests to define chest wall anatomy.
4. Major flaps of the chest wall and their vascular pedicles
5. Clinical Skills.
   - Recognises of chest wall anomalies.
   - Interprets diagnostic tests.
   - Performs of procedures using flaps and prosthesis.

2. Acquired Abnormalities and Neoplasms.

■ **Objectives:**

On completion the resident:

- Understands the diagnosis and management of acquired chest wall lesions, especially neoplasms.
- Knows the indication for and types of prosthetic reconstructions.
- Knows the chemotherapy and radiotherapy for chest wall tumors.
- Perform surgery for chest wall lesions.

■ **Contents:**

1. Malignant neoplasms of the chest wall
2. Benign neoplasms of the chest wall
3. Clinical Skills.
   - Performs surgical procedures on the chest wall and identification of the need for flap or prosthetic reconstruction.

understands physiological disturbances, and diagnostic tests.
• Understands the disease process, the diagnosis and management of thoracic outlet syndrome.
• Knows the operative approach for pectus and thoracic outlet syndrome.

■ **Contents:**

1. Pectus excavatum.
2. Pectus carinatum.
3. Thoracic outlet syndrome.
4. Diagnostic tests.
5. Forms of conservative management.
6. Surgical management
7. Clinical Skills.
 • Evaluates chest wall deformities and thoracic outlet syndrome.
 • Interprets diagnostic tests and selection of therapeutic approach.
 • Performs corrective surgery.

III. Lungs and Pleura

1. Anatomy, Physiology, Embryology, Lymphatic and Vascular Systems of the Lung and Pleura the investigative procedures.

■ **Objectives:**

On completion the resident:
 • Understands the embryology and anatomy of the lung, its physiology and the utilization of tests to patient management.
 • Knows the various thoracic incisions and their indications.
 • Knows the staging system, the use of nuclear medicine and pulmonary function tests and their interpretation.

■ **Contents:**

1. Normal anatomy and histology of the lung
2. Normal physiology of the lung.
3. Thoracic surgical incisions.
4. Clinical Skills.
 • Interprets diagnostic studies.
 • Applies basic knowledge to endoscopic evaluation of patients.
 • Participates pulmonary function testing.

pathophysiology, presentation, treatment and indication for surgical intervention in lung infections due to common pathogens.
• Knows the indications of lung volume reduction surgery and transplantation.
• Understands the implication of HIV infection in lung disease.
• Understands the management of airway foreign bodies and haemoptysis.
• Performs appropriate surgical procedures for lung diseases.

■ **Contents:**

1. Common pulmonary pathogens
2. Chronic obstructive and restrictive pulmonary disease
3. Acquired malformations ; bullae and emphysematous disease
4. Foreign bodies of the lung and airways
5. Haemoptysis
6. Pneumothorax
7. Haemothorax
8. Haemopneumothorax
9. Clinical Skills:
 • Performs invasive diagnostic thoracic procedures and endoscopies.
 • Manages patients with haemoptysis (especially from TB, HIV).
 • Performs lung resection and manages airway foreign bodies.

3. Neoplastic Lung Disease

■ **Objectives:**

On completion the resident:
 • Understands TNM staging system of lung carcinoma and evaluation of patients.
 • Be able to differentiate benign from malignant lesions based on radiographic and CT scan appearances according to the Bayesian Theorem

and surgical options according to the diagnosis and the staging system of malignant neoplasms.

■ **Contents:**

1. Benign tumors of the lung and airways
2. Malignant tumors of the lung and airways
3. Solitary pulmonary nodule
4. Metastatic tumors to the lungs
5. Other neoplastic disease : sarcomas, lymphomas and neuroendocrine tumours
6. Surgical Skills:
   • Evaluates patients with regard to functional status and stage of disease.
   • Performs extirpative resections and manages peri-operative complications.

4. Congenital Lung Disease

■ **Objectives:**

On completion the resident:

•Understands the anatomy and pathophysiology of congenital lung anomalies.
• Provides appropriate management.

Contents:

1. Pulmonary sequestration
2. Congenital lobar emphysema
3. Bronchogenic cysts
4. Cystic adenomatoid malformation
5. Cystic fibrosis
6. Surgical Skills
   • Evaluates patients and performs surgery as indicated.

5. Diseases of the Pleura

■ **Objectives:**

On completion the resident:

• Understands the presentation, the evaluation and management of benign and malignant diseases of the pleura.
• Understands the importance of Mycobacterium Tuberculosis in thoracic practice
• Be familiar with the radiological appearances and interpretations of the various infections and infestations of the appropriately.

Contents:

1. Pulmonary Tuberculosis
2. Empyema Thoracis
3. Bronchiectasis
4. Pulmonary Aspergillosis
5. HIV/AIDS
6. Pleural effusions : tuberculous, post-pneumonic, bacterial, fungal, amoebic & parasitic
7. Chylothorax : aetiology and management
8. Mesothelioma, benign and malignant
9. Clinical Skills:
   • Evaluates pleural effusions and performs invasive studies including thoracosentesis and percutaneous needle biopsy.
   • Performs and observes appropriate surgery for disease process including thoracoplasty for chronic pulmonary tuberculosis and decortications for chronic empyema.

IV. Trachea

1. Anatomy, Physiology and Embryology

■ **Objectives :**

On completion the resident

1. Understands the anatomy, blood supply and lymphatic drainage of the trachea
2. Understands the respiratory system
3. Understands the anatomy and physiology of the upper and lower respiratory airway
4. Understands the embryology of congenital and acquired tracheal malformations

■ **Contents :**

1. Benign and malignant tumours of the trachea
2. Tracheomalacia
3. Tracheal stenosis, (cicatrixial and extrinsic compressions)
4. Operative resection and reconstruction of the trachea

pathophysiology of the diaphragm.
• Understands the congenital anomalies and studies for assessing the diaphragm.

■ **Contents:**

1. Normal anatomy of the diaphragm
2. Foramina of the diaphragm
3. Relationship of the diaphragm.
4. Clinical Skills:
 • Applies knowledge in clinical treatment of related pathology.
 • Interprets diagnostic studies of the diaphragm.

2. Acquired Abnormalities.

■ **Objectives:**

On completion the resident:
 • Understands the presentation, evaluation and management of traumatic injuries of the diaphragm
 • Understands the aetiology and management of diaphragmatic paralysis; including the modality for diaphragmatic pacing.
 • Understands tumors of the diaphragm and reconstructive methods.
 • Understands diaphragmatic hernias.

■ **Contents:**

1. Diaphragmatic injuries.
2. Acquired diaphragmatic hernias
3. Tumors of the diaphragm
4. Clinical Skills:
 • Performs and interprets diagnostic tests.
 • Performs operative repair of acquired diaphragmatic abnormalities and peri-operative management

3. Congenital Abnormalities

■ **Objectives:**

On completion the resident:
 •Understands the pathology and pathophysiology of congenital diaphragmatic
3. Clinical Skills.
 • Evaluates and provides Perioperative care of patients.
 • Participates in operative treatment of patients.

VI. Oesophagus

1. Anatomy, Physiology and Embryology of the Oesophagus

■ **Objectives:**

On completion the resident:
 • Understands the anatomy, physiology and embryology of the oesophagus.
 • Understands the diagnostic tests for oesophageal function
 • Be able to interpret oesophageal motility study tests

■ **Contents:**

1. Anatomy of the oesophagus
2. Physiology of the oesophagus
3. Assessment of the oesophagus
4. Clinical Skills.
 • Interpretation of diagnostic studies
 • Performance of upper GI endoscopy.
2. Congenital Abnormalities of the Oesophagus

■ **Objectives:**

On completion the resident:
 • Understands congenital abnormalities of the oesophagus
 • Performs operative and non-operative management.

■ **Contents:**

1. Oesophageal atresia/tracheo-oesophageal fistula
2. Oesophageal duplication
3. Clinical Skills:
 • Evaluation and management strategy.

• Demonstrates knowledge of appropriate management of acquired oesophageal diseases.
• Performs operative and non-operative management for both benign and malignant diseases.

■ **Contents:**

1. Trauma:
 • Chemical injuries
 • Blunt and penetrating trauma
2. Motility disorders
3. Oesophageal reflux
4. Paraoesophageal hernias
5. Oesophageal varices
6. Foreign bodies
7. Oesophageal perforation.
8. Oesophageal replacement
9. Infections
10. Benign oesophageal tumors

4.Malignant Diseases of the Oesophagus
Objectives

On completion the resident
• Understands malignant abnormalities of oesophageal carcinoma
• Have a good understanding and interpretation of diagnostic studies of oesophageal carcinoma, including EUS, CT Scan, PET San etc
• Performs operative and non-operative management

■ **Contents :**

1. Oesophageal Carcinoma (Adenocarcinoma and Squamous cell carcinoma)
2. Barrett's oesophagus
3. Clinical Skills

(Ivor Lewis) & Colon interposition procedures.

VII. The Mediastinum

■ **Objectives**

On completion the resident :
1. Understands the anatomy, histology, embryology, vascular supply and lymphatic drainage of mediastinum
2. Understands the anatomical of mediastinum
3. Understands the anatomical divisions of the mediastinum with respect to predictive importance of diagnosis of mediastinal tumours based on their mediastinal locations
4. Understands the various diagnostic procedures of the mediatinum
5. Understands the nodal mapping of mediastinum for lung cancer staging

■ **Contents**

1. The Thymus gland and its pathologies, benign & malignant thymomas, thymic cyst
2. Myasthenia Gravis and associated diseases
3. Neurogenic tumours
4. Terratomas
5. Lymphomas
6. Intrathoracic goitre
7. Pericardial cyst

►Skills

1.Mediastinoscopy (Cervical Madiastinal Exploration, CME)
2. Mediastinotomy (Chamberlain procedure)
3. Scalene node biopsy
4. Cervical and thoracic sympathectomy

► *Thoracic Trauma*

1. Trauma of the Chest Wall

■ **Objectives**

2. Sternal fracture
3. Simple and complex rib fractures
4. Flail Chest
5. Pneumothorax
6. Tension pneumothorax
7. Massive Haemothorax
8. Lung contusion
9. Cardiac contusion
10. Clinical Skills
 • Makes crest diagnosis of injury or injuries
 • Treats chest wall injuries
 • Performs operative and postoperative care

2. Tracheobronchial and Pulmonary Trauma

■ **Objectives**

On completion the resident
 • Understands the pathophysiology of tracheobronchial injuries and clinical presentation, including radiological findings.
 • Understands the managements of patients
 • Understands acid base imbalance
 • Understands the use of Mechanical ventilators and how to wean from the ventilator

■ **Contents:**

1. Tracheobronchial injury
2. Airway control
3. Pulmonary contusion
4. Penetrating injury
5. Clinical Skills:
 • Evaluates and manages patients
 • Performs management of pulmonary contusions, repair of tracheobronchial and other intra-thoracic injuries.

3. Oesophageal Trauma

■ **Objectives**

■ **Contents:**

1. Oesophageal trauma
2. Methods of repair
3. Complications
4. Clinical Skills:
 • Evaluates and interprets diagnostic tests.
 • Performs operative intervention and manages complications

4. Diaphragmatic Trauma

■ **Objectives**

On completion the resident
 • Understands the pathophysiology of diaphragmatic trauma.
 • Understands the presentation, evaluation and treatment of acute injuries.
 • Knows the presentation and management of delayed injuries.

■ **Contents:**

1. Blunt trauma
2. Penetrating trauma
3. Clinical Skills
 • Performs evaluation, diagnosis and operative repair of acute and chronic cases.

5. Cardiovascular Trauma

■ **Objectives**

On completion the resident
 • Understands the pathophysiology of injuries to heart and great vessels and the presentations.
 • Evaluates patients and understands the methods for diagnosis.

Contents:

1. Cardiac contusion
2. Penetrating cardiovascular injuries

including aortic transaction and surgical procedures of the different types of intrathoracic aneurysms.

CARDIAC & VASCULAR

VIII. Congenital Heart Disease

1. Embryology, Anatomy, Physiology and Physiologic Evaluation.

■ **Objectives:**

On completion the resident:

- Knows the embryology of the heart and great vessels
- Knows the embryology of major cardiac anomalies
- Knows the surgical anatomy of the cardiac valves
- Knows the conduction system of the heart
- Understands electrocardiogram and its interpretations
- Understands cardiac catheterization procedure
- Interprets echocardiograms, angiocardiograms and other imaging studies.
- Knows coronary circulation
- Understands foetal circulation and pathophysiology of shunts and abnormal connections before and after birth.

■ **Contents:**

1. Anatomy and embryology of the normal heart;
2. Embryology and pathologic anatomy of each major congenital cardiac anomaly;
3. Fetal circulation.
4. Transitional and neonatal circulation
5. Indications for operation
9. Clinical Skills:
   - Diagnosis of important CHD.
   - Selection of operative procedure.
   - Perioperative management of physiological derangements in CHD.

2. Cardiopulmonary Bypass for Operations on Congenital Cardiac Anomalies

■ **Objectives:**

On completion the resident:

- Understands the principles of cardiopulmonary bypass (CPB) and knows the indications for various techniques.
- Knows about use of haemodilution, anticoagulation, profound hypothermia and circulatory arrest.
- Understands perfusion flow and pressure control.
- Understands the principles, indications and complications of Extra-Corporeal Membrane Oxygenator (ECMO)

■ **Contents:**

1. Monitoring for cardiopulmonary bypass
2. Cannulation.
3. Myocardial preservation techniques.
4. Clinical Skills:
   - Performs cannulation and initiates CPB.
   - Conducts CPB.
   - Actively participates in repair of cardiac defects under CPB.

3. Anomalies with Left-To-Right Intracardiac Shunts.

■ **Objectives:**

• Performs operative and non-operative procedures.

■ **Contents:**

1. Atrial septal defect.
2. Ventricular septal defect
3. Patent ductus arteriosus
4. Atrioventricular septal defect
5. Double-outlet right ventricle
6. Aorto-pulmonary window
7. Clinical Skills
   • Participates in or performs operative repair of defects.
   • Performs preoperative evaluation and postoperative management.

4. Cyanotic Anomalies.

■ **Objectives:**

On completion the resident:

• Knows the anatomy, embryology and the pathophysiology of the common anomalies.
• Knows the surgical indications for the common anomalies.
• Knows the operative procedures and understands the postoperative care.
• Performs operative and non-operative procedures.

■ **Contents:**

1. Tetralogy of Fallot.
2. Transposition of the great vessels (TGA)
3. Truncus arteriosus
4. Tricuspid atresia
5. Total anomalous pulmonary venous connection
6. Ebstein's anomaly.
7. Clinical Skills;
   • Participates in or performs palliative procedures or total operative repair of complex defects.

pathophysiology of the common anomalies.
• Knows the surgical indications for the common anomalies.
• Knows the operative procedures and understands the postoperative care.
• Performs operative and non-operative procedures.

■ **Contents:**

1. Aortic stenosis
2. Pulmonary stenosis.
3. Coarctation of the aorta.
4. Interrupted aortic arch.
5. Subclavian steal syndrome
6. Aberrant right subclavian artery (Dysphagia Lusoria)
7. Clinical Skills.
   • Participates in or performs palliative procedures or operative repair of defects.
   • Performs preoperative evaluation and postoperative management.

6. Principles of Postoperative Care

■ **Objectives:**

On completion the resident:

• Understands the postoperative management of CHD.

■ **Contents:**

1. Preoperative assessment and preparation.
2. Expected postoperative course for each operation.
3. Ventilatory management.
4. Pharmacologic management
5. Clinical Skills:
   • Manages ventilators for paediatric patients.
   • Assesses cardiopulmonary functions
   • Treats postoperative complications

• Knows the pathophysiology and clinical presentation of major valve lesions.
• Knows the therapeutic options for treatment of major valve lesions.
• Knows the pre- and post- operative management of valvular heart disease.

■ **Contents:**

1. Assessment of patients with valvular heart disease
2. Choice of treatment options, viz ; valvular repair (valvuloplasty) vs valvular replacement with biological or mechanical valves
3. Long term complications of replacement devices
4. Mitral valve diseases
 • Mitral stenosis
 • Mitral incompetence
5.Aortic valve diseases
 • Aortic stenosis
 •Aortic incompetence
6. Tricuspid valve dieseases
 • Tricuspid incompetence
 • Tricuspid stenosis
7. Clinical Skills:
 • Evaluates, diagnose, and selects therapeutic options for patients.
 • Participates in operative surgery for valvular disease and manages perioperative care.
 • Performs valve replacement.
 • Understands the principles, indications, physiology and complications of preoperative and post-operative applications of Intra-aortic balloon support.

2. Coronary Artery Disease

■ **Objectives:**

artery bypass, coronary angioplasty and knows their outcomes.

■ **Contents:**

1. Cardiac anatomy
2. Radiographic cardiac and coronary anatomy
3. Pathologic development of atherosclerotic plaque
4. Coronary artery bypass grafting
5. Preoperative evaluation
6. Postoperative care
7. Outcome
8. Clinical Skills:
 • Participates in evaluation of patients with angina pectoris and myocardial infarction.
 • Participates in surgery for coronary artery disease, including Perioperative management.

3. Pericardial Diseases

■ **Objective**

On completion the resident
 • Understands the Anatomy and Physiology of the pericardium
 • Knows the congenital abnormalities of the pericardium
 • Knows the acquired abnormalities of the pericardium

Contents

1. Pericardial effusions
2. Infective pericarditis
3. Uremic pericarditis
4. Restrictive pericarditis
5. Constructive pericarditis
6. Clinical Skills
 • Performs pericardiocentesis
 • Performs pericardiectomy

Pathophysiology of the disease
• Differentiates between right, left ant bilateral disease
• Understands the anatomy of endocardial valves in EMF
• Understands the haemodynamics of EMF
• Understands the histopathology of EMF

■ **Contents**

1. Clinical presentations
2. Echocardiographic, ECG and radiological diagnosis
3. Laboratiry findings
4. Anatomical changes of heart that is pathopneumonic of the disease
5. Clinical skills
 • Performs pericardiocentesis for pericardial effusion due to EMF
 • Performs /observes endocardiectomy with valve replacement procedure
 • Involves in the perioperative management of patients

5. Abnormalities of the Aorta

■ **Objectives:**

On completion the resident
 • Understands the common aetiology, pathology and clinical presentation of aneurysms of the thoracic and abdominal aorta.
 • Knows the operative and non-operative management of acute and chronic diseases.

