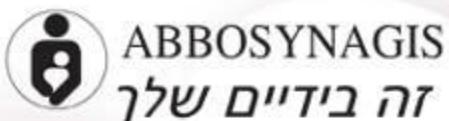




# כנס האיגוד הישראלי לקרדיולוגיה ילדים

## 4-6 בנובמבר 2010, מלון הגושרים



אלדר מדיק



genzyme



# PEDIATRIC CARDIOLOGY (PC)

- All aspects of cardiology
- Emphasis on Congenital Heart Lesions (CHL)
- CHL → Closely related surgery

# CONGENITAL HEART LESIONS

- Two aspects: Specialty Patients
- Specialty: Development  
(International – Israel)  
1960's → 2010
- Patients: Birth → Adulthood
- Two New specialties:Fetal Cardiologist  
“Gutch” Cardiologist

## (A) Definition – Pathological Anatomy Era

Hundreds of years

Leonardo Da Vinci – A.S.D

Neils Stenson 1671

Sandifort 1780 + Clinical description

E.L. Fallot 1888 (75% of cyanotic lesions)



de Senac



Morgagni



Rokitansky



Peacock



Keith





3

(B)

## (1) Clinical Diagnosis

Laennec 1819 – Stethoscope

Peacock 1850 – Pulmonic Stenosis

Roger 1874 – V.S.D.

Gibson 1900 – P.D.A.

Helen Taussig – 1930, Harriet Lane clinic

## Clinical + Fluoroscope - 1947

Additional Tools -> E.C.G. Einthoven 1902

Xray – Roentgen (1907)

