Global burden of cardiac surgical disease

Service & Training

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Presentation overview

Global need for cardiac surgical expansion
Challenges for “donor” countries
Challenges for “host” countries
Results of personal involvement &
“cost/benefit analysis”
Suggestions for future developments.
Four Horsemen of the Apocalypse

Ch. 6  Book of Revelation

- WAR
- PESTILENCE
- FAMINE
- DEATH
The global incidence of cardiac surgical disease increases despite its changing profile

EPIDEMIOLOGIC TRANSITION

driven by sociologic/economic changes of “globalisation”
Need for GLOBAL EQUITY

Dramatic advances in surgical technology increases disparity between the “haves” and the “have nots”.

Internet access has raised global consumer expectations (patients, governments, surgeons, etc.)
In 2008 - estimated 17.3 million people died from CVDs.

Over 80% of CVD deaths in low- and middle-income countries.

By 2030, almost 23.6 million people
Rheumatic Heart Disease falls disproportionately on children & young adults in low income countries.

1% all schoolchildren in Africa, Asia, Eastern Mediterranean region & Latin America are affected - 233,000 deaths annually worldwide.

Estimated 15.6 million current sufferers will need repeat hospitalisation and surgery within 5 - 20 years.

*World Heart Federation fact sheet 2012*
## Global availability disparities

<table>
<thead>
<tr>
<th>Cardiac centres by population</th>
<th>Cardiac surgical cases per million people</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>1: 120,000</td>
</tr>
<tr>
<td><strong>Australia</strong></td>
<td><strong>1: 500,000</strong></td>
</tr>
<tr>
<td>Asia</td>
<td>1: 16,000,000</td>
</tr>
<tr>
<td>Africa</td>
<td>1: 33,000,000</td>
</tr>
</tbody>
</table>

In other words: 93% of the world’s cardiac patients living outside USA, Australia or Europe do not have access to surgery.
“WE ARE CONTINUALLY FACED BY GREAT OPPORTUNITIES BRILLIANTLY DISGUISED AS INSOLUBLE PROBLEMS”

Lee Iacocca
Aims of service provision

Key components:

i) Patient Service commitment

ii) Development of in-country capacity for self determination

* multi-disciplinary skills transfer
Australian & New Zealand experience

- “Operation Open Heart” co-ordinated by Sydney Adventist Hospital, Rotary International & RACS PIP project.
- NZ Pacific & African programs
- Programs in China
- East Timor RACS program
- Individual excursions
## Operation Open Heart (1986 – 2012)

(ADRA, Rotary, PIP)

### Pacific Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Visits</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonga</td>
<td>5</td>
<td>113</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>7</td>
<td>126</td>
</tr>
<tr>
<td>Fiji</td>
<td>19</td>
<td>407</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>PNG</td>
<td>19</td>
<td>783</td>
</tr>
</tbody>
</table>

**Total Cases:** 1479

### Asia / Africa

<table>
<thead>
<tr>
<th>Country</th>
<th>Visits</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>Nepal</td>
<td>6</td>
<td>62</td>
</tr>
<tr>
<td>Mongolia</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Vietnam</td>
<td>7</td>
<td>52</td>
</tr>
<tr>
<td>Myanmar</td>
<td>10</td>
<td>205</td>
</tr>
<tr>
<td>Rwanda</td>
<td>5</td>
<td>111</td>
</tr>
<tr>
<td>Cambodia</td>
<td>3</td>
<td>43</td>
</tr>
</tbody>
</table>

**Total Cases:** 540
Programs in China

TPCH (1985-2004) “China Link program”
trained 38 surgeons. >200 patients

RNSH (1993-2004) 14 patients

St. V. (Sydney) (1986-2009)
trained many surgeons > 200 patients

Major benefits also occur in local unit development
Other cardiac programs

East Timor (2003-2011) 45 patients

Indonesia & India - Individual RACS Fellows have visited
New Zealand experience

- Fiji closed heart teams since 1980s.
  - No data available

- Samoa & Fiji (2003-2009)
  - 30 day mortality (69 pts) 3.9% Euroscore predicted 3.3%
  - 103 pts.