■ **Contents:**

1. Aortic aneurysms
2. Operative and non-operative treatment
3. Clinical Skills:
 • Interprets diagnostic studies of diseases of the aorta
 • Participates in operative and non-operative management.
 • Performs perioperative care

arrhythmias and pathophysiology
• Understands the hemodynamic changes resulting from arrhythmias
• Knows the diagnostic studies and application to patient care
• Understands electrophysiological studies (mapping) of cardiac arrhythmias
• Appreciates the differences between electrical defibrillation and electrical cardiovertion
• Understands the physiology of cardiac pacing

■ **Contents:**

1. Cardiac arrhythmias
2. Non-operative management
3. Operative management
4. Clinical Skills:
 • Performs operative and non-operative management of atrial and ventricular arrhythmias.
 • Knows about cardiac pacing and implantation of cardiac pacemakers
 • Uses Automatic Electrical Defibrillator (AED)

X. Deep Venous Thrombosis & Pulmonary Thromboembolism

■ **Objectives**

On completion the resident
 • Understands the risk factors of DVT
 • Understands preventive measures of DVT
 • Understands the importance of early treatment of DVT
 • Understands the clinical presentations and signs of DVT
 • Understands the therapeutic options of DVT
 • Understands the aetiology and pathophysiology of pulmonary thromboembolism
 • Understands the indication of pulmonary thromboembolectomy
 • Understands coagulation cascade

embolectomy

XI. Transplantation

1. Cardiac Transplantation

On completion the resident

- Knows the principle of immunosuppressive therapy.
- Knows the indications for cardiac transplantation.
- Understands evaluation of donors, organ harvesting and preservation.
- Understands the management of immunosuppresion and cardiac rejection.

■ Contents:

1. Indications for cardiac transplantation
2. Immunosuppressive therapy in cardiac transplantation
3. Technique of cardiac transplantation
4. Donor preparation and organ harvest
5. Cardiac rejection
6. Clinical Skills:
   - Participates in cardiac transplantation and perioperative management.

2. Lung Transplantation

On completion the resident

- Knows the principle of immunosuppressive therapy.
- Knows the indications for lung transplantation.
- Understands evaluation of donors, lung harvesting and preservation.
- Understands the management of immunosuppresion and lung rejection.

■ Contents:

1. Indications for lung transplantation
2. Immunosuppressive therapy in lung transplantation
3. Technique of single and double lung lung transplant recipient.

XII. Extracorporeal Bypass & Coagulation-Blood Products

1. Physiology of Extracorporeal Bypass

On completion the resident

- Understands the physiology/mechanics of oxygenators and pumps.
- Knows the coagulation system.
- Understands design and function of ventricular devices.

■ Contents:

1. Membrane oxygenators
2. Bubble oxygenators
3. Roller head pumps
4. Vortex pumps
5. Extracorporeal circuits
6. Perfusion solutions
7. Clinical Skills:
   - Plans and use extracorporeal circuit in clinical practice.
   - Plans and use ventricular assist devise in clinical practice

2. Techniques of Extracorporeal Bypass

On completion the resident

- Understands the conduct of extracorporeal bypass; either total, or for left or right bypass.
- Understands the technique for cannulation and de-cannulation.
- Oversees the conduct of bypass.

■ Contents:

1. Standard cardiopulmonary bypass
2. Anticoagulation for cardiopulmonary bypass
3. Special Bypass situations
4. Clinical Skills
   - Performs cannulation for bypass.
   - Uses specific type of bypass for clinical problems.

4. Others			
LUNGS & PLEURA 1. Closed Chest Intubation 2. Open Lung Biopsy 3. Pleurectomy 4. Decortication 5. Closed Chest Intubation 6. Wedge Resection of the Lung 7. Segmentectomy 8. Lobectomy 9. Pneumonectomy 10. Exploratory thoracotomy 11. Other operations on the Lung 12. Other operations on the Pleura	**15**	**15**	**30**
MEDIASTINUM 1. Exploration of the Mediastinum 2. Excision of Mediastinal Tumour and Cysts 3. Others			**10**
DIAPHRAGM 1. Repair of Congenital Diaphragmatic hernia 2. Repair of Traumatic Diaphragmatic Hernia 3. Others	**5**	**5**	**10**
OESOPHAGUS 1. Endoluminal Intubation – Celestin M.B. Tube etc 2. Oesophagectomy with Oesophago-gastrotomy 3. Colon Bypass of the Oesophagus 4. Modified Heller's Procedure 5. Repair of Tracheo-Oesophageal Fistula 6. Resection of Diverticulum 7. Oesophagostomy for Benign Tumors and Foreign Bodies 10. Others.	**30**	**20**	**50**
PERICARDIUM 1. Pericardiostomy 2. Pericadiectomy 3. Others	 4 6 2	 10 4 2	**20**

PROCEDURES	AS SURGEON	AS ASSISTANT	TOTAL
VASCULAR			
1. Repair of Coarctation of Aorta	2	1	
2. Repair of Congenital Vascular Anomalies	1	1	
3. Repair of Thoracic Aortic Aneurysms	2		
4. Repair of Abdominal Aortic Aneurysms	1		**47**
5. Repair of Peripheral Arterial Aneurysms	2	2	
6. Reconstruction of Peripheral Vascular Disease	2	2	
7. Others	2	2	
CARDIAC			
1. Ligation of Persistent Ductus Arteriosus	4	4	
2. Palliative Shunts for Congenital Heart Disease	4	2	
a. Blalock-Tausig Shunt	2	2	
b. Others	2	2	
3. Closed Mitral Commissurotomy			
4. Corrective Congenital Cardiac Surgery			
a. Closure of ASD	2	1	**25**
b. Closure of VSD	2	1	
c.Total Correction of Intra-cardiac Defect	2		
5.Corrective Acquired Cardiac Surgery			
a. Open Valvotomy or Valve repair	2	1	
b. Mitral Valve Replacement	4	2	
c. Aortic Valve Replacement	2	1	
d. Multiple Valve Replacement	2	1	
6. Other Open Heart Procedures	2	1	
PACEMAKER IMPLANTATION			
1. Primary permanent implantation	5	5	
2. Replacement of Pulse Generator	2	5	**28**
3. Others	3	5	
MISCELLANEOUS	3	5	
1. Mediastinotomy (Chamberlain procedure)	2	3	
2. Thoracoscopy (VATS)	2	5	
3. Scalene node Biopsy	3	5	
4. Tracheostomy			
TOTAL OPERATIVE CASES			**260**
ENDOSCOPY			
1. Bronchoscopy	15	10	
2. Mediastinoscopy	5	2	**55**
3. Oesophagoscopy	10	10	

HARMONISATION DU PROGRAMME DE FORMATION EN CHIRURGIE CARDIO-VASCULAIRE E THORACIQUE DANS L'ESPACE OUEST-AFRICAIN FRANCOPHONE

HARMONISATION OF TRAINING PROGRAMME FOR CARDIO VASCULAR AND THORACIC SURGERY IN WEST AFRICAN FRANCOPHONE COUNTRIES-ECOWACS AREA

Prof. Hervé YANGNI-ANGATE[1] (Côte d'Ivoire), Prof. Yena SADIO[2] (Mali),
Prof. Mouhamadou N'DIAYE (Sénégal), Prof. Yves TANAUH (Côte d'Ivoire).

[1] Président de l'Association Africaine des chirurgiens thoraciques et cardiovasculaires
[2] Membre de l'Association Africaine des chirurgiens thoraciques et cardiovasculaires

Correspondance : Prof. Hervé Yangni-Angaté
BP : 01 BP 5119 Abidjan 01
E-mail : yangniangate@yahoo.fr

RESUME

Cette communication a pour objet de présenter le programme de formation en chirurgie cardio-vasculaire et thoracique (CCVT) adopté dans l'espace ouest-africain francophone. Cette communication met en évidence les différents principes généraux de la formation commune en CCVT, les conditions d'accès, le contenu du programme et les méthodes d'évaluation.

Mots clés : Formation, Chirurgie cardio-vasculaire et thoracique

SUMMARY

The objective is of this study is to present the uniform curriculum for Cardiothoracic and Vascular surgery (CTVS) in francophone countries in West-Africa.
The pre-requisites are as follows :
Successful completion at part I Diplôme d'Etudes Spéciales (DES) in General Surgery or
DES diploma in General Surgery. The duration of the training is at least 5 years, and divided in 2 parts; the part one level (2 years) is dedicated to General Surgery, and the part two to Principles, Pathology Clinical diagnosis and operative techniques for Cardiothoracic and vascular surgery.
A list of Procedure and number of cases, for CTVS is documented in this work.
The examination shall be : written, clinical, Oral and presentation of a dissertation research project to an international board at the end of part 2 level.

Key words : Training – Cardio-vascular and thoracic surgery

Ghana et le Nigéria.
Au regard de la tendance mondiale à l'harmonisation des diplômes, les chirurgiens francophones de l'espace Ouest-Africain ont décidé d'établir sur une base consensuelle un programme harmonisé de formation dans leur discipline commune, la chirurgie cardio-vasculaire et thoracique.

Principes généraux

A l'ouverture d'un comité pédagogique international incluant les membres choisis de l'association africaine des chirurgiens thoraciques et cardio-vasculaire, et ceux du collège ouest-africain des chirurgiens a été préconisé la communication d'un coordinateur national, la facilitation de la mobilité des apprenants et des enseignants, la mise en place d'un cahier de stage unique et harmonisé, l'instauration d'une évaluation continue semestrielle par un jury national et annuelle par un jury international, l'adoption d'une soutenance de mémoire de fin de cycle devant un jury international, la nécessité de délivrance par les universités d'un diplôme dénommé : "Diplôme Ouest-Africain de Chirurgie cardio-vasculaire et thoracique", la reconnaissance du diplôme par le collège ouest-africain des chirurgiens, l'organisation
ouest-africaine de la santé et le CAMES,
la durée totale admise est de 5 ans.

base et à la chirurgie générale et une deuxième de 3 ans relative à la spécialité proprement dite.
Le découpage des semestres et leur contenu respectif figurent aux tableaux.
Tout postulant à ladite formation doit avoir pratiqué comme opérateur principal ou premier aide opératoire un nombre de cas chirurgicaux précisé aux tableaux.

Méthodes d'Evaluation

2 types d'évaluation par année d'études ont été adoptés ; l'évaluation continue et l'évaluation annuelle.
L'évaluation comporte une épreuve écrite, un examen du carnet de stage et une épreuve clinique du malade.
Le passage en année supérieure correspond à une moyenne annuelle supérieure ou égale à 10/20.
En fin de cycle en ajout aux épreuves ci-dessus citées un mémoire de fin d'études est à présenter devant un jury international.
Une épreuve écrite à Questions à choix multiples (QCM) ou question à réponses ouvertes ou fermées ou cas cliniques (QROC).

HARMONISATION
Programme de formation en Chirurgie Thoracique et Cardio-Vasculaire dans l'Espace Ouest -Africain
ATELIER OOAS
Dakar du 21 au 23 avril 2009

Président: Pr Hervé YANGNI-ANGATE (RCI)
Rapporteur: Pr Sadio YENA (MALI)
Membres : Pr Mouhamadou NDIAYE (SENEGAL)
Pr Yves TANAUH (RCI)

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DEFINITION

La Chirurgie Thoracique et Cardio-Vasculaire
Discipline académique
Un seul diplôme universitaire CTCV
Plusieurs options professionnelles:
- **1- Thoracique et Cardio-Vasculaire**
- **2- Thoracique**
- **3- Cardio-Vasculaire**

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ETAT DES LIEUX

- Exercice de la chirurgie Thoracique
  - Côte d'Ivoire
  - Ghana
  - Mali
  - Nigeria
  - Sénégal
- Exercice de la Chirurgie Cardio-Vasculaire
  - Côte d'ivoire
  - Ghana
  - Nigeria
  - Sénégal

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ETAT DES LIEUX

Programme d'harmonisation des DES

Principe de la mobilité inter-états

Appuis: UNIVERSITES; OOAS;CAMES;WACS;AACTCV; SOCIETES SAVANTES NATIONALES DE CTCV

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CTCV

COMITE PEDAGOGIQUE INTERNATIONAL
COORDINATION INTERNATIONALE

Comité pédagogique international (WACS; AACTCV)
- Coordinateur national
- Mobilité des apprenants et des enseignants
- Cahier de stage unique et harmonisé
- Première partie possible dans un centre national
- Évaluation continue semestrielle nationale
- Évaluation annuelle internationale
- Soutenance de mémoire de fin de cycle devant jury international
- Délivrance du diplôme par les universités et les collèges

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COORDONNATEURS LOCAUX

ABIDJAN : Pr Yves TANAUH
BAMAKO : Pr Sadio YENA
BOUAKE : Pr Hervé YANGNI-ANGATE
DAKAR : Pr Mouhamadou N 'DIAYE
IBADAN :Pr Oluwole ADEBO
ENUGU : Pr Martin AGHAJI
BENIN-CITY: Pr Reginald O. OFOEGBU
ACCRA : Pr Kwabena FRIMPONG- BOATENG

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Principes de l'harmonisation en CTCV

- Dénomination: Diplôme Ouest Africain de CTCV
  - Durée totale 5 ans
  - Délivré par chaque université et/ou collèges
  - Reconnu par WACS; OAAS; CAMES
- Mobilité des enseignants

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Le diplôme comprend 2 parties:

- **Première partie : (Durée 2 ans)**
- **Deuxième partie : (Durée 3 ans)**

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Diplôme Ouest Africain de chirurgie thoracique et cardiovasculaire

CONDITIONS D'ACCES

- Internat qualifiant francophones/anglophones
  - Admission directe
- Doctorat en médecine
- Admission après un examen probatoire
- Centres d'examen: Dakar (Sénégal)
  Accra (Ghana)
  Ibadan(Nigéria)

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Quelle université pour former

- ABIDJAN
- BAMAKO
- BOUAKE
- DAKAR
- IBADAN
- ENUGU
- BENIN-CITY
- ACCRA

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- Financement
- Support pays
- Option professionnelle pour la future activité

- Chirurgie Thoracique
- Chirurgie Cardio-Vasculaire
- Chirurgie Thoracique et Cardiovasculaire

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Curriculum 1ere partie:2 ans

- Unités d'enseignement semestriels
- Semestre 1 : sciences de base et chirurgie générale

Unités d'Enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
1 Sciences de Base 1	Anatomie, Physiologie et Pharmacologie 1	20			60	100			5
2- Bases de la Chirurgie	Exploratisme : endoscopie, Imagerie	8			8	12			3
	Organisation du bloc opératoire Hygiène	8			8	12			
	Technique de bases chirurgicales 1	12			8	12			
	Urgences en chirurgie 1	4			6	8			
	Responsabilité médicale	4			5	8			
	Anesthésie réanimation 1	8			5	8			
3- Stages	24 semaines chirurgie générale et urgence		200	240		440			22
Total		64	200	240	100	600			30

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- Semestre 2 chirurgie générale et urgences

Unités d'Enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
1-Sciences de Base 2	Anatomie, Physiologie et Pharmacologie 2	20			60	100			5
2- Chirurgie de base	Chirurgie digestive	8			8	12			3
	Techniques de bases chirurgicales 2	8			8	12			
	Chirurgie viscérale 1	8			8	12			
	Urgences en chirurgie 2	12			6	8			
	Anesthésie Réanimation 2	8			5	8			
	Neurochirurgie	4			5	8			
3- Stages	24 semaines chirurgie générale et réanimation		200	240		440			22
Total		68	200	240	100	600			30

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Chirurgie du Sein	Techniques en Chirurgie thoracique cardio-vasculaire 1	8			8	12			3
	Chirurgie viscérale 2	8			8	12			
	Chirurgie plastique et reconstructrice	4			4	8			
	Techniques en Orthopédie	8			5	8			
	Techniques en Urologie et en ORL	8			5	8			
3- Stage	24 semaines Urologie orthopédie		200	240		440			22
Total		64	200	240	100	600			30

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Coeur	cardiopathies congénitales cyanogènes	4			4	6			3
	Pathologies péricardiques	4			4	6			
	Cardiopathies congénitales non cyanogènes	12			8	12			
Vaisseaux	Anévrismes (aorte et vx périphériques)	8			6	10			5
	Troncs supra Aortiques	4			8	12			
12-Stages 24 Semaines	**Chirurgie cardiovasculaire et thoracique**		200	240		440			22
Total		56	200	240	106	600			30

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- Semestre 4: Initiation à la CTCV et disciplines annexes

Unités d'Enseignement	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
1- Sciences de Base opératoire thoracique et cardio-vasculaire	Anatomie physiopathologie Cardio thoracique	28			40	100			5
2- Option chirurgie thoracique et cardio-vasculaire	Explorations coeur thorax vaisseaux	12			8	12			3
	Techniques en Chirurgie thoracique cardio vasculaire 2	8			8	12			
	Techniques de circulation extra corporelle	4			8	12			
	Cardiologie	2			4	8			
	Anesthésie Réanimation de l'opéré coeur poumon	12			5	8			
	Pneumologie	8			5	8			
3- Stages 24 semaines	Chirurgie générale urgence 3 mois et chir cardiovasculaire et thoracique 3mois		200	240		440			22
Total		40	200	240	100	600			30

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- Semestre 8: Pathologies et techniques en chirurgie thoracique et cardio-vasculaire