Fluoroscopy - Williams

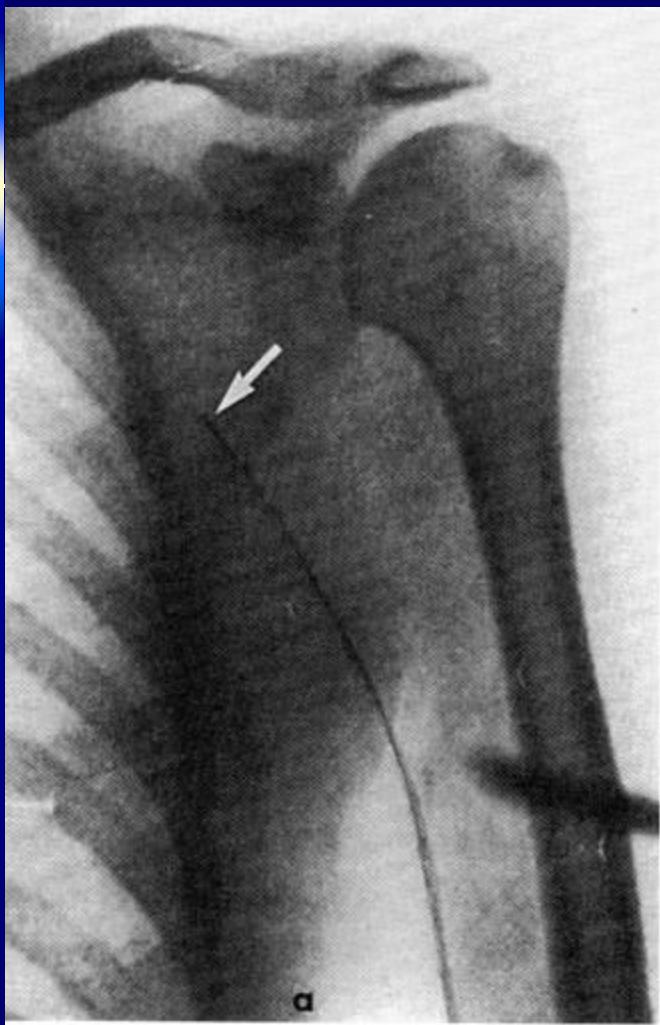


Further diagnostic tools

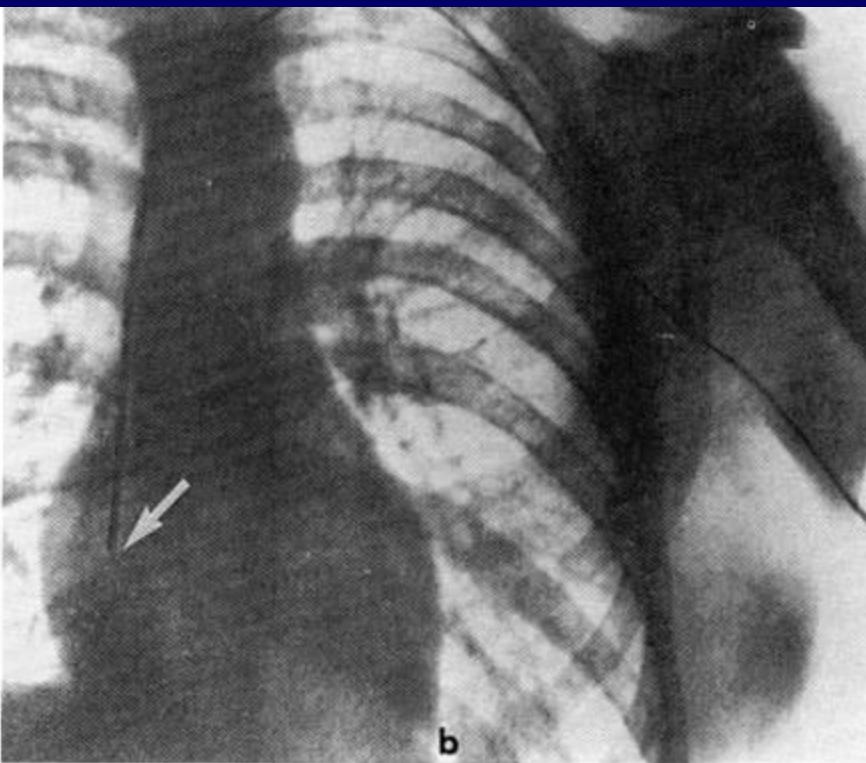
Catheterization – Forsmann

Angiography Castellanos – (Havana) Infants,  
1937

Chavez – Mexico 1940's. Internal structure  
of the heart



a



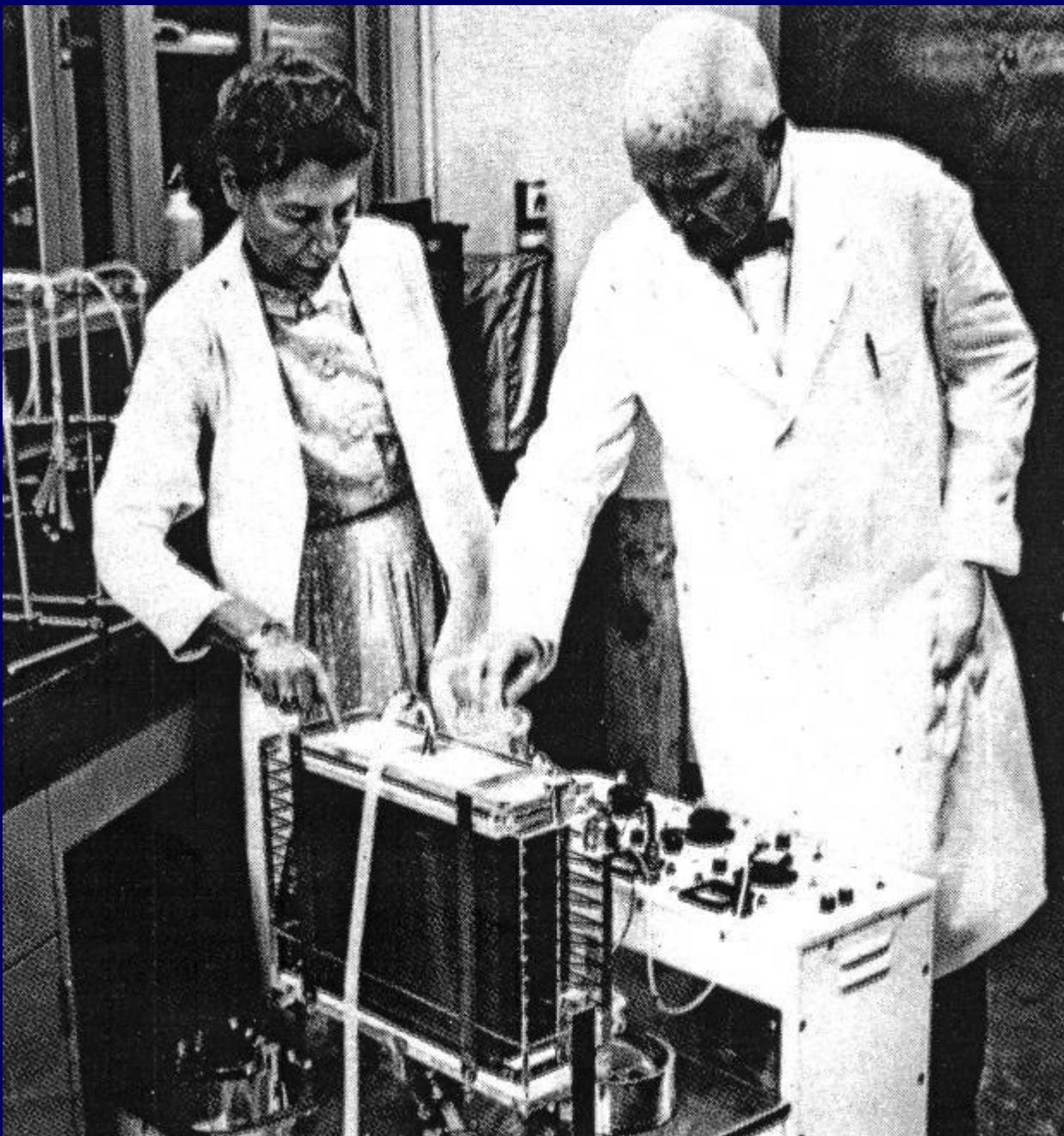
b

**Figure 1-6 • A,** "The catheter is introduced in the left cephalic vein up to the level of the axilla" (arrow). **B,** "The catheter extends from the left cephalic vein down into the right atrium" (arrow). (Forssmann, W. From Die Sondierung des rechten Herzens. Klin. Wochenschr. 8:2085, 1929.)









