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Dr. Paula S. Vivili
Mr. Sione Hufanga
Ministry of Health
Kingdom of Tonga
Perioperative Mortality Rate (POMR)

Tonga Experience
Presentation outline

- Background
  - Kingdom of Tonga
  - POMR

- Methods

- Results

- Lessons learned
Niuatoputapu
Population Dev. Issues

- Fertility Rate: 3.9 (2012)
- Annual Population Growth: 0.2%
- Life Expectancy: 65 yrs (Male) and 69 (Female)
Figure 1.1: Population of Tonga, 1901–2011

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>20700</td>
</tr>
<tr>
<td>1911</td>
<td>23017</td>
</tr>
<tr>
<td>1921</td>
<td>24935</td>
</tr>
<tr>
<td>1931</td>
<td>28839</td>
</tr>
<tr>
<td>1939</td>
<td>34130</td>
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<tr>
<td>1956</td>
<td>56838</td>
</tr>
<tr>
<td>1966</td>
<td>77429</td>
</tr>
<tr>
<td>1976</td>
<td>90085</td>
</tr>
<tr>
<td>1986</td>
<td>94649</td>
</tr>
<tr>
<td>1996</td>
<td>97784</td>
</tr>
<tr>
<td>2006</td>
<td>101991</td>
</tr>
<tr>
<td>2011</td>
<td>103252</td>
</tr>
<tr>
<td>2012</td>
<td>103219</td>
</tr>
</tbody>
</table>
Background

- Unmet burden of Surgical disease is substantial
- Two billion of the world’s populations do not have access to emergency and essential surgical care.
- Each year this results in an estimated
  - 70,000 unnecessary maternal deaths (25% of 280,000 deaths per annum)
  - 175,000 excess deaths from road traffic accidents (25% of 750,000 deaths per annum)
  - 35,000 avoidable Anaesthetic deaths (1:500 of some 35 million operations).
Current Clinical Indicators

- **Population Indicators**
  - Mortality Rate
  - Birth Rate

- **Obstetric Care Outcomes**
  - Maternal Mortality Rates (MMR)

- **Paediatric Care Outcomes**
  - Infant Mortality Rate
  - Under 5 Infant

- Absence of a widely accepted and used Surgical and Anaesthetic Outcome Measure
  - Perioperative Mortality Rate (POMR)
The Global Burden of Surgical Disease: Developing an indicator for perioperative mortality

- Meeting held in Melbourne in March 2013 and attended by:
  - Royal Australasian College of Surgeons (RACS)
  - Australian and New Zealand College of Anaesthetists (ANZCA)

- Discussed at the Strengthening Specialised Clinical Services in the Pacific (SSCSI-P) meetings in May 2013 & April 2014 – Supported
<table>
<thead>
<tr>
<th><strong>Day-of-surgery death ratio</strong></th>
<th><strong>Definition</strong></th>
<th><strong>Rationale for use</strong></th>
<th><strong>Data sources</strong></th>
<th><strong>Comments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of deaths on the day of surgery, irrespective of cause, divided by the number of surgical procedures in a given year or period, reported as a percentage</td>
<td>Day-of-surgery death ratios allow the health system to assess its performance and the state of health of the population</td>
<td>Administrative and hospital records based on health service statistics</td>
<td>Death on the day of surgery often reflects the comorbidities and physiological disorders of the patient, the quality and complexity of surgical care, or the risks of anaesthesia. It cannot be used to compare one site, facility, or country with another without appropriate, validated, and time-consuming risk adjustment</td>
</tr>
</tbody>
</table>
### Postoperative in-hospital death ratio

<table>
<thead>
<tr>
<th>Definition</th>
<th>Rationale for use</th>
<th>Data sources</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of deaths in the hospital following surgery, irrespective of cause and limited to 30 days, divided by the number of surgical procedures done in a given year or period, reported as a percentage</td>
<td>Understanding the in hospital death ratio after surgery provides insight into the risks associated with surgical intervention</td>
<td>Administrative and hospital records based on health service statistics</td>
<td>Patients who undergo surgery and die outside a health facility or after readmission to the same or a different facility are important to record in postoperative mortality assessments. Facilities should be encouraged to gather such information. Neither circumstance is included in this statistic, however</td>
</tr>
</tbody>
</table>
Background

POMR 24
• A death that occurred after an operative procedure on the day of surgery or within 24 hours of the surgery.

POMR 30
• A death that occurred after the first 24 hours from the commencement of a procedure, and during that admission, either on the day of discharge or 30 days after surgery.
Perioperative Mortality Rate (POMR)

- POMR should be an indicator for

“Access to Safe Surgery and Anaesthesia when Needed”
Methods

- **Scope of Data**
  - All types of admission to Hospitals
  - Theatre/ward registration
  - Discharge Details
Methods

- **Primary focus**

Review of discharge deceased with surgical Procedures to derive POMRs

- Discharge Deceased
  - With Surgical Procedures
    - POMR 24 (Numerator)
    - POMR 30 (Numerator)
    - Discharge with Surgical Procedures (Denominator)
Methods

- Verification Process to capture two scenarios
  - Discharge alive but they actually died
  - Discharge deceased without surgical procedures but they actually have one

National Mortality Data (Ministry of Health, Hospital and Community Based, Ministry of Justice and Ministry of Internal Affairs)
Results (Surgical Procedures)

<table>
<thead>
<tr>
<th></th>
<th>Tongatapu</th>
<th>Vava'u</th>
<th>Ha'apai</th>
<th>Eua</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>3044</td>
<td>169</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2013</td>
<td>4555</td>
<td>225</td>
<td>3</td>
<td>28</td>
</tr>
</tbody>
</table>
KEY RESULTS

POMR 24
• \( \frac{1}{3220} \times 100 = 0.03\% \) (2012)
• \( \frac{0}{4811} \times 100 = 0\% \) (2013)

POMR 30
• \( \frac{14}{3220} \times 100 = 0.43\% \) (2012)
• \( \frac{6}{4811} \times 100 = 0.12\% \) (2013)
Throughout the reporting period

2012

Local Surgical Teams Lists + 7 Visiting Teams

1. Colorectal Team
2. Pacific Eye Team visit (2 times)
3. Urology Team
4. Orthopeadic Team
5. Paediatric General Surgery
6. Clubfoot Team
7. Interplast Team
Throughout the reporting period

2013

Local Surgical Teams Lists + 11 Visiting teams

1. Colorectal Team (2 visits)
2. Pacific Eye Team
3. AUS Eye Team
4. NZ Eye Team
5. Urology Team visit (2 Visits)
6. Orthopaedic Team
7. Open Heart
8. Paediatric General Surgery
9. Clubfoot Team
10. Interplast Team
11. Gastroenterology Team.
Lessons learned

• **Commitment/Leadership** of Surgeon/A Anaesthetist

• Supportive roles of HIS (System & Staff)

**Minimum Requirements**

• Complete Theatre/ward Registration
• Comprehensive Hospital Admission and Discharge Database
• Reasonable National Death Registration
Thank you.
Come visit us. There is surgery to do and places to go (and dive!)