Unités d'enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
10-Thorax	Paroi thoracique et diaphragme	8			4	6			3
	complications en chirurgie thoracique	4			8	12			
	Recherche en chirurgie thoracique et CV	8			4	6			
Coeur	Dissection Aortique	4			8	12			
	Cardiomyopathies métaboliques et non métaboliques	4			4	6			
	tumeurs du coeur	4			4	6			
	Complications en chirurgie cardiaque	12			8	12			
Vaisseaux	Complications en chirurgie vasculaire	8			6	10			5
	Malformations vasculaires	4			8	12			
12- Stages 24 Semaines	Chirurgie cardiovasculaire et thoracique		200	240		440			22
Total		54	200	240	104	600			30

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2ème partie: CTCV: 3 ans

Semestre 5: Pathologies et techniques Chirurgicales

Unités d'enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
7-Thorax	Infections	8			8	12			4
	parasitoses	4			18	28			
	traumatismes thoraciques	8			18	28			
	Pathologies médiastinales	4			6	12			
8-Coeur	Cardiopathies valvulaires acquises	16			6	10			4
	Endocardites bactériennes	4			18	28			
	Techniques de Chirurgie à coeur fermé	8			8	12			
Vaisseaux	Artériopathies des membres inférieurs	4			20	30			
9-Stages 24 semaines	**Cardiologie 3mois et pneumologie 3 mois**		100						
	Chirurgie cardiovasculaire et thoracique 6 mois		100	240		440			22
		56	200	240	102	600			30

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- Semestres 9 et 10 Recherche et mémoire

Unités d'enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
10-Stages	24 semaines		200	200		400			20
10-Emploi					200	200			10
Total			200	200	200	600			30

Unités d'Enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
20-Stages	24 semaines		200	100		300			15
21-Soutenance mémoire					300	300			15
Total			200	100	300	600			30

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Semestre 6: Pathologies et techniques chirurgicales; carcinologie; malformations; maladies thrombo-emboliques

Unités d'enseignements	Eléments constitutifs	CM	TD	TP	TPE	VHT	C.T	C.C	Crédit
10-Thorax	Cancers intra thoraciques	8			4	6			3
	malformations thoraciques et pulmonaires	4			8	12			
	Emphysèmes et maladies dépressives	8			4	6			
Coeur	Prothèses mycardiques	4			8	12			
	Chirurgie de l'insuffisance cardiaque globale	4			4	6			
	Pathologie péricardique	6			4	6			
	Cardiopathies congénitales	12			8	12			
Vaisseaux	Insuffisances veineuses et maladie thromboembolique	8			4	10			5
	Lymphologie	4			8	12			
12- Stage 24 Semaines	Chirurgie cardiovasculaire et thoracique		200	240		440			22
Total		54	200	240	104	600			30

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1. Exploration of the Mediastinum
2. Excision of Mediastinal Tumour and Cysts
3. Others

DIAPHRAGM 10

1. Repair of Congenital Diaphragmatic hernia
2. Repair of Traumatic Diaphragmatic Hernia
3. Others

OESOPHAGUS 30

1 Endoluminal Intubation
2 Oesophagectomy with Oesophago-gastrotomy
3 Colon Bypass of the Oesophagus
4 Modified Heller's Procedure
5 Repair of Tracheo-Oesophageal Fistula
6 Resection of Diverticulum
7 Oesophagotomy for Benign Tumors and Foreign Bodies
10 Others

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Objectifs pratiques
Nombre de cas

CHEST WALL : 10

1. Rib Resection
2. Thoracoplasty
3. Resection and reconstruction
4. Others

LUNGS & PLEURA : 100

1. Closed Chest Intubation
2. Open Lung Biopsy
3. Pleurectomy
4. Decortication
5. Closed Chest Intubation
6. Wedge Resection of the Lung
7. Segmentectomy
8. Lobectomy
9. Pneumonectomy
10. Exploratory thoracotomy
11. Other operations on the Lung
12. Other operations on the Pleura

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Objectifs pratiques
Nombre de cas

PERICARDIUM : 30

1 Pericardiostomy
2 Pericadiectomy
3 Others

VASCULAR : 40

1 Repair of Coarctation of Aorta
2 Repair of Congenital Vascular Anomalies
3 Repair of Thoracic Aortic Aneurysms
4 Repair of Abdominal Aortic Aneurysms
5 Repair of Peripheral Arterial Aneurysms
6 Reconstruction of Peripheral Vascular Disease
7 Others

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Mitral Valve Replacement
Aortic Valve Replacement
Multiple Valve Replacement
Myocardial revascularization

PACEMAKER IMPLANTATION : 10

1 Primary permanent implantation
2 Replacement of Pulse Generator
3 Others

24

Objectifs pratiques
Nombre de cas

MISCELLANEOUS : 30

1. Thoracoscopy (VATS)
2. Scalene node Biopsy
3. Tracheostomy

ENDOSCOPY : 10

1 Bronchoscopy
2 Oesophagoscopy

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Méthodes d'évaluation

- **Évaluation continue**: QCM QROC et études de CAS:

Note moyenne des évaluations continues **(coefficient 1)**

- **Évaluation annuelle**
  - Examen écrit coefficient 1
  - Carnet de stage Coefficient 1
  - Epreuve de malade Coefficient 1

  Moyenne annelle ≥ 10/ 20 pour passer en année supérieure
- **Moyenne de fin d'études ≥ 12/20**

- **Mémoire de fin d'études: jury international**

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ONT SIGNE

Pr Hervé YANGNI-ANGATE (RCI)
- Président AACTCV
- Membre Board CTCV et WACS
- Chef du département Maladies cardio-vasculaires et thoraciques- Bouaké (RCI)
- Chef de service du CHU Bouaké (RCI)

Pr Sadio YENA (MALI)
- Membre AACTCV
- Président Société CTCV du Mali
- Chef de l'unité de Chirurgie Thoracique du CHU Point G Bamako (Mali)

Pr Mouhamadou NDIAYE (SENEGAL)
- Membre AACTCV
- Chef du Service de Chirurgie Thoracique et Cardio-Vasculaire – Dakar- (Sénégal)

Pr Yves TANAUH (RCI)
- Membre AACTCV
- Chef département Thorax et Vaisseaux - Université de Cocody (RCI)
- Chef de service de Chirurgie Thoracique- Institut de Cardiologie- Abidjan (RCI)

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HARMONIZED WACS CURRICULUM FOR CARDIOTHORACIC SURGERY

Professor R.O. OFOEGBU
University of Benin City (NIGERIA)

MD; FRCS.Ed. D; FWACS; FACS; FMCS; FACA; FICS; FICA.
Former Head of Surgery
Former Dean of Medecine
Former Provost, College of Medecine
Former Deputy, Vice-chancellor University of Benin - Benin city

Correspondence : Prof. R.O. Ofoegbu
P. O Box 3496 Benin City
E-mail : ofoegbuor@yahoo.com

Summary

The Author reports a proposal for harmonization of training program for cardiovascular and thoracic surgery in West Africa ; Several items are detailed: 1) detailed Generals Objectives; 2) Generals and specific requirements.

Key words: Training – Cardiovascular and thoracic surgery

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Résumé

L'auteur rapporte un projet d'harmonisation du programme de formation en chirurgie cardio-vasculaire et thoracique en Afrique de l'Ouest ; plusieurs points ont été détaillés à savoir les objectifs généraux, les exigences générales et spécifiques.

Mots clés : *Formation chirurgie cardio-vasculaire et thoracique*

Cardiothoracic (Thoracic and Cardiovascular) Surgeons in the West African Subregion under the auspices of the West African College of Surgeons.

The Committee comprised :
Prof. H..Yangni-. Angate – Cote D'Ivoire
Prof. M. Ndiaye – Senegal
Prof. A.O. Adebo – Nigeria
Prof. R.O. Ofoegbu – Nigeria

By an internal consensus Prof. Ofoegbu was asked to chair the Committee. Documents were made available for the purpose by the Francophone colleagues and the papers presented at the meeting by Professors Adebo, Ndiaye and Ofoegbu were added to the working documents.
The Francophone and Anglophone countries have operated different in emphasis though similar programmes for the training of Cardiothoracic Surgeons in the subregion of West Africa. The aim is to harmonize the two programs in such a way that there will be one regional program for both language groups. The population catered for and those to be treated are the same, a situation made more manifest by the legal free movement of people among the ECOWAS countries.

The Harmonized Curriculum comprises the following Sections :

(b) Cardiac Surgery and Great Vessel Vascular Surgery
(c) Miscellaneous Areas
(d) Appraisal of the Curriculum and its Objectives.

General Objectives

The Specialty of Cardiothoracic Surgery is a field with rapid increase in both knowledge base and operative innovations. Competency is dependent not only on cognition but on acquisition of diagnostic and therapeutic skills for effective patient care. Adequate operative skill is determined by exposure to sufficient number and variety of cases. It is mandatory that the period of training should at the least provide opportunity for exposure that would at the minimum permit participation of the trainee in the care of a wide spectrum of disease patterns. The cardiothoracic surgeon must demonstrate competence and proficiency in the surgical technical skills required to:

i. Understand and interpret all manifestations and investigations towards firm diagnosis of thoracic and cardiovascular diseases.
ii. Treat diseases of the chest wall, mediastinum, lungs, trachea, pleura, esophagus, stomach and diaphragm.
iii. Treat disease of the heart, aortic

. Ann. Thorac. Cardiovasc. Surg. 2009;4(2):72-80

leading to Certification in CARDIOTHORACIC SURGERY of the West African College of Surgeons (FWACS;CTS) should seek admission into an accredited hospital for training in this Specialty. The pre-requisites are as follows:

i. Successful completion with a pass grade at the Part I FWACS or Part I FMCS or Part I Diplôme d'Etudes Spéciales in General Surgery (DES) in Francophone countries.

OR

ii. Successful completion and certification at Part II Final of the FWACS or FMCS or DES in General Surgery in Francophone countries.

years) of continuous training in an accredited Residency Training Program in Cardiothoracic Surgery.

i. General Thoracic Surgery (1-2 years)
ii. Cardiac Surgery (1 year)
iii. Vascular Surgery (6 months)
iv. Cardiology: Adult and Paediatric (3 months)
v. Cardio-pulmonary Imaging.. (3 months)

It is preferable that the General Surgery rotation should precede that of Cardiac Surgery, that is, after completion of Part I or Part II final in General Surgery.

• Landmarks in Resective Pulmonary and Major Airway Surgery
• History of Cardiac and Vascular Surgery, in particular, vascular Anastomosis and Cardiopulmonary Bypass.
• History of Oesophageal Surgery, in particular repairs for Benign Disease and Evolution of Oesophagectomy.

Infections

• Hospital Infections
• Pulmonary Infections: Suppurative and non supurative
• Pleural Infections
• Mediastimitis
• Endocarditis
• Major Vasculitis
• Implications of HIV and metabolic disorders.

Heart (Cardiac) Failure

• Definition and Types, including Hyperternsive Heart Failure, Volume and Pressure loaded Hearts.
• Pathophysiology of Oedema
• Pathophysiology of Inanition

Respiratory Failure

• Types and Distinction from Cardiac Failure

Tube Thoracostomy

• History, Indications and Pitfalls

Haemoptysis

• Grades and Investigations

Guidelines in Research

• Research Methodology
• Statistical Methods with Clinical

• Normal Anatomy of the chest wall
• Thoracic access incisions
• Surgery of Chest wall anormalies and deformities; Pectus excavatum/carinatum
• Chest wall Neoplasms

B- Chest Wall including the Sternum

• Musculocutaneous flaps and plastic reconstructions of the chest wall
• Resections and Replacements of the chest wall and sternum
• Rib Resections
• Thoracic outlet (Neurovascular) syndromes

C- Lungs

• Embryology and Normal Anatomy of the Lung.
• Normal Physiology
• Lymphatic Drainage System
• Bronchopulmonary Segments
• Congenital Malformations (Bronchogenic cysts, Sequestrations, cystic fibrosis).
• Acquired Malformations; Bullae and Emphysaema
• Degenerative and Storage Diseases (Asbestosis, surgically important pneumoconiosis, scars and fibrosis)
• Primary carcinoma; Types and stagning; Resective surgery, other modalities of treatment (Radiotherapy, Chemotherapy, position Emmission therapy, Hyperbarcic oxygen therapy, Immunotherapy etc; Related Paraneoplastic syndromes and their

• Non Neoplastic conditions (Foreign bodies of the airways, Inhalation burns.

D- Pleura

• Normal Anatomy
• Lymphatic Drainage
• Pneumothorax (Spontaneous and Traumatic)
• Surgical Emphysema (Significance)
• Haemothorax• Emphyaema thoracis
• Pleural Effusions
• Chylothorax
• Primary Tumours of Pleural (Mesethelioma)
• Secondary Tumours

E- Trachea

• Tracheostomy: Types and Indications and Complications especially long term.
• Tumours of the Trachea
• Tracheomalacia
• Tracheal stenosis (Cicatrixial and extrinsic compression)
• Operative resections and plastic reconstructions of the trachea.

F- Diaphragm

• Embryology and Anatomy with emphasis on the Architecture, anatomical relationships, the various foramina, the crura and their contents.
• Paralysis of the Diaphragm and Eventration
• Congenital Herniae
• Acquired Herniae
• Repair of Diaphragmatic Hernia and Eventration
• Diaphragmatic Pacing
• Ruptured Diaphragm and Physiology
• Surgical Accesses; Merits and Disadvantages
• Congenital Abnormalities; Atresia Tracheo-oesophageal fistula, Duplication of the Foregut
• Acquired pathologies: Functional and Motility Disorders including Achalasia, Oesophageal Reflux Disease with or without hiatal hernia, Epiphrenic and other Diverticula; Paraoesophageal herniations
• Chemical Injuries and Trauma
• Perforations
• Surgery for Oesophageal Varices: Porto-systemic shunts; Disconnections
• Benign Neoplasms; Leiomyoma, etc
• Malignant Neoplasms: Carcinoma, staging, pathology and Modalities of treatment.
• Oesophageal Resections: Oesophagectomies (limited and Extensive), Transhiatal, Oesophag-gastrectomy, Jejunum and Colon Transplants, By-pass surgery.

H- The Mediastinum

• Anatomical and Surgical Divisions: Relevance to placement of organs and structures.
• The Thymus and its pathologies
• Mediastinal Masses (Ectopic thyroid, etc)
• Mediastinal Adenopathies and Lymphatic drainage
• Ganglionic neoplasms
• Mediastinal Compression Syndromes
• Mediastinoscopy

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Injuries)

• General Principles: Blunt and Penetrating Injuries; low and High velocity missile injuries; contusions as they affect different thoracic organs and systems.

Trauma of Chest wall:

• Isolated soft tissue injuries
• Fracture of Ribs and their complications; pneumothorax, haemothorax, methods of treatment.

Tracheobronchial and Pulmonary Trauma:

• Pathophysiology and Presentation
• Major airway injury (Trachea and Major Bronchi)
• Distal Bronchopulmonary Injuries
• Airway control: Early and Late complications and their Management.
• Pulmonary contusion
• Pulmonary Laceration
• Pulmonary Vascular Injuries

Oesophagel Trauma:

• Modalities and Extent of Injury including chemical burns and Instrumental tears and perforations.
• Methods of Repair and Complications
• Isolation of the Oesophagus

Diaphragmatic Trauma

• Blunt Trauma
• Penetrating Injuries
• Damage of structures associated with the diaphragm, e.g. phrenic nerve, thoracic duct, crural fibres with herniations
• Methods of repair

• Traumatic valve disfunctions
• Rupture of the Aorta
• Tear/Avulsion of Major blood vessels

K- Polytraumatized Thoracic Patient.

• Assessment, Diagnosis, Damage control and Options and Priority in Management.

CARDIAC SURGERY AND GREAT VESSEL VASCULAR SURGERY

A- Congenital Heart Disease

• Embryology and Developmental Anatomy of the Heart and Great Vessels
• Foetal Circulation and Pathophysiology of shunts and abnormal cardiac and vascular connections before and after birth.
• Surgical Anatomy of Heart Valves, Conduction System, Coronary Circulation.
• Classification of Major (Fundamental) Congenital Abnormalities and the associated physiological derangement,
• Cyanosis
• Pulmonary Arterial Hypertension
• Anomalies with left to right shunt:
• Patent Ductus Arteriosus
• Atrial Septal Defect
• Ventricular Septal Defect
• Atrioventricular Septal Defect
• Double Outlet Right Ventricle
• Aortopulmonary Window

. Ann. Thorac. Cardiovasc. Surg. 2009;4(2):72-80

• Truncus Arteriosus
• Total Anomalous Pulmonary Venous Connection

B- Obstructive Anomalies

• Coarctation of the Aorta
• Interrupted Aortic Arch Variations, Associated lesions
• Pulmonary stenosis; complications and right heart failure.
• Aortic Stenosis

C- Particular Problems

• Fontan Circulation
• Congenital Heart Valve Diseases (Aortic and Mitral Valves)
• Bacterial Endocarditis: Epidemiology, Pathology and Target sites.

D- Acquired Heart Disease: Valvular Heart Disease

• Mitral valve: stenosis/Incompetence
• Aortic Valve:stenosis/Incompetence
• Tricuspid valve:stenosis/Incompetence
• Valve Replacement Surgery
• Stented and stentless Prosthesis
• Biological and Mechanical Prosthesis
• Surgery of the Aortic Root
• Surgery of the Aortic Arch

E- Diseases of the Great Vessels

• Aortic Aneurysms. Types and Variations
• Prosthetic Replacement
• Aortic Dissection
• Segmental Aortic Replacements

F- Surgery For Arrhythmia

• Aetiology and Pathology of Arrhythmia
• Electrophysiological Mapping
• Electrophysiology of Cardiac Pacing
• Pace-Makers (Transvenous, Epicardial, Temporary, Permanent).
• Cardioveters and Defrillators
• Left Ventricular Assist Devices
• Non Operative Management of Arrhythmia
• Surgery For Atrial Fibrillation

H-Coronary Artery Disease
• Coronary circulation
• Imaging in Ischaemic Heart Disease and coronary obstructions
• Arterial Grafting Technique
• Harvesting and Types of Conduits
• Off Pump Revascularization
• Minimally Invasive Techniques
• Other Interventions (Angioplasties, etc)
• Post Infarction Septal Rupture
• Post Infarction Ventricular Aneurysm
• Ischaemic Mitral Regurgitation

I-Transplantation: Heart Lung Transplantation
• Indications
• Orthotopic and Heterotopic Transplantation
• Immunosuppression therapy
• Outcome and Graft Rejection Diagnosis

J-Cardiopulmonary Bypass (Extracorporeal circulation).
• The Circuit
• The component Parts and Compartments
• Perfusion solutions and Fluids
• Cardioplegia and Related Solutions
• Acid-Base Balance
• Anticoagulation
• De-airing, Weaning
• Conduct of a standard Bypass process
• Pharmacological Requirements
• Blood Products and Blood Conservation Techniques
• Post Cardiotomy Syndrome
Filters.