# Open Heart Surgery

Lillehei – Minnesota, 1954

Gibbons – Pump oxygenator 1952

Lewis – A.S.D – 1952 (Inflow occlusion +)

Lillehei – A.S.D V.S.D Fallot

A-V Canal

-> Cross - circulation

Bubble oxygenator

1957 – Pacemaker – Lillehei

# Treatment Surgery

Lillehei - 1954

Neonatal surgery – 1972 +

Castaneda

Complex lesions, Mustard, Senning

Rastelli

Jatene

Fontan

Heart

transplant

# Non Invasive Methods

## Cardiac Ultrasound

Edler / Herz – 1954

1970's -> M mode echo

1980's -> 2 Dimensional + Color flow  
doppler

Fetal Echo – Kleinman 1980

3D Echo

M.R.I.

Spiral C.T.

# ECHOCARDIOGRAPHY

- Most important discovery – 20<sup>th</sup> century
- Edler Cardiologist
- Herz : Physicist
- Spahanzani : 1700 – Bats Navigate
- Inaudible Sound : Echo
- Curie : Piezo Electricity → Ultrasound
- Richardson : SoNar  
RaDar

# ECHOCARDIOGRAPHY

- Edler : Dentistry  
Mitral Stenosis/Insufficiency  
Left Atrium
- Edler→ Herz→ Reflectoscope  
29<sup>th</sup> October 1953
- Dying Patients
- Lack of Recognition – P.D. White, Cournand
- MD Thesis 1961 Chinese, Japanese, Feigenboum 1963

# The Prostaglandin Story

Classical bench to bedside paradigm,  
**Rudolph** – Physiology of ductus transition from fetus to newborn. Factors that maintain patency, close the ductus

**Cocceani + Olley** – E type prostaglandin –  
ductal patency

Mid late 1970's -> Prostaglandin in clinical use  
for “ductal dependant” lesions

# Interventional Catheterization

Rashkind (1966) – Atrial septostomy – father of interventional cardiology  
But: Rubio – Alvarez 1953 – Catheter relief of pulmonic Stenosis  
Semb – Angio catheter, rupture of valve  
1982: Kan static balloon dilatation  
Portsmann – patent ductus (1960)

1980's – Explosion Pulmonic Stenosis

1990's Aortic Stenosis

2000's Arteries

Coarctation

Patent Ductus Arteriosus

Atrial Septal Defect

Ventricular Septal Defect + Stents

Mullins

Lock

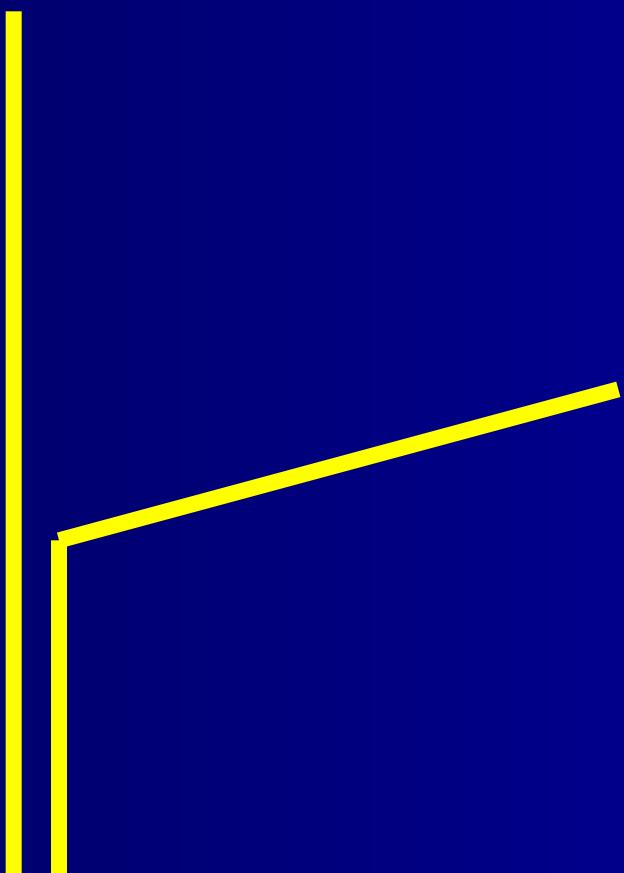
Hellenbrand

Quereshi, Tynan

Benson

USA, EUROPE

ISRAEL



# HISTORY OF ISRAEL PEDIATRIC CARDIOLOGY RUNS PARALLEL TO WESTERN MODERN PEDIATRIC CARDIOLOGY

- Different time frame
- Initially marked difference
- Gap slowly closed
- Improved communication
- ↑Number of Pediatric Cardiologists

# **WHO : BY 2020 WORLD WIDE PANDEMIC OF ATHEROSCLEROSIS DEVELOPED + DEVELOPING COUNTRIES**

- Pediatric cardiology
- Rheumatic fever + congenital heart lesions
- Congenital heart lesions + rheumatic fever
- Congenital H.L. + Atherosclerosis