- “Mutama” project in Zambia (2010-present)
  - (NZ + Irish + S. African team) 50 pts.
The big questions

Is there benefit in what we have achieved from Australia & New Zealand?

How do we measure achievement?
Judging outcomes

Per patient costs - often used

not appropriate best “bang for the buck”
OOH cost amortised ~ 1400 cases
  ~ $A 3500/case
  (PIP ~$A 875,000    Rotary > $A 250,000)

Service costs in Australian hospitals:
  $A 20,000 – 25,000 per patient
  (without implantable devices)
Judging outcomes: QOL

Procedures that improve quality of life & productivity must not be confused with those anticipating improved longevity (curative vs. staged procedure vs. palliative)

Life expectancy should not be the sole measure of successful outcome (biopositivism to biohumane - Miles Little)
Challenges

Patient selection:
- case & procedure
- local pressure for undertaking high risk procedures
- requirement for postop. care
- long term monitoring needs
Parallel educational systems capability:
  e.g. infection control measures.

Trans-cultural ethical issues:
Donors must have a global perspective of geographic, environmental, political, economic, social, and cultural issues in the region visited.
AIM TO FIT PROJECT TO THE LOCAL NEEDS
BASIC OH&S EDUCATION NECESSARY
Role of donors

Identify leaders in host program
Form partnership.
Mentor rather than dictate
(sensitivity to concept of “face”)
Establish managerial base
Provide infra-structure assistance
Develop a strategic time line for realisation of operational goals
Obstacles

Limited availability of life salvaging pharmaceuticals and devices

Availability of safe blood for transfusion

Flexible specialised anaesthetic services able to adjust to foreign environment with supervisory role in managing safe perfusion
NOTE EXPIRY DATE & MARKET RESTRICTION (USED IN 2006 !)
Adaptability essential
- camping pillow filled with oxygen
Challenging work environment
Future educational directions

International scholarships to recognised units (e.g. Rowan Nicks scholars)

Vietnam
- Nguyen Thai An
- Le Thanh Khanh Van

Myanmar
- Khin Maung Aye
- Win Win Kyaw
- Aung Zaw Myo

Regular visits to developing units by acknowledged leaders.

Easy access to education (CTSNet) journals/social media
Future essentials

Database internationally accessible
- may establish realistic benchmarks.

Ongoing commitment
(through the hard times)

Support for the critical parallel allied health involvement

e.g. ICU care, physiotherapy
Re-definition of global boundaries

Regional concentration of donor services:

e.g. Australia concentrates on Pacific / SE Asia.
USA on Sth. America.
Europe on central Europe/Asia
Role of hosts

Have realistic program goals.

Develop a strategic plan with donors

Facilitate entry to country by donors

Recognise free donated equipment is finite

Encourage local government, charitable, industry or private sector support
Role of hosts

Prioritise all health programs in the country and the imperative of preventative strategies

Co-operate in regional programs for cost-effectiveness if feasible.
Parallel public health programs
Role of hosts

Recognise uniqueness of team role in cardiac surgery

Encourage multi-disciplinary patient assessment & management

Expand post-operative intensive monitoring ability & the training of intensivists.
Role of hosts

Trainee selection (not only surgical)

team player - adaptability
appropriate self discipline
ability to develop empathy and compassion in own culture
demonstrated dexterity
commitment to life-long learning, research and teaching.
Role of hosts

Trainee development:

• Facilitate out-of-country travel for trainees
• Support ESL skills of trainees
• Understand the need for audit, research and ethical principles of trainees
  (Helsinki Declaration)
• Surgeon ego modification
  ? Humility development
“NO SUCH THING AS A FREE LUNCH”

Financial support is critical:

- Governments (AusAID)
- World Bank/IMF
- NGOs (ADRA, Rotary)
- Industry
- Charities (Save the Children)
- Training institutions (RACS)
VISIT OF THE HEALTH MINISTER
“You can accomplish anything in life so long as you do not mind who gets the credit.”

*Harry S. Truman*  
(May 8, 1884 – December 26, 1972)  
33rd President of the United States (1945–1953)