MISCELLANEOUS SUBJECTS
• Anaesthesia in Cardiac Surgery
• Controlled Hypotension
• Haemostasis in Cardiac Surgery
• Pharmacology of Major Cardiotropic Drugs
• Post-Operative Complications in cardiothoracic Surgery
• Surgery of Endomyocardial Fibrosis

BASIC DIAGNOSTIC PROCEDURES

(a) Cardiac

Appreciation and Competence in Interpretations of Results and Application are expected in the following:
• Plain Radiological Imaging (X-rays)
• Computed Tomography
• Doppler Flow
• Cardiac Catherization; Pressure/Volume Studies
• Electrocardiography
• Echocardiography
• Cardiovascular Monitoring (Invasive and Non invasive)
• Radioactive Imaging.

(b) Pulmonary
• Plain Radiology (x-rays)
• Computed Tomography
• Radioactive Imaging
• Lung Function Tests
• Blood Gas Analysis
• Bronchoscopy
• Mediastinoscopy
•Thoracoscopy

. Ann. Thorac. Cardiovasc. Surg. 2009;4(2):72-80

(d) Vascular

- Arteriography
- Aortography
- Venography

APPRAISAL

In each case it is expected on completion by a trainee (Resident) to have understood:

(a) The Anatomy, Physiology, Pathophysiology and Natural History of Diseases Entities, Disorders and Conditions in their proper contexts.

(b) Advantages, Disadvantages and Outcome of Investigation and Treatment Methods

(c) Critically evaluate any procedure in all aspects of its application

(d) Be proficient enough to pass on the skills acquired to others

(e) An Appropriate Log Book based on the Curriculum will be provided to reflect the minimum number of operations/procedures and the level of responsibility expected from a trainee, making allowance for the volume of the procedures and experience in the subregion.

INITIATION OF A MODEL SIX YEAR CARDIOTHORACIC SURGERY RESIDENCY PROGRAM IN SHANGHAI, CHINA

A. THOMAS PEZZELLA, MD
Former Director, Special Projects
World Heart Foundation
Founder/ Director, International Children's Heart Fund

Correspondence: A. THOMAS PEZZELLA, MD
17 Shamrock Street
Worcester, MA, USA 01605
E-mail: atpezzella@hotmail.com
Phone: 1-508-791-1951; mobile 774-272-0241
www.ichfund.org

SUMMARY

China has witnessed an accelerated growth in its economic, demographic, social, and political development. The population of China is over 1.3 billion people, in comparison with the world population of >6.5 billion. Healthcare is evolving from a totally socialized government funded system to a hybrid of government and privatization, and a slowly increasing number of private "for profit" systems with domestic and foreign support. The medical education system beyond medical school, i.e. graduate medical education (GME), is not centrally organized or controlled in China. It is estimated there are 8 million Chinese citizens in need of cardiac surgery. There are presently approximately 100,000 operations performed in over 170 centers annually, with <20 centers doing more than 1,000 per year. The exact number of cardiac surgeons is unknown, but estimated at over 1,000. The individual larger centers have developed their own "in-house" residency programs, with no oversight authority, or transparency. There is no formal specialty or subspecialty board certification or credentialing process. In August 2005, a formal six year cardiothoracic residency program was initiated at Shanghai Chest Hospital, Shanghai, China, in cooperation with the World Heart Foundation. Modeled after the current USA program, and modified for China, this system is designed to provide a defined period of cardiothoracic residency training with graduated responsibility, subsequent written/practical/oral examination, and certification by the local Shanghai Health Bureau, Shanghai Chest Hospital, and the World Heart Foundation. A review of the planning, initiation, implementation, and early experience with this effort is presented.

Key words : China – Cardiothoracic residency training

besoin de chirurgie cardiaque. Il y a actuellement environ 100,000 opérations exécutées dans plus de 170 centres annuellement, avec moins de 20 centres faisant plus de 1,000 par an. Le nombre exact de chirurgiens cardiaques est inconnu, mais évalué à plus de 1,000. Les plus grands centres individuels ont développé leurs propres programmes de résidence, sans autorité de l'Etat, ou sans transparence.

Il n'y a aucune structure formelle de certification ou de suivi des formations qualifiantes. En août 2005, un programme de formation de 6 ans en Chirurgie Cardio-Thoracique a été amorcé à l'Hôpital pneumologique de Shanghai, (Shanghai, Chine) en coopération avec la Fondation Mondiale du Cœur. Cette résidence, modelée sur le programme des USA et modifiée pour la Chine, est ponctuée d'un diplôme après un examen écrit/pratique/oral et certifiée par le Bureau local de la Santé de Shanghai, l'Hôpital pneumologique de Shanghai et la Fondation Mondiale du Cœur. Une revue de la planification, de l'initiation et de la mise en œuvre de ces efforts consentis est présentée dans ce travail.

Mots clés :*Formation-Résidence en Chirurgie Cardio-Thoracique*

Introduction

The global burden of cardiovascular and chronic diseases has been well documented (figures 1,2) (table 1)[1,2,3]. The Chinese experience parallels this burden[4,5]. Of interest to cardiothoracic surgeons are the global incidence, prevalence, mortality, morbidity, and long-term results of cardiac and thoracic diseases, and subsequent surgical management. Unfortunately, there is no international database to exact these statistics[6,7]. Global cardiothoracic surgery statistics are extrapolated from unofficial sources that include corporate data e.g. annual sales of cardiopulmonary oxygenators, perfusion packs, heart valves, or disposable mechanical stapler devices, as well as data from the West, e.g. the Society of Thoracic Surgery, and European Association of Cardiothoracic Surgery annual database systems. Disposable items, like cannulas or OPCAB devices give inaccurate statistics, since they are reused multiple times in many developing countries and emerging economies.

Table 1 : Deaths by Major Causes, estimates for 2002

Source: World Health Report 2004

Total Deaths	**57,029,000**
Communicable	*18,324,000*
Respiratory Infections	3,963,000
HIV/AIDS	2,777,000
Perinatal Conditions	2,462,000
Diarrheal	1,798,000
Tuberculosis	1,566,000
Malaria	1,272,000
Non-communicable	
Cardiovascular Disease	16,733,000
Malignant Neoplasms	7,121,000
Injuries	5,168,000

http://www.who.int/whr
http://www.who.int/whr/2004/annex/topic/en/annex_2_en.pdf
and Comment : Injury- Surveillance is Key to Preventing Injuries. Lancet 2004, 364:1564.

Figure 1: Estimated main causes of mortality, worldwide, all ages, and 2005

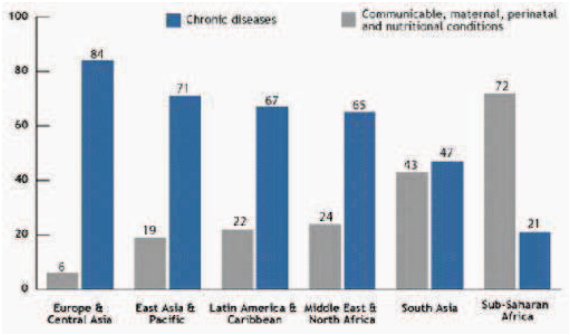

Figure 2* : Global Incidence of Chronic Disease

**Source: Ref. #1. Deaths by Cause. http://www.prb.org/images07/Dths-ByCause.gif. (Accessed 8/3/08).*

The annual Chinese mortality for ischemic heart disease, lung and esophageal cancer, and tuberculosis exceeded 14% of total annual deaths in China in 2001(table 2)[4,5]. The incidence of chronic disease is rising, in the face of lingering infectious diseases that include rheumatic fever, HIV/AIDS, and tuberculosis. This double burden of disease is not seen in the West. The access of cardiothoracic services worldwide remains a challenge. This has been reasonably studied and documented[1,2,3]. Access to Cardiothoracic (CT) surgical services remains a greater challenge in China, given the population of 1.3 billion people, an estimated backlog of 8 million patients, a growing incidence of diseases that includes >150,000 neonates with congenital heart disease, and the imbalance of healthcare access and delivery systems between the urban and rural population[8].

Historically, a number of international voluntary marketing and good will, this has not been a cost-effective strategy, in terms of reducing the global backlog, or promulgating the "teaching to fish" concept. Ironically, the reverse course of surgical tourism has expanded recently to include patients from developed countries going to emerging countries for surgery at lower prices[10]. Large state of the art "for profit" centers in these countries cater to the global market, as well as the privileged or financially capable native population. Visiting surgeons, either solo, or with non-government organizations (NGO's) or medical center sponsored teams, have and continue to go to these countries for short term visits to offer assistance from a clinical, educational, and training perspective. When done on a continuing basis to build capacity in the surgical team in a specific host country and program, this yields gratifying results[11]. Non-sequential or inconsistent, sporadic voluntary short term efforts, often categorized as "surgical tourism", have generally been unsuccessful.

Foreign trained CT surgeons, as well as foreign medical school graduates, have and continue to go abroad to obtain accredited and non-accredited training, as well as those coming for short 1-6 month observational training/education experiences[12]. In the USA, the procedural aspects of obtaining fellowship training are complex. Obtaining a J1 visa is a requirement for acceptance to USA training programs (www.ecfmg.org/). This involves completion of the USML steps one and two, as well as English language proficiency. Some of those who have qualified and completed their USA fellowship training attempt to remain beyond their J1 or HI USA visa status to obtain permanent resident status (green card). This is substantiated by the percentage of foreign medical graduate (FMG) physicians practicing in the USA[13]. Other western programs (e.g. USA, Western Europe), as well as regional centers (e.g. Hong Kong, Singapore, Australia, New Zealand, Taiwan, Japan) have and continue to offer both short term, and long term

of cardiothoracic surgical services in any particular country or region (figure 3)[14].

particular country or region (figure 3)[14].

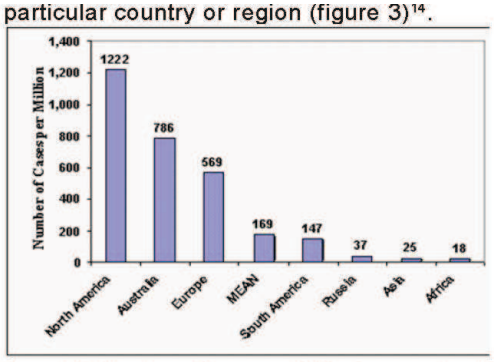

Figure 3* : Number of Cases per Million in several continents.

Figure 3* : Number of Cases per Million in several continents.

** Source: Unger, F. Worldwide Survey on Cardiac Interventions 19995. Cor Europaeum. 1999;7:128-146.*

A practical and, probably more lasting and durable initiative is to establish effective long-lasting "in situ" relationships with a host program or country, thus decreasing emigration, diaspora, or "poaching" of physicians and healthcare workers, and providing a continuous increase in capacity with upgrading of clinical care, services, education/training, and clinical/basic research within their native country[15]. For the larger populated countries, like China and India, this is a practical and more effective approach, especially with regards to education and training. Unfortunately, the glamour, distraction, or emphasis on acquiring high tech operations, e.g. transplantation and robotic surgery, in developing or emerging countries, and the greed of some Western centers and individuals eager for commercial success, have overshadowed the basic need of providing basic CT surgery to the larger patient population base, as well as providing accredited centers with well trained personnel, especially CT surgeons and teams, to handle the backlog and increasing incidence of CT

of Medical Sciences, the Chinese Medical Doctors Association (CMDA), and the Chinese Association of Thoracic and Cardiovascular Surgery offer broad based recommendations, but have no official authority or mandate re. education/ training directives or standards. In fact, broad based international recommendations and standards regarding graduate medical education/training programs remain non-existent worldwide[16]. Funding for GME in China is provided by the individual large training hospitals, with little or no financial or administrative support from central or local government health agencies. In addition, most hospitals must subsidize their budget with financial revenues from billing patients for supplies, drugs, and high tech diagnostic and therapeutic services. The larger national training centers, like FuWai and Anzhen hospitals in Beijing, Shanghai Chest Hospital, and Shanghai Childrens Medical Center, though well established and experienced with education/training and clinical care, cannot meet the accelerated demand. It is necessary and imperative to reform the present education/training scheme in China. To address this challenge, the World Heart Foundation has embarked on a collaborative effort with Shanghai Chest Hospital and the local Shanghai Health Bureau to initiate a standardized, model six year cardiothoracic residency program at Shanghai Chest Hospital. Hopefully, this model will serve as a template for other programs to study and adopt, or integrate into their own system. The ultimate goal is to accelerate the formation of a centrally organized and administered graduate medical education system in China. The present report highlights the initiation and first three years experience with this project.

Zhou dynasty (11th century-256 BC) saw the emergence of the four social classes – scholar, farmer, laborer, and merchant. This was the era of Confucius (551-479 BC), who established the philosophical base of Chinese thought, characterized by "ren" or benevolence. The Great Wall emerged in the Qin dynasty (221-206 BC). During the "golden era" or Han dynasty (206 BC -220 AD) the economy flourished, and paper was invented. The legacy of other Chinese inventions include movable type, the compass, firearms, paper money, and gunpowder[17]. China was also one of the first countries to navigate the world[19].

Though traditional Chinese medicine (TCM) began during the earlier Zhou dynasty or Spring-Autumn Period (772-481 BC), it advanced during the Han dynasty[20]. Hua Tuo and other Chinese doctors developed the notion of holistic medicine, as opposed to the western system of curing specific illnesses. Chinese herbal medicines, along with acupuncture, and exercises like Tai Chi, became the basis of traditional Chinese medicine. The Compendium of Materia Medicu became the authoritative text that listed and described the pharmacology of thousands of herbal medicines. In the modern era the Chinese or Sinic civilization remains the oldest and most robust of the 8 remaining major global civilizations (Sinic, Japanese, Hindu, Islamic, Western, Latin America, African, and Orthodox)[21].

Surprisingly, it was drugs, namely opium, that brought China into open conflict with the Western powers, especially Great Britain during the last half of the 19th century[17,18]. The 20th century was a defining period for China as it emerged from the Qing dynasty (1616-1911 AD). The Boxer rebellion of 1899 saw the beginning of separation from western power influence, the end of emperor rule, and the start of a democratic process. Most westerners, especially faith based groups were expelled from China. Educational efforts, including the recently increased its political and economic support of indigenous research and development[22].

The conflict between the nationalists and communist political factions abated during World War II, where a united China, in alliance with the west, opposed Japanese aggression and courageously defeated over one-half of the total Japanese military effort in the Pacific theater of conflict.

Following the war, the hostility between the nationalists and communists re-emerged with the ultimate establishment of a Chinese communist state in 1949. Three subsequent movements occurred. The Peoples Communes and the Korean War gave way to the cultural revolution from 1966 to 1978, with its hard line socialistic constraints and suppression of individual expression and growth, but which eventually saw the emergence of a modified traditional Chinese culture, ultimately overshadowing the remnants of the Chairman Mao Ze Dong sponsored rigid communistic structured society[24]. However, during the cultural revolution the effect on education was profound. There was the attempt to define a modern educational system that tried to eliminate the "three distinction": town vs. country; industry vs. agriculture; and mental vs. manual labor. This virtually halted academic and creative intellectual activity[25]. All foreign influence was suppressed, as well as the native Confucian and Taoist philosophy.

China gradually opened to the west following the "ping pong diplomacy" and President Richard Nixon's visit to China in 1972. By 1978, with the inspired leadership of the moderate hard liner Deng Xiaoping, China re-emerged as a balanced society that embraced both the elements of state controlled socialism, and the foreign style elements of capitalism or economic free enterprise[24]. This has evolved dramatically with China becoming a major international force both economic growth and geopolitical influence (table 4,5).

Education spending – 5.7% of GDP
Human Development Index – 75.5 *
(HDI)

* HDI – measures income levels, adult literacy, and life expectancy
(>80 high; 50-79 medium; <50 low)

** The Economist, Pocket World in Figures, 2007 edition. Profile Books LTD. London, UK. 2007.

Country	Doctors
USA	321
Malawi	000
China	

China is the 3rd largest country, with the largest population, and the fastest growing economy.

Table 5 *: Country, China

Population estimates	
Total population (000), 2003	1,311,709
Percentage of population aged 60+ years, 2003	10.5
Total fertility rate, 2003	1.8
Health indicators	
Life expectancy at birth (years) 2003	
Total population	71.0
Males	70.0
Females	73.0
Child mortality (probability of dying under age 5 years) (per 1000) 2003	
Males	32
Females	43
Adult mortality (probability of dying between 15 and 59) (per 1000) 2003	
Males	164
Females	103
Healthy life expectancy at age 60 (years) 2002	
Total population	64.1
Males	63.1
Females	65.2
Healthy life expectancy at age 60 (years) 2002	
Males at age 60	13.1
Females at age 60	14.7

become aware of this imbalance, and during the 11th meeting of the party in November, 2005, the theme of the new 5 year plan was the creation of a "harmonious society". Elimination of the farm tax was a bold step in that direction, along with harsher punishment for political fraud in the higher economic zones, like Shanghai. China remains open to growth and development, as witnessed by the assimilation of Western technology, yet mindful of its proud history and heritage (figure 4).