# ISRAEL – CLINICAL CARDIOLOGY

1960's

- Rheumatic Heart Disease
- Congenital Heart Lesions

# **PEDIATRIC CARDIOLOGY – ISRAEL 2010**

- History of Pediatric Cardiology
- History of Israeli Cardiology

# HISTORY OF ISRAELI CARDIOLOGY

- Rheumatic heart disease
- General cardiac disease
- Arrhythmias
- Congenital Heart Lesions

# **TEL AVIV**

- Dr. Lev – ECG      1938 → Vienna
- Prof. Fried – ECG 1940 → Vilna
- Balfour – Zondek
- Later Dr. Lev - Ichilov

# JERUSALEM

- Prof. Freed Joins Prof. K. Braun – Har Hazofim
- 1949 1<sup>st</sup> Cardic Cath. Hadassah
- 1949 1<sup>st</sup> Publication Br. Ht. J
- Prof. Freed – Donolo
- Prof. Shlomo Rogel Joins Braun

- **TEL-AVIV** - Dr. Kariv Balfour Joins Lev, late 40's  
1948 → Tel Hashomer 1st Unit  
Tel Aviv - Dr. Lev Joint discussion
- **AFULA** – Dr. Fleishman, Arrhythmias  
Dr. Neuman E.C.G.
- **JERUSALEM** – Dr. Brand, Rheumatic Heart Disease, Congenital Heart Disease
- **1953 – ISRAEL HEART SOCIETY FOUNDED**

# PEDIATRIC CARDIOLOGY

- 1950's, 1960's : Emphasis on Rheumatic Fever
- JERUSALEM: Dr. Tahila Shapira Hadassah  
Dr. Aaron Brand – USA,  
Dr. Sabo-Kupat Cholim  
Pediatrician Rheumatic Fever

- TEL AVIV – Tel Hashomer Prof Neufeld, Yachini, Shemtov, Beilinson  
Prof. Aygen, Wurzel
- HAIFA – Prof. E. Abineder
- 1960's Rheumatic, General Cardiology, Pediatric Cardiology
- Milestone: Atlas of Congenital Heart Disease
- Catheterization Right : Cardiologist  
Left : Radiologist
- 1968 1<sup>st</sup> Rashkind Procedure
- 1960's Diagnosis: Clinical examination E.C.G
- Xray, 4views, AP, LAT, RT+LT Ant. Obl.

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## **Fellowship Pediatric Cardiology – 1 st group: 1973**

- Simcha – England
- Glaser – USA
- Bliden – USA
- Gusharski – USA
- Frand – USA
- Feigl – Israel

## **2 nd Group:**

- Di Segni – Italy
- Roguin – England

# **80's into 90's**

## **3 rd Group:**

- Berant
- Rein
- Brand
- Zeevi
- Matityahu
- Birk
- Ferber
- Zalshtein
- Lorber
- Nir
- Butto
- Diamant
- Tamir
- Hegesh
- Levi
- Fink
- Dembo
- Winehouse
- Zucker
- Baram
- Khoury
- Bruckheimer
- Katz
- Wertheimer
- Viser

# Units

- Beilinson
- Schneider
- Shaarei Zedek
- ■ Tel Hashomer
- Kaplan
- Ichilov
- Meir
- ■ Hadassah
- Bikur Cholim
- ■ Rambam
- Afula
- ■ Soroka
- ■ Wolfson
- Carmel
- Hadera
- Assaf Harofe