Figure 4 : The Old and New Shanghai, China (photo, courtesy of Dr AT Pezzella)

Figure 5 : (A) Dr Gu, Dr Wu, Dr Huang

b. Healthcare in China

As in most countries, education and healthcare are low priority, given the fact that neither generates immediate revenue or tangible results. Qizhi[20] gives a very detailed history of traditional Chinese medicine (TCM) and the

healthcare benefits[26]. At the hospital level, the complexity and number of surgical specialties and beds available remain the method of categorization. Hospital levels range from 1 A,B,C to 2 A,B,C to 3A,B, C, with 3A being the "best" or most sophisticated[29]. Patients can choose their doctors at the hospital. The names and photos of the attending doctors available are portrayed in the hospital lobby entrances for perusal and selection. Direct referrals from other physicians are not the norm. Though physicians are hospital employees, the "red envelop" courtesy payment by patients to desired surgeons and staff is commonly practiced[30]. In many cases, the patient must also pay the hospital for expensive devices, e.g. heart valves, mechanical staplers, and expensive drugs.

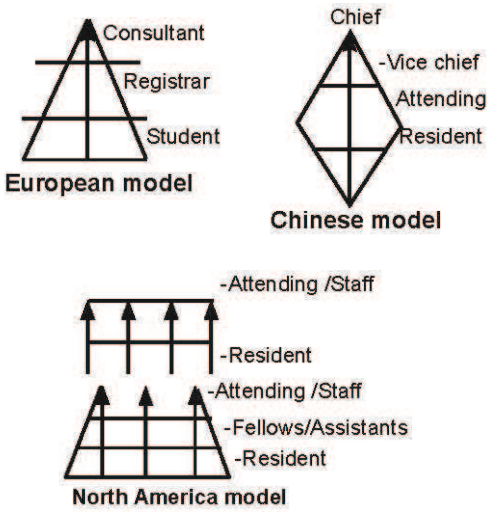

Figure 6 : Training Models in CI Surgery.

Historically, healthcare in China has evolved in China since 1949[31]. In the early era from 1949 to early sixties prevention and universal access to healthcare were the priority. The barefoot doctors (estimated at 1 million) were basically farmers with basic medical training. They were sent to rural areas to fill the void when urban

barefoot doctors gradually disappeared or evolved into non-effective administrative positions. This resulted in more concentration of resources into the urban areas, leaving the rural majority neglected or ignored. This disparity has been highlighted in recent epidemiological problems, including HIV/AIDS in 1985, SARS in 2002, the Avian Flu Virus (H5N1) in 2005, and the recent earthquake in 2008[25].

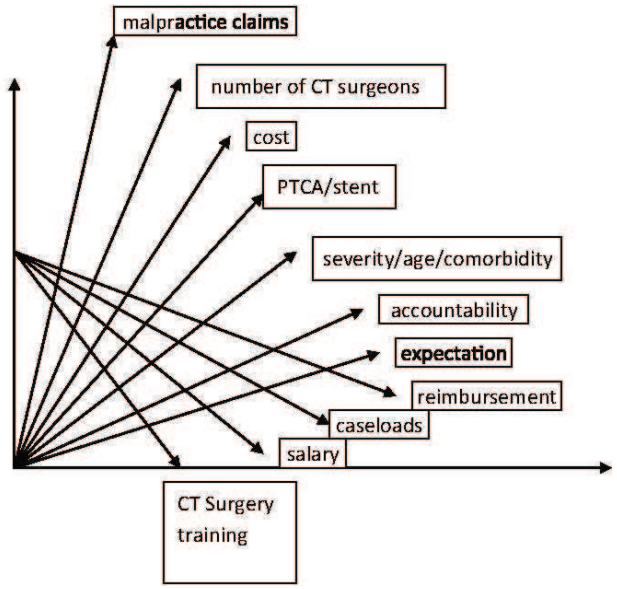

Figure 7 : The Challenges for Cardiothoracic Surgery – USA/Developed Countries/Economies

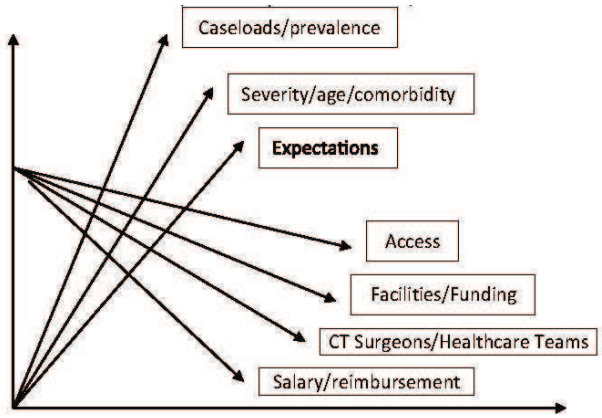

Figure 8 : The Challenges for Cardiothoracic Surgery – Developing Countries/Emerging Economies

disposable income, given the fact that savings are sequestered to finance personal healthcare and education. At the hospital level, there is minimal central or local government financial support. As noted, over 90% of hospital revenue comes from the patients' medical care expenditures[31-34]. As an example, patients requiring a lung resection can have mechanical staples if they pay for the device, otherwise they get silk ligation of the bronchus, and the "Chinese GIA" (i.e. horizontal silk mattress closure of incomplete fissures).

Unfortunately, the USA healthcare system is not be a perfect model or system for China. The USA is the only developed country without a universal health care system. In 1990, the USA ranked 10th in a 10 nation survey on level of healthcare satisfaction[35]. The poor pay 18% of their disposable income on health, verses 3% for the rich. More than 46 million Americans (including both employed and unemployed) are uninsured[35].

Cardiothoracic Surgery in China

a. History of CT Surgery in China

The growth and development of CT surgery has been slow yet progressive in China. The history is well documented in the excellent monograph by Wan and Yim[36]. Yet reference or elaboration of CT surgical training in China is lacking. The major historical CT operative procedures performed in China are summarized in (table 6)[36]. Despite limited exposure to the West from 1949-1966, and intellectual suppression during the Cultural Revolution from 1966-1976, the ingenuity, persistence, and determination of the early pioneers is evident. Four pioneers stand out: Ying-Kai Wu, Jia-Si Huang, Kai-Shi Gu, and Mei-Hsin Shih (figure 5 A,B). Dr Wu received training further training in the USA. He returned to China in 1943, after 10 months with Dr. Evarts Graham at Barnes hospital in St Louis, Missouri. He eventually became an honorary member of the American Association of

formulating the basics of education and training for future Chinese CT surgeons. Huang's textbook of surgery continues in its 7th edition[39]. Dr Gu become the vice president and chief of cardiac surgery at Shanghai Chest Hospital in 1957[40]. He pioneered the early growth of cardiac surgery, performing the first open-heart operation in China utilizing a Chinese made heart/lung machine in 1958. Dr Shih trained with Dr Huang[39]. He performed the first Blalock-Taussig shunt in China in 1944. He also corrected an ASD in 1958 utilizing surface cooling.

Table 6 : [36]Chronology of Significant First Successful Cardiothoracic procedures in China

Year	Surgeon	Procedure
1937-	Da-Tong Wang	Lobectomy for bronchiectasis
1940-	Ying- Kai Wu-	Esophagectomy for carcinoma
1941-	Ji-Sheng Zhang-	Pneumonectomy for carcinoma
1944-	Ying- Kai Wu-	Ligation of patent ductus arteriosus
1953-	Mei-Shin Shih-	Blalock-Taussig shunt
1954	Xi-Chun Lan-	Closed Mitral
1958	(June)-Hong-Xi Su-	First CPB procedure (VSD repair)
1958	(July) Kai-Shi Gu-	Correction of RVOTO with Chinese made CPB
1974-	Jia-Qiang Guo-	machine at Shanghai Chest Hospital CABG
1974-	Wen-Xiang Ding-	Pediatric (<2 years) cardiac surgery

The contributions from the West can be divided into 4 eras: the first era was the Western missionaries who ventured to China over 100 years ago as volunteers or missionaries to establish churches, schools, and hospitals[41]. One example is the Peking University Medical Center (PUMC) in Beijing. In 1917, the Chinese Medical Board of the Rockefeller Foundation established PUMC to foster the spiritual, physical, and mental well-being of the Chinese people[38]. The second era involved a few Chinese surgeons, like Drs Huang and Wu, receiving formal training in the West.[42]. The third era saw prominent foreign surgeons returning to China. Leo Eloesser came to China following World War II and spent 4 years living and working there[43]. Following WW II there was an increase in the number of notable first CT

occurred after 1976 and the 10 year cultural revolution, when China progressively opened to the West. Prominent western surgeons, including Michael DeBakey and Denton Cooley came to China to teach and operate. At the same time, many Chinese surgeons came to the West for short and long term training. A notable example is the number of Chinese surgeons receiving non-accredited 1-2 year " hands on" clinical fellowship training with Dr Albert Starr's program in Portland, Oregon[18] Chinese CT surgeons completed non-accredited clinical CT surgery fellowships in Dr Starr's program)[46]. Other surgeons ventured to Japan, Australia, and New Zealand.

The international "break out" event for CT surgery in China came in 1981 with the International Cardiothoracic Surgery Beijing Symposium[29]. Participation by the international cardiac surgery community accelerated subsequent exchange .Since then a number of international meetings have been held in China, including the 1986 conference, and the recent Beijing International Heart Forum in 2005[29].

This era continues today with the current generation of foreign surgeons, as well as NGO's, and foreign companies bringing new technology, as well as clinical expertise in establishing or upgrading CT surgery centers and programs throughout China. At the same time, the indigenous development of Chinese devices, like heart valves, oxygenators, and medical equipment, continues to grow.

Foreign surgeons, like Drs.Carlos-A Mestras from Spain, Roland Hetzler from Germany, Ray Chu-Jeng Chiu, Jean Deslauriers, and Ren-KE Li all from Canada, are notable examples of dedicated international volunteers who have donated their time and services to help their Chinese colleagues. Native Chinese surgeons abroad have also been involved in this effort. Hong Kong, after returning to mainland Chinese control in 1997, Taiwan, and Singapore CT surgeons have all been especially helpful in offering training and

China[48]. This grew to 15,000 cases in 1990, 59,886 cases in 2003, 74,840 in 2004, and > 100,000 cases in 2007[49] .The number of centers in 1999 totaled >600. Presently, the number of centers exceeds 700 (>170 is the more realistic number), with >75% of the centers performing < 100 cases/ year. Fu Wai hospital in Beijing performs the largest number of cases, estimated at > 7,500 procedures/year. There are at least 20 hospitals in China performing >1,000 cases per year in Beijing, Shanghai, Wuhan, Guangzhou, and Chengdu[29]. From 1997-2004, the breakdown of specific procedures was 60% congenital, <25% valvular, 10-15% CABG, and < 5% aortic procedures[29,49]. In a national survey in 2005 there were 1,225 cardiac and 3,405 CT surgeons in China[49]. Thoracic surgery continues to grow with increases in lung cancer, as well as a large incidence of esophageal cancer. At Shanghai Chest Hospital > 2,500 major chest procedures are done annually, including > 250 esophageal resections for carcinoma.

At present, the estimated backlog of patients requiring cardiac surgery in China is >8 million[8]. The annual incidence of congenital cardiac disease exceeds 150,000 , with a rate of 6.7/1,000 live births[50]. Of these > 100,000 need surgical or interventional procedures. Less than 80 centers are capable of treating CHD, with < 10 centers having expertise for complex neonatal problems[50].

Clearly, the need for more centers and CT surgeons is apparent. This is a global problem. The overall number of healthcare workers in Asia is 2.3/1,000 population, compared with 10.1/1,000 in the USA, and the 4.0/1,000 global average[51].

As noted, the incidence of coronary artery disease and degenerative valve disease will increase as the population ages. In 2000, 7% of the population was >65 years old. This will rise to 20% by the year 2040 (5). This alone will increase annual deaths 200% from CV

accredited Chinese medical school with a bachelor of medicine degree (171 medical schools in China)[52], the future CT surgeon can apply for a job vacancy at a hospital with an active CT surgery service, and an "in house" training program. He/she is accepted as a hospital employee. The number of residents is limited by the number of employee vacancies. A second route is to pursue a masters degree in medicine, combined with a residency. Others can pursue this tract to gain the doctor of medicine degree as well. More than 15 centers in China offer the masters or doctorate in medicine program[50]. At present 15 medical universities are approved by the government as teaching centers for masters and doctorate programs[50]. Over 50% of the present Chinese CT surgeons have a masters degree, and about 30% have a doctorate degree. Though long and arduous, this pathway offers the best chance to secure an attractive academic position. A small number of graduates do not pursue clinical medicine but enter industry or sales of pharmaceuticals or medical devices. The training hospitals receive no formal financial assistance for medical training from the central or local governments.

In contrast, in the USA, all Graduate Medical Education (GME) is financed by the federal government through the Medicare program (53,54). In 2004, Direct- GME funding was 2.7 billion dollars, and Indirect- GME funding 5.8 billion dollars. Medicare controls the total number of resident positions in accredited residency programs. This has become a debated area since the number of residency positions accedes the annual number of medical school graduates. Given the need of doctors in primary care, as well as selected specialty areas, the shortfall has been filled by foreign medical graduates.

In China, once accepted into the designated training hospital, there is a basic first year of general medical training in order to qualify for medical licensure by the local health bureau. accepted. This aspect is very subjective, relying on recommendations of senior staff, chiefs, and vice-chiefs. Traditionally, cardiovascular and thoracic training are separate pathways. As stressed, there is no centrally controlled or administered graduate medical education system, nor specialty credentialing process in China.

In comparison, in the USA, the non-profit independent Accreditation Council for Graduate Medical Education (ACGME), established in 1981, controls and coordinates the 8,355 ACGME residency programs, covering 126 specialties and subspecialties, and 106,245 residents[55]. Each specialty board, like the American Board of Thoracic Surgery (ABTS), coordinates the criteria, selection, residency programs, and certification processes.

Presently, in China, after 2-3 more years of specialty training, the attending is granted privileges to perform surgery at that hospital. Yet the attending is under the direction of the chief and vice-chief of that team. He cannot admit his own patients, assume primary responsibility, or operate independently. He/she basically remains a vassal for varying lengths of time, with only graduated levels of operative independence. Basically, it is a master/apprentice system, somewhat similar to the Kung fu (Wu Shu) system of teaching the martial arts! Historically, this is the familiar old European triangle system, the difference being the varying number of accepted candidates, depending on job vacancies in that particular hospital (figure 6).

Historically, the German triangle or pyramid system was brought to the USA by Dr William Halsted to Johns Hopkins Hospital in Baltimore, Maryland in 1889[56]. This system produced a number of gifted surgeons who became chiefs at many academic centers, but failed to satisfy the need of more qualified surgeons to meet the rising demand. It was basically a modification of the master/apprentice philosophy. In 1931 Dr Edward Churchill

failure, since there are only a limited number of vacancies in the hospitals, with the best candidates competing for the few positions in the larger centers. In addition, attractive candidates will be dissuaded from pursuing a long and arduous career in favor of more lucrative and promising careers in other areas. To use the airline example, as China airlines increases its flights and routes, buying more Boeing and Airbus planes, they urgently need more trained pilots. This mandates quantity and quality in a shorter time period. Foreign pilots are a short term measure. Native Chinese pilots are needed. CT surgery is growing in China, given the increase in centers, and the ability of more patients able to pay for services. This mandates an increase in qualified Chinese CT surgeons. This is the grid lock situation for CT surgery in China. China has well trained and capable mentors and teachers. Convincing them to change their philosophy of training is a major challenge. A paradigm shift to accelerating the experience and responsibility of the aspiring Chinese CT surgery residents will help alleviate the problem. If this doesn't occur, then fewer candidates will pursue a career that is low in salary, long in training, and not professionally satisfying. In interviewing a number of Chinese medical students and residents, the three major wants or needs included opportunity to do what they were trained to do, a secure job with decent salary, and personal time for family and other interests. This is being seen to some extent in the American system. The differences between the Western and Chinese system are summarized in figures 7,8. A major difference is the increasing caseloads and demand in the emerging economies and developing countries. A disturbing trend in the American system is the declining number of candidates applying for CT surgery residency positions. The number of CT surgery resident candidates have decreased an average of 10% per year in recent years[57]. Long training periods (7-9 years post medical school---mean age 35+/- 3years), innate talents and abilities. Language and visa requirements have, and still remain major barriers to Chinese surgeons seeking training abroad. Canada, USA, Australia, New Zealand, and Japan have been the major countries for both short term, and long term "hands on" accredited and non-accredited training. At present, the visa restrictions and requirements for both the H1 research visa and the J1 clinical visa have decreased the overall number of foreign trainees in the USA. The ECFMG remains the organization that administers the qualifying USML examinations that qualify the candidate for visa approval[59,60]. Few Chinese surgeons presently have availed themselves of the international opportunities, given the language, political, and logistical challenges and constraints.

Model/ Standardized Program

" There is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new order of things" Niccolo Machiavelli[61].

The need for improvement in residency training was highlighted in 1995 at a National Chinese conference However, no firm recommendations were made or implemented[42]. In 1997 David Cheung from Hong Kong proposed a project to formally train mainland Chinese surgeons in Hong Kong[62]. Despite hard work and diplomacy the project never materialized. A second attempt was made by Baxter Ltd to develop centers of excellence in both China and India. Again that program never materialized[63]. A notable exception was the Shanghai Children's Medical Center. In cooperation with Project Hope and Boston Children's Hospital, and under the direction and leadership of Dr Richard Jonas, a modern, state of the art pediatric cardiac surgery program was established in the late 1980's[64]. This program has grown to > 2,000 open heart operations/ year. An in house Pediatric Cardiac surgery residency program was established as well, along Western standards, though elements of

formal standardized 6 year CT surgery residency program, modeled after the USA system. Following a series of meetings in the USA and China, a memorandum of understanding was fashioned. A formal proposal and business plan was accepted by the World Heart Foundation, Shanghai Chest Hospital, and the Shanghai Health bureau (table 7). Two additional Shanghai centers were invited to participate in a cooperative collaborative endeavor, but declined, as well as Fu Wai hospital in Beijing.

Table 7 : Shanghai Chest Hospital Model Cardiothoracic Residency Program

Introduction
Formation Correspondence/Letters Goals/Business Plan Outline of program Approval; Initiation (SCH/SHB/WHF) Application/Selection Process
Program requirements:
Caseload; Operative Log Rotations/Call schedules/Vacations Evaluations – Resident/Rotations Certification requirements Conferences – Core Lecture/M & M/VP Clinical Core lectures- one academic year cycle with lectures prepared/given by resident Monthly morbidity/mortality conference alternating between cardiac and general thoracic Visiting professor every 3-4 months Weekly preoperative case discussions to include indications, contraindications, timing of procedure, knowledge of operative technique, and early/late complications of operation
Certification:
Clinical competency-approval of program committee Operative minimum requirements Successful completion of 3 part examination process

Shanghai Chest Hospital deserves special recognition. Started in 1880 as Hongren Hospital by the Protestant Episcopal Church, it was converted to SCH in 1957 by the Shanghai Health Bureau[40]. Under the pioneering efforts of

Cooperation and Training Center of Cardiovascular Disease. Through 1998, 98 centers have been supported. This involved the re-establishment of cardiac surgery activity in 28, upgrading in 25, and de novo centers in 44[65]. The satellite concept of major centers developing and supporting smaller programs in outlying cities and regions is a practical and effective strategy for China.

Criteria to be a designated center were established. The clinical activity at SCH included >800 adult open heart procedures, > 200 pediatric open heart procedures, and >2,200 major thoracic procedures (>200 esophageal resections. The majority of the teaching staff had academic appointments at Jai Tung Medical School. The clinical research was active with peer reviewed publications in both Chinese and Western journals. The residents had access to the internet, as well as currents texts and journals in an established medical library. Adequate conference and audiovisual capability were in place. The major deficit was “in house” medical and surgical specialty consultant services. Consultants were available from affiliate institutions.

The initial phase one plan includes acceptance of residents who have successfully completed a three year general surgery residency. Phase two will require 2 years of general surgery, and subsequently four years of CT training, of which one year would include rotations on cardiology, pulmonary medicine, and oncology. Three pathways would be offered: adult cardiac, pediatric cardiac, and general thoracic. The pediatric cardiac pathway would also involve an additional year of training in a designated Chinese pediatric cardiac surgery program.

All rotations include preoperative, operative, and postoperative exposure and involvement, with incremental increases in clinical and operative responsibility. A monthly morbidity/ mortality conference alternates between cardiac and thoracic surgery. A core curriculum was fashioned from the Thoracic Surgery

(http://school.eacts.org/sections/Thoracic/ThorComp/index.html).

Evaluations were submitted after each rotation by both residents and faculty. This provides valuable information, not only for resident performance, but for faculty assessment insofar as participation and willingness to advance the education and training of the individual resident. An annual in training examination will be implemented in the phase two update.

In August, 2005, 4 residents, having successfully completed 3 years of general surgery residency, began the phase one 3 year CT surgery residency (figure 11A,B). The framework for the program was adapted from the American Board of Thoracic Surgery residency system (66). The author (ATP) spent one year (July 2005-July 2006) coordinating the program, along with co-director Professor Ying Ze Li. Three residents successfully completed the program in August, 2008. The 4th resident will complete his final year following a 2 year program in Hong Kong to obtain his Master of Medicine degree. Presently seven more residents are in the program.

In summary, candidates for certification must complete a minimum of 36 months of residency training in thoracic and cardiovascular surgery in the program. This includes 12 months of continuous senior responsibility. The director and program committee of the thoracic training program must approve the resident and signify that he/she has satisfactorily completed the residency in thoracic surgery. The resident was also encouraged, but not required, to write a paper (a case study or review paper) for submission to a peer reviewed Chinese or foreign journal. This will be mandatory in the phase two update. The resident then qualifies to take the 3 part certifying examination (written/oral/practical).

Figure 9 : The new Shanghai Chest Hospital, Shanghai, China--2006

Education and adequate operative experience in both general thoracic and cardiac surgery are essential parts of the thoracic surgery residency program, no matter what pathway the resident chooses to follow

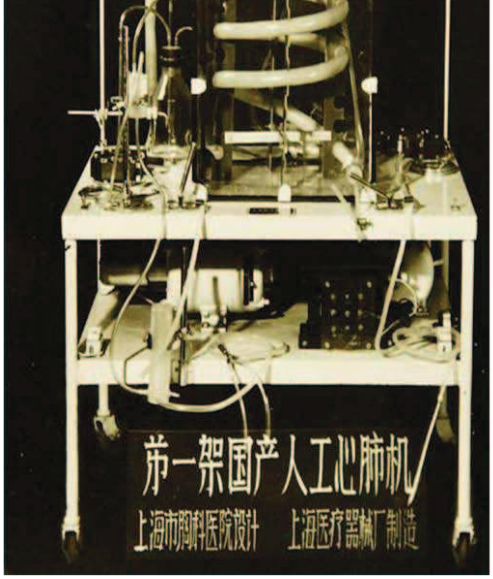

Figure 10 : First Chinese made Heart/Lung machine in Shanghai, China. (photo, courtesy of Prof Yingze Li)

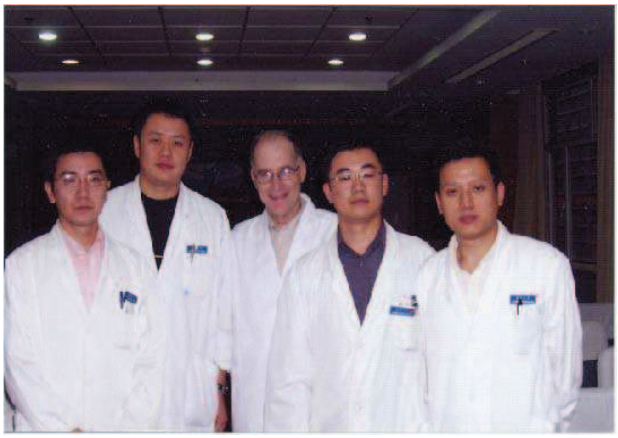

Figure 11 A : First group of Chinese CT surgery residents at Shanghai Chest Hospital (photo, courtesy cof Dr. AT Pessella).

Figure 11 B : Atending assisting Chinese resident perform CT surgical procedure, Shanghai Chest Hospital, 2006.

The approved candidate must satisfy the minimum operative experience requirements (table 8).

Table 8* : Log Boolk

Cardiothoracic Pathway USA----China			Requirements	General Thoracic Pathway USA----------China	
20	20		Congenital Heart Disease	10*	10*
10	10	P	rimary		
10	10		First Assistant	*All cases can be as First Assistant	
150	65	A	dult Cardiac	75	65
50	45	A	cquired Valvular Heart	20	45
80	10		Myocardial Revascularization	40	10
15	5	R	e-Operations	5	5
5			Aorta	0	0
15	10		Other	15	0
50	50		Lung, Pleura, Chest Wall	100	100
30	30		Pneumonectomy, lobectomy,	50	50
20	20	S	egmentectomy Other	50	50
5			Mediastinum (resection)	10	10
15	8	E	sophagus	30	30
10	4	E	sophagectomy/Resection	20	20
0	0		Benign Esophageal Disease	5	0
5	4		Other	5	5
15			VATS	30	
255			**Total**	**255**	
40		E	ndoscopy	90	30
20			Bronchoscopy	40	10
10		E	sophagoscopy	25	10
10			Mediastinoscopy	25	10
100		C	onsultative Experience	100	-
50			New patients	50	-
50			Follow-up	50	-

*Source:ABTS:http://www.abts.org/sections/Certification/Operative_Requiremen/index.html

The major challenges for the future of CT surgery education/ training in China include: training the trainer to accept the roles of mentor, advisor, coach, and instructor of the new generation of Chinese doctors; permitting and fostering increasing responsibility, as well as operative experience of the residents; accepting the value and necessity of core lectures, ward rounds, preoperative conferences, morbidity/mortality conferences; and the

have a negative impact on patient outcomes[67-69]. To help bridge the transition in China, corporate involvement, (e.g. Ethicon and Tycos), has been helpful in allowing the residents to perform both basic and newer operations in their wet lab facilities in Shanghai.

On a larger scale, embracing the entire Chinese healthcare team, proficiency in spoken and written English, as a second language, is crucial to professional growth and global involvement. This has been adequately addressed by Benfield[70]. The level of English language proficiency in China is very low. There are many examples that can simplify the transition, (e.g. composing hospital records and charting in bilingual formats) (figure 12).

Faculty growth and development, and retention of both faculty and staff in the government hospitals in China will have to compete with the lure of private practice initiatives and opportunities. The future training programs will also have to include cooperative arrangements for rotations in affiliate hospitals to provide training in deficient areas. In Shanghai, a three month rotation in pediatric cardiac surgery at Shanghai Childrens Medical Center was a major step in that direction.

Clinical and basic research and development is an essential component of any major academic training program. Those Chinese residents who choose to go the route of obtaining their masters and doctorate in medicine will form the core group of the next generation of academic Chinese CT surgeons[50].

An interesting aspect of CT surgery in China is that, in the future, many foreign residents may desire to come to China for further fellowship training, given the large caseloads and spectrum of pathology. Cooperative affiliations are already emerging between leading centers in China and the West.

Open access to the medical literature, especially journals, remains a formidable challenge, not only in China, but throughout the world[71,72]. The CTSnet remains an essential link for the global CT surgical community. For this Beijing Olympics is but the start of China embracing international participation.

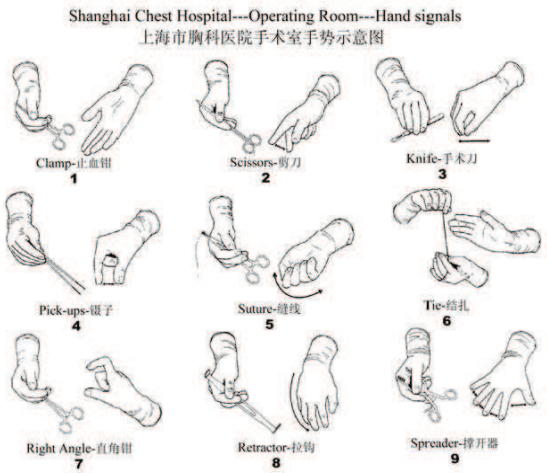

Figure 12 : Practical initiative to overcome the language barrier

Future issues to be discussed, debated, developed, and implemented in China include: maximum working hours (80 hours in USA)[73], job placement[58], newer methodology to teach operative procedures[74-76], and compliance with the newly developed American ACGME core competencies system (table 9).

Table 9*: Accreditation Council for Graduate Medical Education (ACGME) Core Competencies

Patient Care
Medical Knowledge
Practice-Based Learning and Improvement
Interpersonal/Communication Skills
Professionalism
Systems-Based Practice

*Source: ACGME.http:/www.acgme.org/outcome/comp/compFull.asp. Accessed 8/17/08

Remarkably, the Chinese display the admirable quality of assimilation. They have become the benefactors and not the victims of the resurrected educational philosophy of

• Proceed step by step in an orderly way------ organizational and managerial approach
• Integrating learning with thinking----balance between objective and subjective or facts vs. creativity
• Specialized knowledge needs a base------fundamentals are building blocks
• Gaining new insights through reviewing old material----judgment, experience, maturity is evolutionary
• Learning through practice-----aligning ethics with practical ,objective application
• Teaching and learning complement and support each other---- the mentor, coach, instructor welcomes his teacher (student)

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MIDDLE LOBE SYNDROME - PUTTING THE CART BEFORE THE HORSE?

K. ENTSUA-MENSAH, L. SEREBOE, M. TETTEY, F. EDWIN, M. TAMATEY, E. ANITEYE, D. KOTEI, A. FORSON, L. EDUSEI, K. FRIMPONG-BOATENG

National Cardiothoracic Centre, Korle-Bu Teaching Hospital. Accra, Ghana.

Correspondence: Dr Kwo Entsua-Mensah
Korle-Bu Teaching Hospital. PO. Box 77 Accra. Ghana.
E.mail: kentsuam@yahoo.com

SUMMARY

Middle lobe syndrome is an uncommon condition. Reports of this condition in West African literature are rare.
We report a 34 year old male patient seen with right-sided chest pain and persistent haemoptysis. Plain chest radiographs showed features of middle lobe consolidation. Several investigations carried out could not elucidate the primary aetiology of the consolidation, except for an elevated erythrocyte sedimentation rate of 100mm/hour. A clinical diagnosis of florid pulmonary tuberculosis was only arrived at during surgery. A bilobectomy was performed. Tuberculosis as the primary aetiology was confirmed by histology. Post-operative anti-tuberculous chemotherapy resulted in cure.
This report highlights the limitations in using the methods detailed in our report below.

Key words: Middle lobe syndrome- lymphadenopathy- middle lobe bronchus- atelectasis.

RESUME

Le syndrome du lobe moyen est une pathologie rare ; il a été rarement rapporté dans la littérature ouest-africaine
Nous rapportons l'histoire médicale d'un patient de 34 ans de sexe masculin qui présentait une douleur thoracique droite et une hémoptysie persistante. La radiographie du thorax montrait des images de condensation du lobe moyen droit. Les différentes investigations n'ont pu élucider l'étiologie de cette condensation radiologique, en dehors d'une élévation de la vitesse de sédimentation (100 mm/h). Le diagnostic clinique de tuberculose pulmonaire évolutive a été l'indication opératoire. Une *bilobectomie a été pratiquée et le diagnostic de tuberculose a été confirmé à l'histologie. Ainsi, une chimiothérapie antituberculeuse post- opératoire a permis une guérison. Ce travail met en lumière les limites des méthodes utilisées et détaillées dans le cas clinique ci-dessous décrit.*

Mots clés : *Syndrome du lobe moyen - lymphadénopathie- bronche lobaire moyenne - atélectasie.*

and kept him awake. Associated with the above symptoms were night sweats and significant weight loss. He did not recall contact with anybody with chronic cough.

The referring hospital had on two occasions evaluated his sputum for acid fast bacilli using standard World Health Organization (WHO) protocols. All proved negative. Tuberculin skin test with 0.1ml of 0.005% (5 TU) purified protein derivative was also negative, i.e. less than 5mm of induration after 72 hours. He therefore had conventional antibiotic treatment for middle lobar pneumonia. Cardiothoracic opinion was sought when there was neither clinical nor radiological resolution after two courses of parenteral Augmentin™ followed by the oral formulation.

Physical examination revealed clinical evidence of consolidation of the right middle zone anteriorly. The blood profile was normal except for elevated erythrocyte sedimentation rate of 100mm/hr (Westergreen™). Sputum examination revealed Proteus sp, which was treated with cefuroxime, the appropriate antibiotic on sensitivity testing.

Serial plain chest radiographs on postero-anterior view (Fig. 1), revealed an ill-defined opacity abutting the right cardiac border leading to loss of cardiac silhouette (silhouette sign), the lateral view (Fig. 2) further helped in localization of an opacity with rectangular shape overlying the upper cardiac silhouette.

A chest CT scan (Fig. 3) confirmed the plain radiographic findings, and in addition demonstrated right hilar lymphadenopathy.

Flexible fibre-optic bronchoscopy showed extrinsic compression of the right middle lobar bronchus. The mucosa was normal. However, cytology of brush biopsy and bronchial washings revealed cells with features of malignancy. At this point the patient was planned for urgent surgery to forestall any further delay.

Fig. 1. Postero-anterior radiograph showing ill-defined density abutting right cardiac border

Fig. 2. Lateral chest radiograph showing rectangular density overlying upper part of cardiac silhouette

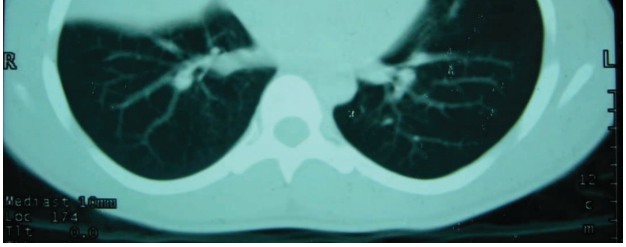

Fig. 3. CT scan showing collapse of right middle lobe

Preoperative pulmonary function test revealed a restrictive lung picture with mildly reduced lung volumes (Table 1).

	Predicted Values	Patient Test Values	Percentage of Predicted Value
FEV1(L)	3.37	2.34	70
FVC (L)	3.97	3.04	77
FEV1/FVC	81%	77%	-4%

Table I: Spirometry Results

He had double-lumen endotracheal intubation and standard right posterolateral thoracotomy. Findings were extensive caseation of the middle lobe with significant involvement of contiguous basilar portions of the upper lobe and a small area of the apical part of the lower. There was also a cuff of enlarged lymph nodes around the right middle lobar bronchus extending into the right hilum. Standard upper and middle bi-lobectomy was performed. Postoperatively, he had anti-tuberculous chemotherapy using the W.H.O. guidelines on Directly Observed Therapy, Short course (DOTS). i.e. 2SHRZ/6HT.

He was discharged home on the 7th post-operative day to continue with the anti-tuberculous therapy. Histopathology of the surgical specimen confirmed florid pulmonary tuberculosis.

He remains well after two years of follow-up (Fig. 4).