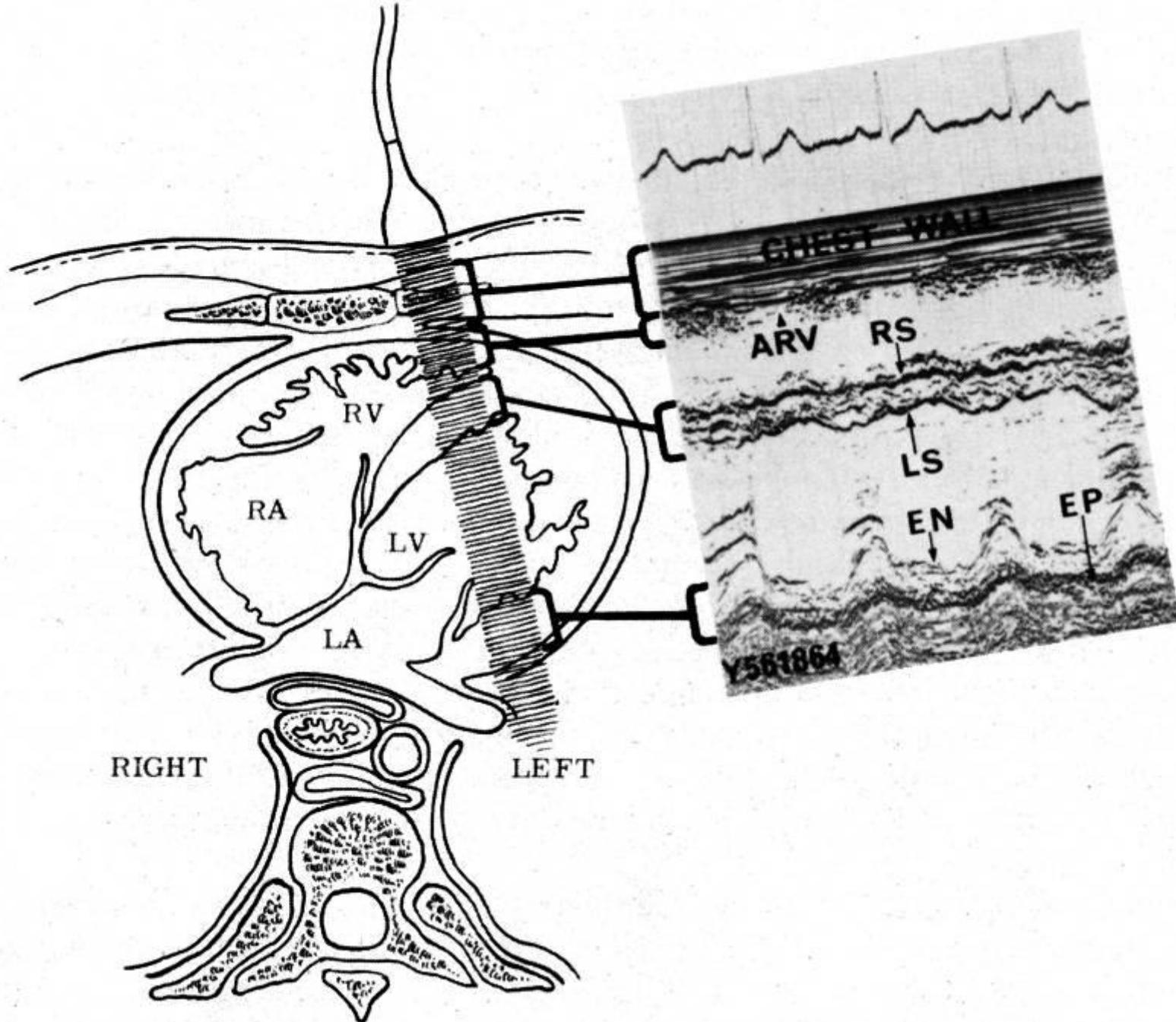
# PEDIATRIC ECHOCARDIOGRAPHY

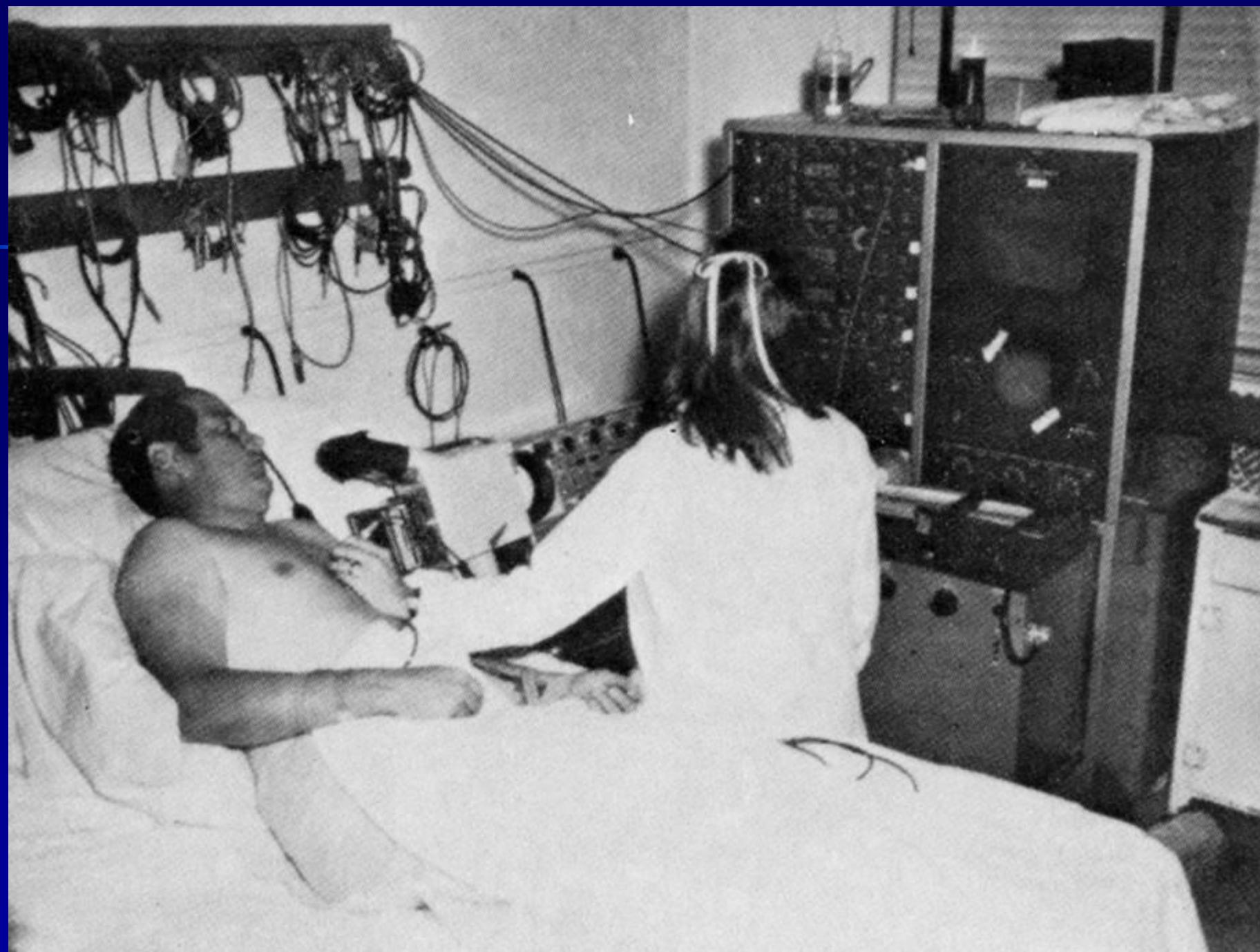
- 1975 – First Echo Machines – M Mode
  - Tel Hashomer
  - Ichilov
  - Hadassah
  - Soroka
- 1977, 1979 : Dr. Stan Goldberg (Tucson)
  - Tel Hashomer (sabbatical)
  - 2 Dimensional
  - Seminars, courses
- 1979 : Dr. Hugh Allen
- 1980's : 2 Dimensional + Color Doppler
- 2001 + : 3 Dimensional