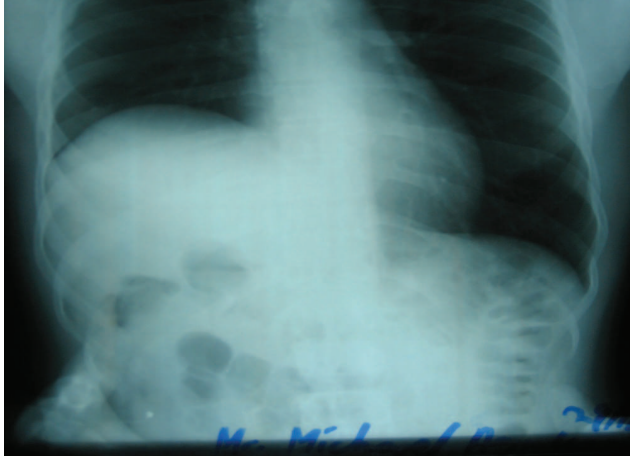

Fig. 4. P.A. radiograph 2 years after surgery

Discussion

Middle lobe syndrome (MLS) generally refers to atelectasis of the middle lobe of the right lung. It occurs in all age groups and is divided into an obstructive type, with a demonstrable airway occlusion, and a non-obstructive type, with a patent middle lobe bronchus apparent on bronchoscopy[1].

Middle lobe syndrome is characterized by a wedge-shaped density that extends anteriorly and inferiorly from the hilum of the lung, best visualized on lateral chest radiographs[2,3].

Certain anatomical characteristics make the middle lobe susceptible to transient obstruction as a result of extrinsic compression, inflammation or oedema. The narrow diameter of the lobar bronchus and acute take-off angle create poor conditions for drainage. Relative anatomical isolation of the middle lobe and poor collateral ventilation decrease the chance of reinflation once atelectasis occurs[2].

The true incidence is unknown. It is widely under-diagnosed[2]. It is for this reason that we share our experience.

lymphadenopathy of non – tuberculous origin[4]. However, the basic underlying pathology, irrespective of aetiology, is now broadened to include all atelectasis of the middle lobe of the lung, with or without obstruction of the middle lobar bronchus[2,3,].

Bronchial obstruction can result from extrinsic compression from enlargement of the cuff of lymph nodes which surround the bronchus, as from benign inflammatory conditions[2,3], or tumour of neoplastic origin[2,5]. However, atelectasis in children usually results from a process such as asthma-associated oedema and inflammation from infection and allergic processes[2,3,5]. Foreign body aspiration into the middle lobar bronchial orifice can also predispose to collapse of the lobe[2,6]. Other rare reported cases are middle lobe syndrome as the pulmonary manifestation of Sjögren syndrome[7], in the post-pneumonectomy syndrome[8], silicosis[9], traction deformities of the oesophagus[2], bronchopulmonary dysplasia[2] and cardiovascular anomalies[2].

In the case being reported, computerised tomography scan (Fig. 3) clearly demonstrated hilar lymphadenopathy. Tuberculosis was naturally the foremost differential. The patient was investigated for this but all the tests proved negative except for the ESR of 100mm/hour. A negative tuberculin skin test is possible in the setting of immuno-suppression. There was no clinical or laboratory evidence for this; HIV screen (HIV 1 / 2 Tri-Line™, ONE STEP™, qualitative assay) was negative, and serum proteins were within normal range. Polymerase chain reaction for mycobacterium tuberculosis was not done as it is not routinely available in our laboratories. Its availability may have changed the course of management.

Management of this condition depends on the pressure (nCPAP)[8] and fibre optic bronchoscopy with bronchoalveolar lavage[6]. In the presence of bronchiectasis, bronchial stenosis, significant lung destruction from granulomatous infection, failure of lung to re-expand after adequate medical therapy and malignant tumours, early pulmonary resection is indicated[11,12]. In this reported case, definitive evidence of the aetiology was only arrived at during surgery.

In this case, a pre-operative therapeutic trial of anti-tuberculous chemotherapy would have been the preferred course of management since most cases of middle lobe syndrome result from a benign aetiology, and specifically tuberculosis in most third world countries from where such cases have been reported[3]. This was the original plan. It was however changed in favour of early surgery when the cytology report suggested the presence of malignant cells. The need to be vigilant for tumourigenesis in association with middle lobe syndrome has been stressed[5,13]. The difficulties inherent in interpretation of cytological details are well recognised. This fact notwithstanding, we chose to err on the side of surgery rather than conservative management, hence the choice of urgent surgery as our primary treatment modality.

Though all three lobes were involved in the pathologic process at surgery, the involvement of the lower lobe was thought to be minimal enough to resolve on chemotherapy alone.

Given prior chemotherapy, a less extensive resection may have been afforded or surgery avoided altogether.

The patient made uneventful post-operative recovery, resulting in his discharge on the 7th post-operative day. It may therefore seem as if we put the cart before the horse. He remains well two years after follow-up.

aetiology of the middle lobe syndrome in our sub-region.

Where exhaustive attempts at isolation of the tubercle bacilli are lacking, a prudent trial of chemotherapy constitutes a valid investigative option before the decision for lung resection is made.

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49ème Conférence du Collège Ouest-Africain des Chirurgiens 7-13 février 2009, Conakry (Guinée) / *West African College of Surgeons 49th Annual Conference February 7th-13th, 2009, Conakry (Guinee)*

SESSION SCIENTIFIQUE / SCIENTIFIC SESSION :

Chirurgie Thoracique et Cardiovasculaire/ Thoracic and Cardiovascular Surgery

Jeudi 12 Février 2009 /Thursday February 12th, 2009

Chairman : Prof. R. O. OFUEGBU (Nigeria)

Co-Chairman : Prof K. H. YANGNI-ANGATE (Côte d'Ivoire)

1- Plaie pénétrante de l'aorte thoracique par épée d'Espadon
S. Diatta , O. Diarra, A. Ndiaye, G. Ciss, P.A. Dieng, P.S. Ba, O. Kane, M. Ba, M. Ndiaye.

2- Devenir des fistules arterio-veineuses pour hemodialyse à Dakar
Dieng PA, Diarra O, Ciss G, Ba PS, Ndiaye A, Fall Mb, Diatta : Kane O, Diouf B, Ndiaye

3- Anterior mediastinotomy for biopsy: indications and results
A. Ndiaye, O. Diarra, G. Ciss, P.A. Dieng, P.S. Ba, S. Diatta , O. Kane, M. Ba, M. Ndiaye

4- Acquited non-oesophageal extrathoracic bronchial fistulas in Alexandria, Egypt
U. onakpoya, A. Saleh, Bassem Ramadan MD, Abd El Meguid Ramadan, Munir Zeerban, M. Elhofie, S. Morad, A. Saleh

5- Outcome of endocardiectomy in Egyptian- type endomyocardial fibrosis- a report of two cases
U. Onakpoya; El- Eshmawy Ahmed; Khadragui Ibrahim, Obafemi Awolowo

6- Empyema thoracis is children: a decade experience in a single institution
F.Uba, LB. Chinan, CT. Soo, OO Onaviran, Akpabio M. Ituen Benjamin T. Ugwu, Mohammad A. Mohammad, Selina N. Okolo

7- La plastie mitrale sur valve rhumatismale chez l'enfant au Sénégal : à propos de 100 cas
A G Ciss; O. Diarra; P A Dieng; A. N'diaye; Ba P S; A. Touré; S. Diatta; S A. Beye; O. Kane; I B Diop; M. N'diaye

Adebo, U. Ububakar.

9- Early experience with mediastinoscopy at the Lagos State University Teaching Hospital
B. Falase, M O dada

10- Early experience with peripheral arterial injuries at the Lagos State University Teaching Hospital
B.Falase, A. Majekodumi

11- Early experience with video assisted thoracoscopic surgery at the Lagos State University Teaching Hospital
B. Falase, A. Majekodumi

Kotei, M Tamatey, K Entsua-Mensah, I Okyere, K Frimpong-Boateng

13- Permanent complete heart block after congenital heart surgery
F Edwin, L Sereboe, M Tettey, E Aniteye, D Kotei, M Tamatey, K Entsua-Mensah, I Okyere, K Frimpong-Boateng

PLAIE PENETRANTE DE L'AORTE THORACIQUE PAR EPEE D'ESPADON

S. Diatta , O. Diarra, A. Ndiaye, G. Ciss, P.A. Dieng, P.S. Ba,
O. Kane, M. Ba, M. Ndiaye.

Clinique de Chirurgie Cardio-thoracique et Vasculaire, CNHU Fann, Dakar, Sénégal

RESUME

Nous présentons le cas d'un patient de 15 ans victime d'une agression physique. Il nous a été adressé 2 mois plus tard pour hémothorax gauche sur corps étranger intrathoracique. A l'examen il présentait une hémodynamique bonne et stable et un syndrome d'épanchement pleural liquidien gauche. La radiographie et la scanner thoracique ont confirmé l'épanchement pleural et montré un corps étranger transfixant le lobe supérieur du poumon gauche et pénétrant l'aorte post-isthmique. Une thoracotomie postérolatérale gauche a permis l'extraction d'une épée d'Espadon de 12 cm sans clampage aortique ni circulation extracorporelle fémoro-fémorale. Les suites précoces ont été simples. Le scanner de contrôle à 2 mois a montré un faux anévrysme de l'aorte post-isthmique correspondant à la paroi lésée. Cette observation montre le caractère parfois salvateur par effet d'oblitération d'une plaie de l'aorte par l'agent vulnérant et surtout pose le problème du choix du type de chirurgie en pays sous développé.

Mots-clés : plaie, aorte thoracique, épée d'espadon

DEVENIR DES FISTULES ARTERIO-VEINEUSES POUR HEMODIALYSE A DAKAR

Dieng PA, Diarra O, Ciss G, Ba PS, Ndiaye A, Fall MB, Diatta : Kane O, Diouf B, Ndiaye

Service de Chirurgie Thoracique et Cardio-Vasculaire, Hôpital de Fann Dakar Senegal.

RESUME

La confection d'une fistule artério-veineuse (FAV) facilite l'hémodialyse chronique, mais pose le problème de sa survie à long terme du fait des complications évolutives.
Objectifs : C'est une étude rétrospective pour évaluer le devenir précoce et tardif des FAV pour hémodialyse au CHU de Dakar.
Matériel et méthodes : Entre janvier 1997 et octobre 2006, 112 patients d'âge moyen de 51 ans (16-80) avec un sex-ratio de 1,54 ont bénéficié d'une FAV pour hémodialyse chronique. Ils étaient tous en insuffisance rénale chronique terminale, et 84% d'entre eux étaient déjà en dialyse par cathéter alors que 3,6% étaient en dialyse péritonéale. La fistule atério-veineuse au poignet était note préférence si le réseau veineux le permettait et l'intervention était faite sous anesthésie locale.
Résultats : Les complications précoces étaient la thrombose précoce, retrouvée 13 fois (11,6%), les hémorragies chez 4 patients (3,6%) et l'infection 4 patients (3,6%). A moyen terme les complications retrouvées étaient les thromboses secondaires après utilisation de la FAV, 14 cas (12,5%), un cas d'anévrysme. Plusieurs réinterventions avaient été notées pour restaurer la fonctionnalité des FAV, dont 25 nouvelles fistules refaites au poignet (22,32%), 8 au coude (9%), 4 reprises pour hémostase, et 3 « ligatures » de FAV pour hémorragie ou infection, 2 thrombectomies, 1 superficialisation et 1 cure d'anévrysme. La mortalité opératoire et péri opératoire était nulle. Cependant avec un recul moyen de 3,5 ans (1 mois, 10 ans), une mortalité de 28,6% (32 patients) a été notée. Parmi les patients restés en vie et en vue, 48% avaient des FAV fonctionnelles sans réintervention et 52% des FAV fonctionnelles après réintervention. Seulement 3 patients ont pu bénéficier d'une greffe rénale à l'étranger.
Conclusions : Du fait de l'inexistence de la transplantation rénale dans notre pays, la dialyse constitue la seule alternative ; si tant est qu'elle soit accessible. La gestion des complications des FAV et la nécessité de préserver le réseau vasculaire commande une coordination multi disciplinaire de la prise en charge.

Mots-clés : Fistule artério-veineuse, Hémodialyse

PLACE DE LA MEDIASTINOTOMIE ANTERIEURE DANS LE DIAGNOSTIC DES TUMEURS INTRATHORACIQUES : INDICATIONS ET RESULTATS

A. Ndiaye, O. Diarra, G. Ciss, P.A. Dieng, P.S. Ba, S. Diatta , O. Kane, M. Ba, M. Ndiaye

Clinique de Chirurgie Cardio-thoracique et Vasculaire, CNHU Fann Dakar, Sénégal.

RESUME

Le traitement optimal des tumeurs du médiastin, du poumon et de la plèvre requiert un diagnostic histologique préalable basé sur la biopsie. Celle-ci peut être réalisée entre autres méthodes, par la médiastinotomie antérieure de Mac Neil et Chamberlain.

Objectifs : Rapporter les résultats de la médiastinotomie antérieure dans le diagnostic histologique des affections médiastinales et pleuro-pulmonaires.

Malades et méthodes

Malades : Il s'agit d'une rétrospective entre 1998 et 2008 portant sur 27 dossiers de patients ayant bénéficié d'une biopsie à visée diagnostique par médiastinotomie antérieure. La série comportait 25 hommes et 2 femmes, d'âge moyen égal à 49 ans (17 et 78 ans). Le délai moyen de consultation était de 9 mois (1 et 48 mois) et les motifs étaient dominés par la dyspnée d'effort (55,56%), la toux (51,85%), les douleurs thoraciques (37,03%) et les hémoptysies (37,03%). Le tabagisme chronique était noté chez 62,96% des patients. Les lésions étaient localisées chez 24 patients (88,89%) (apicales : 54,17%, médiastinales antéieures : 29,16% et médiastino-pulmonaires antéro-apicales : 16,67%) et diffuses chez 3 autres (11,11%).

Méthodes :Vingt patients (74,07%) ont eu une anesthésie générale et 7 (25,93%) une anesthésie locale à la xylocaïne. La voie d'abord a été une mini-thoracotomie antérieure passant par le 2ème (19 cas) ou le 3ème espace intercostal (8 cas) avec ou sans résection costale et/ou ouverture de la plèvre. Après prélèvement d'un fragment de la lésion, l'hémostase et/ou l'aérostase sont réalisées et le thorax fermé sur un drain.

Résultats

Un patient a présenté en cours d'intervention un arrêt cardiorespiratoire résolutif. Les suites opératoires ont été marquées par une décès (3,70%) et 3 complications (11,12%) : une atélectasie du lobe supérieur droit, un pneumothorax et un bullage persistant. Chez 3 patients (11,12%), les résultats histologiques ne concordaient pas avec le tableau clinique ; une 2ème biopsie a permis de redresser le diagnostic. L'histologie a ainsi révélé 20 tumeurs malignes (74,07%) et 7 lésions bénignes (25,93%). Les tumeurs malignes étaient broncho-pulmonaires chez 17 patients (adénocarcinome : 7 cas, carcinome épidermoïde : 6 cas, carcinome neuroendocrine : 2 cas, carcinome anaplasique : 1 cas). Les 7 lésions bénignes comprenaient respectivement 1 schwanome et 1 lipome médiastinaux, 1 fibrome pleural, 1 tuberculose et 1 nodule anthracosique pulmonaire, 1 cas de pneumopathie interstitielle et 1 cas de broncho-pneumopathie chronique.

Conclusion

La biopsie par médiastinotomie antérieure est un geste chirurgical aisé, rapide et peu morbide. Elle apporte la certitude histopathologique indispensable pour un traitement otpimal des tumeurs médiastinales antérieures et pleuropulmonaires.

Mots-clés : tumeur, médiastinotomie antérieure, biopsie, histologie.

ACQUIRED NON-OESOPHAGEAL EXTRA-THORACIC BRONCHIAL FISTULAS IN ALEXANDRIA, EGYPT

Uvie ONAKPOYA[1],Ahmed SALEH[2], Bassem RAMADAN MD[2], Abd El Meguid RAMADAN[2], Munir ZEERBAN[2], Mohamed ELHOFIE[3], Sahar MORAD[3], Amr A. SALEH[4]

1-Cardiothoracic Surgery Unit, Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria
2-Cardiothoracic Surgery Department, Alexandria University, Egypt
3-Department of Chest Diseases, Alexandria University, Egypt
4-Faculty of Medicine, Alexandria University, Egypt

SUMMARY

Background: Extra-thoracic bronchial fistulas (ETBF) are rare conditions that arise due to an abnormal communication between the entero-pancreatico-billary system and the trachea-bronchial tree though there have been very rare reports of other unusual distal locations of ETBF such as the spleen and the kidney-ureter complex. We herein review our experience in managing this entity.
Patients and Methods: This was a retrospective study of patients with non-oesophageal extra-thoracic bronchial fistulas managed at the Alexandria University Hospital, Egypt between 1990 and 2007 (18 years).
Results: There were 23 patients managed during this period with a significant male preponderance (male: female ratio of 6.7: 1) and a mean age of 41.5+/-5.3 years.
Bronchobillary fistula occurred in twenty patients (87%) due mainly to ruptured amoebic liver abscess. Gastrobronchial fistulas occurred in 2 patients (8.7%) and were due to a neglected subphrenic abscess in one case while the other occurred as a complication of a gastric decompressive surgery for portal hypertension. One patient (4.3%) developed colobronchial fistula. Thirteen patients had lower lobectomy while nine patients were treated by pneumonectomy. One patient was treated by fistulectomy, primary repair of the colonic end and closure of the bronchial stump using an intercostals muscle pedicled flap. There was 1 death and 10 morbidities.
Conclusion: Acquired extrathoracic bronchial fistulas still remain an unfortunate complication of some gastrointestinal and hepatobiliary pathologies with its attendant high morbidity and mortality. Adequate preoperative preparation as well as appropriate anaesthetic and surgical techniques is emphasized to improve patient outcome.

Key words : Bronchial fistula, Surgery

OUTCOME OF ENDOCARDIECTOMY IN EGYPTIAN- TYPE ENDOMYOCARDIAL FIBROSIS- A REPORT OF TWO CASES

Onakpoya Uvie[1]; El- Eshmawy Ahmed[2]; Khadragui Ibrahim[2]

1-Department of Surgery, Obafemi Awolowo University Teaching Hospital, Ile- Ife, Nigeria
2-Department of Cardiothoracic Surgery, Alexandria University, Egypt.

SUMMARY

Introduction: Endomyocardial fibrosis (EMF) is a form of restrictive cardiomyopathy distinguished by intense endocardial fibrosis of the apical and subvalvular regions of one or both ventricles. In Egyptian patients *Schistosoma mansoni* is responsible for the peculiar clinical picture of right ventricular disease with right atrial thrombosis associated Smmer's periportal fibrosis and pulmonary vascular involvement. The purpose of this study is to highlight our experience in the surgical treatment of the schistosomal endomyocardial fibrosis.
Patients and methods: Two illustrative cases are herein presented who underwent right ventricular endocardiectomy under cardiopulmonary bypass.
Results: The two patients died several days post- endocardiectomy due to severe right ventricular failure and low cardiac output syndrome.
Conclusion: Schistosomal ('Egyptian-type') endomycardial fibrosis is associated with a poor surgical outcome. These patients may be candidates for cardiac and liver transplantation.

Key words : Endomyocardial Fibrosis, Surgery

EMPYEMA THORACIS IS CHILDREN : A DECADE EXPERIENCE IN A SINGLE INSTITUTION

Francis A. Uba[1], Lohfa B. Chirman[1], Charles T. Soo[1], Olabisi O. Onaviran[1], Akpabio M. Ituen[1]
Benjamin T. Ugwu[1], Mohammad A. Mohammad[1],
Selina N. Okolo[2]

1-Surgery Department, Jos University Teaching Hospital, Jos. Nigeria
2-Department of Paediatrics, Jos University Teaching Hospital, Jos. Nigeria.

SUMMARY

Aims: To study the clinical and microbial profile of childhood empyema at the Jos University Teaching Hospital and to identify the changes over the past one decade.
Patients and Methods: A retrospective study of children (aged 1 month to 12 years) with empyema admitted to the Jos University Teaching Hospital, Jos, Nigeria, from 1999-2008. Data were extracted from patients' cas files, operation notes and laboratory records and were analysed for sex, age, causative agent, antibiotics, treatment and hospital stay.
Results: There were a total of 86 children, two thirds of whom were under 5 years of age. Bacteria and mycobacteria were cultured. Culture positivity had decreased significantly (48% v 75%) over the years. Staphylococcus aureus was the commonest (77%) aetiological agent; clustering during hot and humid months (46%). Culture positive Streptococcus pneumonia cases also decreased (9% v 27%); all were seen during the dry harmarttan season.
Gram negative rods grew in more patients (11% v 7%), especially those who tested HIV-positive. Although initial treatment in most children (93%) comprised parenteral cloxacillin and an aminoglycoside, cloxacillin resistant S. adreus (MRSA) isolates predominated in later half of the study (30% v 70%). Intercostals tube drainage (ITD) was used in 100% of fibropurulent cases, and was successful in 90.3%.
Of 18 patients with failed ITD, limited thoracotomy was sufficient in 14 but decortications was required in the remaining 4.
Conclusions: Empyema in children is characterized with reduced rate of culture and high incidence of resistance to commonly used antibiotics in our setting. Although S. aureus continued to be the most common causative agent in childhood empyema, Mycobacteria-empyema was more common in HIV-positive children. ITD was successful in mot instances probably because of early presentation.

Key words : Empyema, Children, Surgery

LA PLASTIE MITRALE SUR VALVE RHUMATISMALE CHEZ L'ENFANT AU SENEGAL: A PROPOS DE 100 CAS

MITRAL VALVE REPAIR IN THE CHILD IN SENEGAL: A REVIEW OF 100 CASES

Ciss A G; Diarra O; Dieng P A; N'diaye A; Ba P S; Touré A; Diatta S; Beye S A; Kane O; Diop I B; N'diaye M

Service de chirurgie thoracique et cardiovasculaire (centre hospitalier universitaire UCAD Dakar) CTCV CHN Fann BP 5035 Dakar.

RESUME

Objectif : Evaluer les résultants à court et à moyen terme de la plastie mitrale chez l'enfant au Sénégal.
Méthodes : Il s'agissait d'une étude rétrospective sur 8 ans (1999-2007), concernant 100 patients porteurs d'atteintes rhumatismales. L'âge moyen était de 12 +/- 5 ans (7-17 ans). La symptomatologie était dominée par la dyspnée. Les lésions valvulaires étaient complexes. La fonction myocardique des patients était conservée et le ventricule gauche dilaté. Des gestes (transfert et raccourcissement) étaient effectués sur les cordages (73) complétés par des commissurotomies (22) et des fermétures de clefts (17). Une annuloplastie était réalisée chez 84 malades.
Résultats : La morbidité était caractérisée par 4 plasties fuyantes. Le suivi moyen était de 5 ans, il n'y avait pas de mortalité tardive. Les résultats étaient satisfaisants avec 84 patients présentant des fuites de grade I-II. La réduction de volume du ventricule gauche était statistiquement significative en systole (p< 0,05 29,5+/-6,2 mm vs 33,07+/-5,3 mm) et en diastole (p< 0,05 47,1+/-8,6 mm vs 50,5+/-9,4 mm). **Conclusion :** La plastie mitrale permet une stabilisation de la fonction myocardique et un remodelage significatif du ventricule gauche. Une analyse lésionnelle précise est déterminante. Les résultats à moyen terme sont encourageants.

Mots clés : plastie mitrale, valve mitrale, enfant.

PATTERN OF PLEURAL EFFUSION IN WOMEN WITH BREAST CANCER

P.O ADEOYE, E.K OKONTA, V.O ADEGBOYE, A.O ADEBO, U. UBUBAKAR.

DIVISION OF CARDIOTHORACIC SURGERY, COLLEGE OF MEDICINE IBADAN

ABSTRACT

Introduction: Malignant disease involving the pleura is the second leading cause of exudative pleural effusion after parapneumonic effusions. Breast cancer is the second commonest cause of metastatic pleural effusion. The aim of study is to evaluate the pattern of pleural effusion in breast cancer in other to determine the relationship between side of breast cancer and the side of pleural effusion.

Materials and method: This is a retrospective study which involved a review of all female patients with breast cancer presenting with pleural effusion and managed in the Cardiothoracic Surgery Division of our Institution. Records were obtained from theatre, wards, surgical outpatient department, and accident and emergency department of the hospital. Demographic data were analysed. The side of breast lesion, side of pleural effusion and treatment offered for the effusion and outcome were documented. Data were analysed with SPSS soft ware version 15.0 window evaluation method.

Results: There were a total of 138 patients. The age range was 29-75 years with a mean age of 46.21 (SD ± 10.32). 72 (52.10%) patients had right breast cancer, 36 (26.0%) had left breast cancer while 30 (21.7%) were bilateral. Of patients with right breast cancer, 54 (75%) had right Closed Thoracostomy Tube Drainage (CTTD) for right pleural effusion and 18 (25%) had left CTTD. 27 (66.7%) of patients with left breast cancer had left CTTD while 12 (33.3%) had right CTTD. Amongst patients with bilateral breast cancer 24 (80%) had right CTTD while 6 (20%) had left CTTD.

Conclusion: Right pleural effusion was commonest finding in patient with right and bilateral breast cancer while left pleural effusion was predominant amongst patients with left breast cancer. This distribution indicates that a lymphatic spread probably accounts for the majority of metastatic pleural effusion from breast cancer. CTTD provided an effective means of palliative treatment.

Key words: Pleural effusion, Breast Cancer, Malignant.

EARLY EXPERIENCE WITH MEDIASTINOSCOPY AT THE LAGOS STATE UNIVERSITY TEACHING HOSPITAL

BODE FALASE, M O DADA

LAGOS STATE UNIVERSITY TEACHING HOSPITAL, LAGOS, NIGERIA.

ABSTRACT

Introduction: Mediastinal lymphadenopathy is often suspected in patients in our institution who are undergoing evaluation for suspected malignancy or ongoing treatment for suspected chronic respiratory disease. Unfortunately most centres in Nigeria do not have facilities to assess the mediastinum. Having obtained the necessary equipment, we have reviewed our experience to date.

Patients and methods: Between April 2007 and August 2008, 13 patients underwent mediastinscopy and biopsy. There were 7 males (53.8%) and 6 females (46.2%). Ages ranged from 27-82 years (average 46.8 years). At mediastinoscopy, glands at station 4 and 7 were biopsied and sent for histology. There were no complications secondary to the procedure in any patients. All patients were discharged after 48 hours once the mediastinoscopy wound was confirmed to be clean and dry. At follow-up there were no mediastinoscopy wound infections. Distribution of the histology from the biopsied mediastinal yielded lymphoma in 4 patients (30.8%), Adenocarcinoma in 3 patients (23.1%), non-specific chronic inflammation in 2 patients (15.4%), poorly differentiated malignant cells in 1 patient (7.7%), tuberculosis in 1 patient (7.7%) and anthracosis in 1 patient (7.7%). Obtaining the histological diagnosis enabled appropriate chemotherapy to be commenced. Of the 13 patients, 10 (77%) are alive while 3 (23%) succumbed to the disease process.

Conclusion: Mediastinoscopy which is now available in our institution has enabled us to determine the histology in patients with mediastinal lymphadenopathy of unknown origin and offer appropriate therapy. This has been done with no peri-procedural morbidity or mortality.

Key words : Mediastinoscopy, Lymphadenopathy

EARLY EXPERIENCE WITH PERIPHERAL ARTERIAL INJURIES AT THE LAGOS STATE UNIVERSITY TEACHING HOSPITAL

BODE FALASE, ADETINUWE MAJEKODUMI

LAGOS STATE UNIVERSITY TEACHING HOSPITAL, IKEJA, LAGOS, NIGERIA.

ABSTRACT

Introduction: A cardiothoracic programme is being developed at the Lagos State University Teaching Hospital. As vascular surgery has not previously been performed in this institution, we present a review of the peripheral arterial injury cases treated in our institution.

Patients and methods: Data of all cases presenting to our unit is stored in a prospectively maintained database. A retrospective database review of patients who required vascular surgery was done. Data reviewed included age, sex, indication for vascular surgery, arterial site involved, ischemic time (where applicable) and clinical outcome.

Results : Of the 10 patients who underwent vascular surgery between January 2007 and November 2008, 8 patients had peripheral arterial injury and are the subjects of this review. Indication for surgery in all 8 patients were the "hard signs" of arterial injury (active haemorrhage, absent pulse, large or expanding haematoma, any of the 5 Ps of compartment syndrome). Of the 8 patients, 7 were male (87.5%) and 1 was female (12.5%). Ages ranged from 5 years (the female patient) to 40 years with an average of 25 years. The involved extremity was the upper limb in 5 cases (62.5%) and the lower limb in 3 cases (37.5%). The mode of injury was gun shot in 5 patients (62.5%), stab injury in 2 patients (25%) and crush injury in 1 patient (12.5%). The artery involved was the brachial artery in 4 patients (50%), the radial artery in 1 patient (12.5%), the femoral artery in 2 patients (25%) and the profunda femoral artery in 1 patient (12.5%). There was an associated nerve injury (median nerve) in only 1 patient. The warm inschemic time ranged from 2 to 12 hours (mode 4 hrs, mean 10 hrs).

At surgery, arterial injury noted was arterial transaction in 4 patients (50%), arterial contusion in 2 patients (25%), laceration in 1 patient (12.5%) and a pseudo-aneurysm with pulsatile haematoma in 1 patient (12.5%). Surgery performed was brachial artery bypass side to side with reversed saphenous vein graft in 2 patients (25%), femoral artery bypass side to side with PTFE graft in 2 patients (25%), brachial artery direct repair in 1 patient (12.5%), brachio-radial bypass side to side with reversed saphenous vein graft in 1 patient (12.5%), radial artery ligation in 1 patient (12.5%) and profunda femoral ligation in 1 patient (12.5%). One patient who had brachial artery bypass has an associated median nerve injury which was also repaired end to end.

Outcome of surgery was excellent apart from the patient who had brachio-radial bypass. He had a brachial artery transaction from gunshot injury with warm ischemic time of 8 hours. The forearm remained ischemic and had to be amputated. All other patients had good perfusion and function of the limbs.

CONCLUSION: Most of the peripheral arterial injury being seen at our institution involves males, most commonly in the upper limb and gunshot injury is the most common cause of injury. We are now able to offer these patients vascular repair with good functional results.

Key words : Arterial injuries, Surgery

EARLY EXPERIENCE WITH VIDEO ASSISTED THORACOSCOPIC SURGERY AT THE LAGOS STATE UNIVERSITY TEACHING HOSPITAL

BODE FALASE, ADETINUWE MAJEKODUMI

CARDIOTHORACIC UNIT,
LAGOS STATE UNIVERSITY TEACHIN HOSPITAL, LAGOS, NIGERIA

ABSTRACT

Introduction : Video Assisted Thoracoscopic Surgery (VATS) is well established in developed countries. Despites its advantages, the lack of expertise and the setup costs have limited more widespread use in Nigeria. Our unit has recently established a VATS programme and we report our experience so far.

Patients and methods: Between March 2008 and April 2008, 5 patients underwent VATS. There were 2 males and 3 females. Ages ranged from 27-2 years (average 43 years). The indications for surgery were malignant pleural effusion in 2 patients, suspected interstitial lung disease in 2 patients and recurrent spontaneous pneumothorax in 1 patient.

Results : VATS was performed with double lumen intubation for single lung ventilation in all patients and the position of the tube checked by fiberoptic bronchoscopy. There ports were routinely used (tow instrument ports, one camera port). VATS procedures performed were lung biopsy in 2 patients suspected to have interstitial lung disease, VATS pleural biopsy and pleurodesis in the 2 patients with malignant pleural effusions and a VATS bullectomy and pleurodesis I the patient with recurrent spontaneous pneumothorax. A single apical tube was placed at the end of the procedures. There was no air leak at 24 hours and all the chest tubes were removed at 48 hours. Chest x ray confirmed no pneumothorax and all the patients were discharged home on the third post-operative day.

The 2 patients who had lung biopsies were confirmed to have chronic lung fibrosis on histology. The patients with malignant effusion were confirmed to have mesothelioma and metastatic adenocarcinoma respectively. There was no recurrence of pleural effusion following pleurodesis in these patients. The patient with recurrent spontaneous pneumothorax also had a successful pleurodesis with no recurrence. At 6 months follow up, the patients with mesothelioma and metastatic adenocarcinoma have died but the remaining 3 patients continue to do well.

Conclusion : VATS has successful been introduced in our institution and has been performed on 5 patients to date with no morbidity or mortality. The use of double lumen endotracheal tubes and fiberoptic bronchoscopy is key to performing these procedures safely. We encourage its use in other Nigeria institutions.

Key words : Thorascoscopy, Surgery, Video-assisted

LEFT HEART VALVE REPLACEMENT WITH MECHANICAL PROSTHESIS IN THE PEDIATRIC POPULATION

Edwin F*, Tettey M, Sereboe L, Aniteye E, Kotei D, Tamatey M, Entsua-Mensah K, Okyere I, Frimpong-Boateng K.

National Cardiothoracic Centre, Korle Bu Teaching Hospital, Accra-Ghana.

SUMMARY

Background : This report focuses on the outcome of left heart mechanical valve replacement in the paediatric population (≤ 18 years) at our institution. The study end-points included mortality, valve-related morbidity, and re-operation.
Method: A retrospective analysis of all consecutive left heart valve replacements performed during a sixteen-year period was carried out. Data was obtained from operation records and patients' case notes. Follow-up was by clinical evaluation and echocardiography as appropriate.
Results: A total of 117 patients were included in the study. Their ages ranged from 4-18 years (median 14 years). There were 47 males and 70 females (M: F = 1 : 1.5). Thirty-day mortality occurred in 3 (2.6%). Late death occurred in 4 (3.4%), 2 from prosthetic valve thrombosis. Prosthetic valve thrombosis (excluding mortality) occurred in three patients (0.003% per year) and 2 patients (0.002% per year) underwent re-operation for valve-related complications. No instances of major anticoagulant-related bleeding or prosthetic valve endocarditis occurred in this series.
Conclusion : Mechanical valve replacement in the pediatric age group has acceptable early and late mortality. Valve-related complications are the main causes of re-operation. Prosthetic valve thrombosis remains an important cause of morbidity and late death.

Key words : Valve replacement, Prosthesis

PERMANENT COMPLETE HEART BLOCK AFTER CONGENITAL HEART SURGERY

Edwin F, Sereboe L, Tettey M, Aniteye E, Kotei D, Tamatey M, Entsua-Mensah K, Okyere I, Frimpong-Boateng K.

National Cardiothoracic Centre, Korle Bu Teaching Hospital, Accra-Ghana.

SUMMARY

Objectives : This study was undertaken to determine: 1) the incidence of permanent post-operative CHB in the setting of congenital heart disease, 2) the intra-cardiac anatomic risk factors in such patients and 3) the significance of the pacemaker in terms of morbidity after intra-cardiac repair.
Method: A retrospective review of all patients who underwent intra-cardiac repair at the National Cardiothoracic Centre (NCTC) from January 1992 to November 2008 with a diagnosis of congenital heart disease known to predispose to post-operative complete heart block was carried out.
Results: Six patients out of 216 (2.8%) developed permanent post-operative CHB. All underwent closure of a large perimembranous ventricular septal defect (VSD) either as an isolated defect or in the setting of tetralogy of Fallot. The dominant morbidity relating to the implanted device was parental concern regarding the financial implications of future multiple surgeries to replace a depleted pulse generator.
Conclusion : Permanent post-operative CHB occurred in 2.8% of patients undergoing intracardiac repair for congenital heart disease on the ventricular septum. The dominant anatomic risk factor was a large perimembranous VSD. Pacemaker-associated morbidity is low in this setting.

Key words: Heart block, Surgery

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