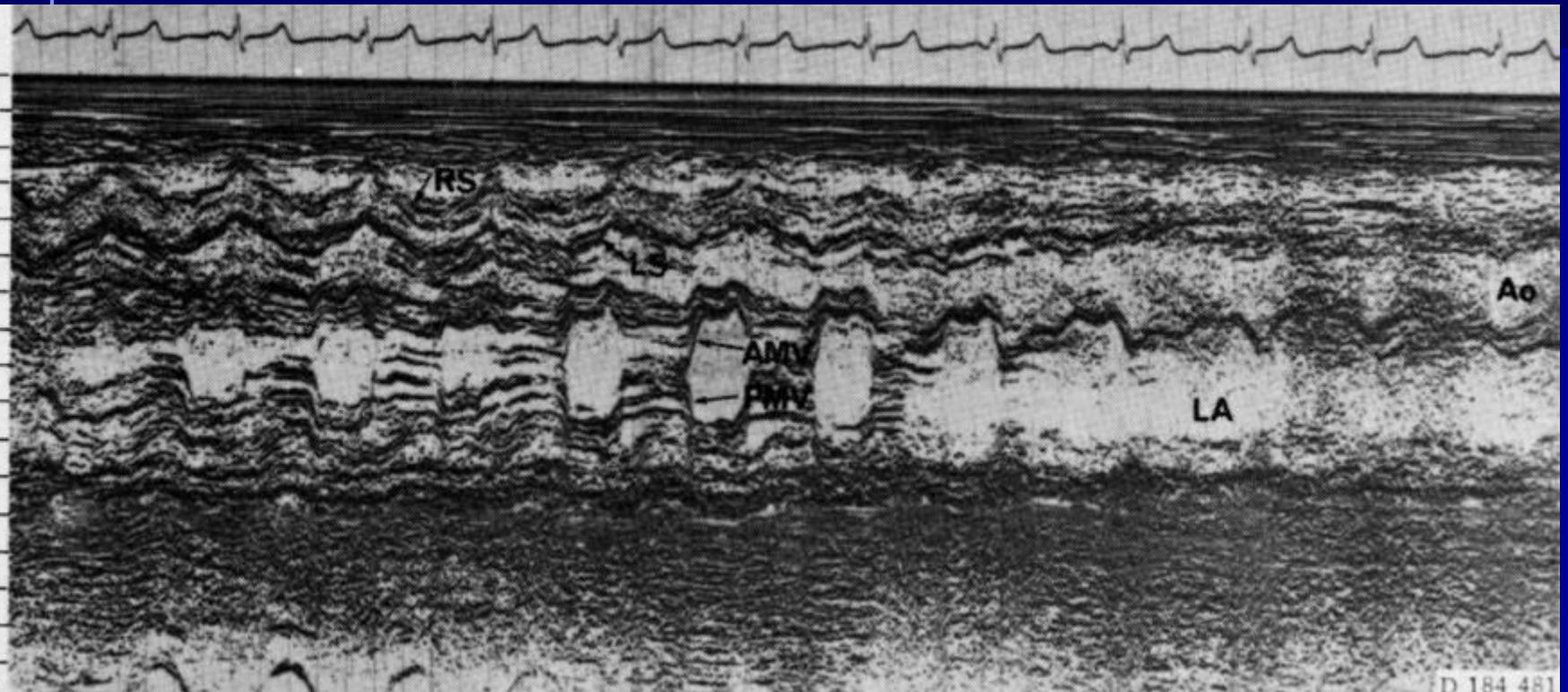
# ISRAEL - ECHOCARDIOGRAPHY

- 1974 – Y. Glaser : Ichilov, Beilinson }
- 1974 – L. Blieden: Tel Hashomer } M. Mode
- 1975 – K. Wanderman: Beersheva
- 1982-1986 : A Rein 2D+ }
- 1982 – M. Berant 2D+
- 1986 – A. Rein : Tissue Doppler  
Fetal Kinetocardiogram









D 184 481

# 1979 (T.G) : PROSTAGLANDIN

- The most N.B. Discovery, 1970's, 1980's
- 1990's Prostaglandin
- + Echocardiography ↑ N. B.
- 2000 + Echocardiography
- + Prostaglandin

# FETAL ECHOCARDIOGRAPHY

- 1978 – Tel Hashomer : M. Mode C.H. Block
- 1980 – Dr. Shapiro Gynecologist
- 1981 C.H. + Block Hydrops
- 1.9.82 – Ebstein
- 1984 – CHB 29<sup>th</sup> week  
31<sup>st</sup> week, CHF  
→Delivery, Temporary pacemaker  
→Permanent pacemaker  
→25 yrs old

- Gynecologists Dr. Shapiro
  - Prof. Bronstein 1987
  - Prof. Yagel 1980
  - Prof. Meisner 1980
- 1986 Dr. Berant – Complex Lesion
  - 1<sup>st</sup> interruption (Beilinson)
- 1986 Dr. H Tomarkin
  - Prof. Achiron

# CARDIAC CATHETERIZATION

- 1950's : Adults                      Braun
- 1960's : Shemtov                      Deutsch
- 1970's : Shemtov, Glaser, Simcha, Blieden
- Initially : Rt Ht. : Cardiologist  
Lt Ht : Radiologist

- 1960's : Cut Films
- 1970's : Roll Films
- 1980's : Cine Angio -35MM
- 1990's : Cine Angio
- 1990's : Cine Angio
- 2000's : Medcon
- 3 D

# CATHETERIZATION 1970's

- PATIENT : H. Board  
Own Anesthesia  
1980's Anesthetist
- EMERGENCY CATH 1970: Cardiologist  
+  
Xray Technician
- No Lateral Fluoroscopy – patient turned

# TECHNIQUE

- Catheterization 1950's, 1960's, 1970's
- → Cutdown Arm or Leg
- 1970 Seldinger Technique

# INTERVENTIONAL CATHETERIZATION

- 1968 – Rashkind Procedure : Tel Hashomer
- 1984 – Pulmonary Valvotomy : Beilinson  
Tel Hashomer
- 1984 – Aortic Valvotomy: Beilinson  
Tel Hashomer
- 1990's – ASD Closure : Schneider  
Beilinson  
Rambam  
Hadassah  
(+ other procedures)
- 2000 – V.S.D. closure

# CARDIAC SURGERY

- Parallel – Interdependant
- Chanoch Milwidski – Hadassah
- Yehuda Pauzner – Beilinson, Tel Hashomer
- PDA, Coarctation, Shunts (Blalock- Taussig)
- 1959 – 1<sup>st</sup> Open Heart Surgery
- 1960's – Morris Levy Beilinson : ASD, VSD A-V Canal, Fallot Joseph Borman Hadassah : Mustard Adler – Palliative, ASD



■ 1973 Danny Gur – Minnesota

Tel Hashomer

\ all forms  
of  
/ repair

■ 1976 Bernardo Vidne

■ 1976 Gur 1<sup>st</sup> Fontan ,Jatene

■ 1986 1<sup>st</sup> Jatene [neo-nate]- Vidne

# SURGERY (cont)

- Early 90's – Vidne + Donald Ross
- 2000+ - Ebstein, Fallot + P. Atresia - Chevaud  
- Reddy  
- Mee

# **INTERMEDIATE GENERATION**

- G. Marin Hadassah, Carmel
- S. Milo – Hadassah, Tel Hashomer, Rambam
- A. Appelbaum, Hadassah, Soroka

# **3 rd Group - Surgery**

- Mishali – Tel Hashomer
- Milgarter – Hadassah
- Eldar – Schneider
- Sasson – Wolfson
- Frankel – Schneider
- Amir – Schneider
  
- Special place: Ami Cohen – Founder – “Save a Heart” - Wolfson

# **ARRHYTHMIAS, PACEMAKERS**

- ADULT CARDIOLOGIST
- PEDIATRIC CARDIOLOGISTS
- → 1995 Dr. Rami Fogelman, Toronto
- → Schneider

# **ADULTS WITH CONGENITAL HEART LESIONS**

- Adult cardiologists
- Pediatric Cardiologists
- 1<sup>st</sup> Adult Unit Dr. Rafi Hirsh - Beilinson
- Present: 3 units Rabin,  
Hirsh, , Dadashov, Bliden
- Hadassah - Nir
- Rambam - Lorber

# PEDIATRIC CARDIOLOGY SOCIETY

- 1981 – Meetings – Beilinson
  - Discuss Cases
  - General & Specific Matters
  - Related to Specialty
- 2001 – Official Society in IMA
  - Bimonthly Meetings Schneider
  - Later Rotating Venues
  - Yearly Meetings Dead Sea,
    - Ramot
    - Hagoshrim

# PEDIATRIC CARDIOLOGY SOCIETY

- Affiliated to Israel Cardiology Society
- European Cardiology Society
- Corresponding Members A.E.P.C.
- Previously to: Asian Pacific C. Society
- 1985 – Present, Representative of P.C.S. in I.C.S.
- Part of Annual Meeting of I.C.S

# SPECIALIZATION

- USA              1960
- ISRAEL        1993
- 1960's → 5 yrs 3 cardiology  
                        2 pediatrics
- Initial specialists: "Grandfather" Clause
- 2<sup>nd</sup> group → ± MA Criteria + time
- → Board Exams
- → Committee IMA : Exceptions

- CARDIOLOGY: 1960's – Time  
1970's – Exams  
One five member board  
1980's 6 sub groups
- Speciality Board Exams, A+B

# **3 Scenarios Showing Progress**

- 1. Physical Facilities**
- 2. Clinical Approaches**
- 3. Academic: History Repeats Itself**







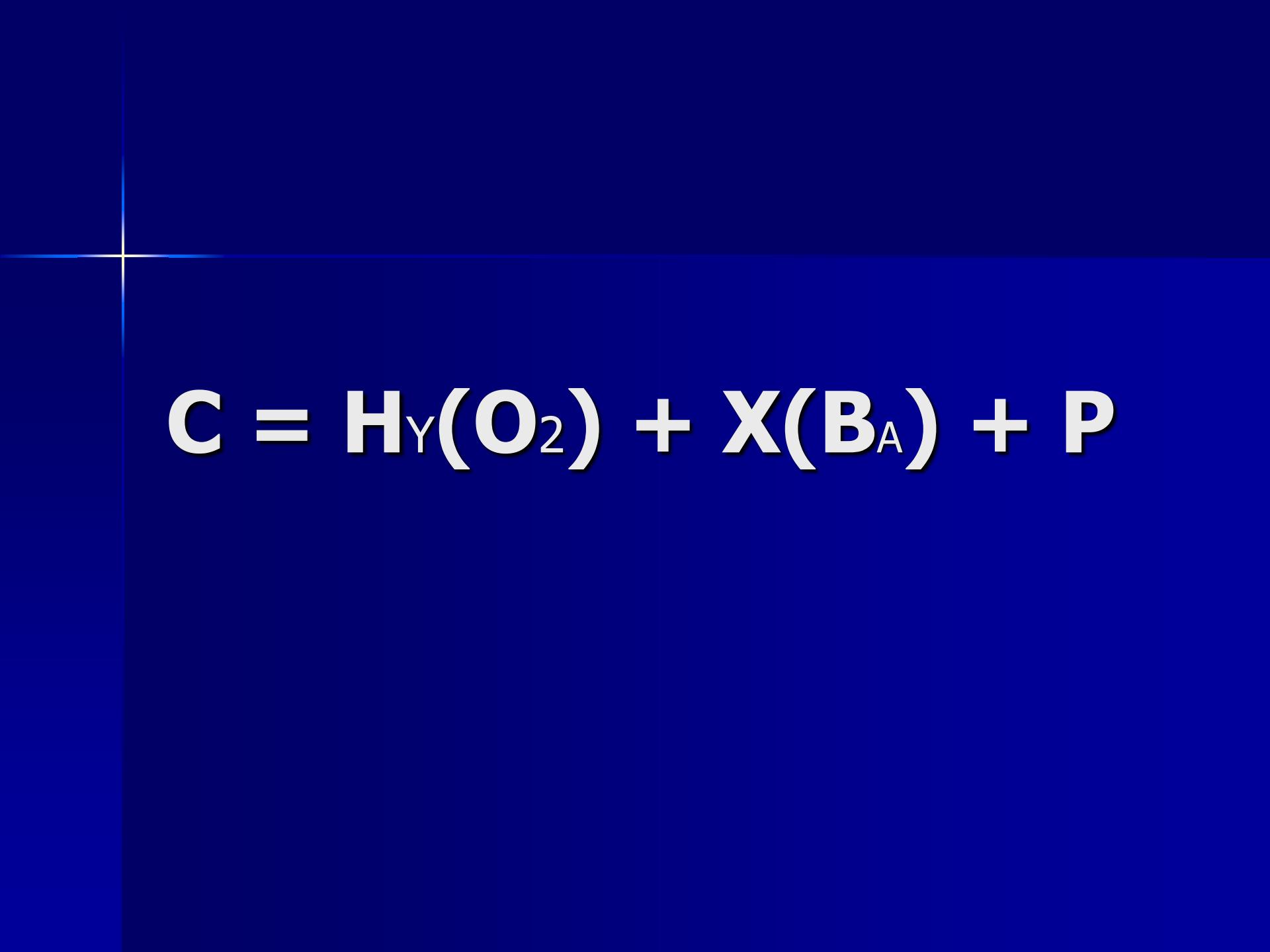











$$C = H_Y(O_2) + X(B_A) + P$$