Indonesia at A Glance

- Islands: 17,508 islands
- Wide Range: 1,904,569 km sq
- Population: 237,556,363 person (More 50% in Java)
- Density: 124 person/km sq
- GDP Average: $3,979/yr

MARKET SITUATION ON IPA-IHPA (NON IDA): VALUE TREND OF FIRST LINE WOUND CARE

<table>
<thead>
<tr>
<th>MAT Q2</th>
<th>2009</th>
<th>2010</th>
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| IPA –IHPA = Indonesian Pharmaceutical Audit – Indonesian Hospital Pharmaceutical audit. IDA = Indonesian Drugstore Audit (1/1000)

Classification

- Acute wound
- Chronic wound

MARKET SITUATION (VALUE):

Based on IPA-IHPA MAT Q2 2010 (NON IDA)

MAT = Moving Annual Trend
MS = Market Share, GR = Growth Value vs Value Last Year

Classification

- Acute wound
- Chronic wound
**Chronic Wound**

- Chronic wound is defined as a break in the skin of long duration, more than 6 weeks or frequent recurrence
- Trapped in an ongoing inflammatory phase

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**Assessment & Wound Care**

- Jakarta (Cipto Mangunkusumo National General Hospital is an Ideal Model)
  - Vascular Surgeon making assessment of wound and consult to Endocrinologist (Diabetic patient), Orthopedic if need amputation, Plastic Surgeon (Skin Graft and flap), Neurologist or Pediatric (as a Team) and nurses take over wound care of patient supervised by Vascular Surgeon
- Big Cities (Surabaya, Medan, Bandung, Makassar, Manado etc)
  - Assessment is done by Specialist/ GP-ER who is caring patient and sometime consult to Plastic or vascular surgeon (as a team) but nurses take over wound care of patient supervised by the doctor
- Small Cities/ Village
  - Wound care is done by GP-ER and Nurses or only nurses

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**Wound Care Management**

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**Chronic wound**

- Common cause
  - Venous stasis
  - Diabetes mellitus
  - Pressure necrosis
  - Ischemia
- Other cause
  - Malignancy
  - Vasculitis
  - Pyoderma gangrenosum

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**Management of Ulcers**

- Wound Care
  - Debridement
  - Wound cleansing
  - Dressings (Moist)
  - Adjuvant therapies
  - Pressure reduction
    - Or it will not heal
- Risk factors addressed
  - Continence care
  - Nutritional improvement
  - Mobility
- Consider operative repair

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**Nursing Education**

- Start from 18 yo (after High School) and take 3 years (Academy)
- Method: Theory lesson and practical/ hands on start from 1st year
- 90% female nurses and 10% male nurses
- Have Nurse Organization/ Union
- Have A Special Organization for nurses that work at Surgeon Room (HIPKABI), under supervised by Indonesian Surgeon Association (PABI)
- HIPKABI gave them Training & Workshop about Wound care, continuously.
Basics
- Optimize systemic parameters
- Debride nonviable tissue
- Reduce wound bioburden
- Optimize blood flow
- Reduce edema
- Use dressings appropriately
- Use pharmacologic therapy
- Close wounds with grafts/flaps as indicated

Optimize systemic parameters
- Age: cannot be reversed, usage of growth factors, aggressive optimization of systemic parameters & supplementation.
- Avoidance of ischemia & malnutrition.
- Correction of diabetes
- Avoidance of steroids, alcohol, smoking.
- Avoidance of reperfusion injury: total contact casting, compression therapy.

Debridement & Reduction of Bioburden
- Surface irrigation with saline.
- Debridement: surgical, enzymatic (papain with urea, collagenase), mechanical (pressurized water jet), autolytic, maggots.
- Antibiotics: cellulitis, decreased rate of healing, increased pain, straw colored oozing from skin, contaminated wounds, mechanical implants.
- Removal of FB.

Recent Developments
- Honey Product in leg ulcers.
- Hydrogel in deep 2nd deg burns.
- LASER therapy enhances tissue repair?
- Nitric oxide containing nanoparticles

Focus on Diabetic Wound

Diabetes in Indonesia
- WHO:
  - 2007: Indonesia is 4th Rank in the world of Diabetic Patient (After USA, India and China)
  - 2000: 8.4 Million Diabetic patient
  - 2007: 11 Million Diabetic patient
  - 2030: 22 Million Diabetic patient (11% of population)

Diabetic Ulcer
**Co-Morbidity in Diabetes**

- Peripheral vascular disease occurs in 11% of diabetic patients
- Peripheral neuropathy occurs in 42% of diabetic patients
- PVD is associated with delayed ulcer healing and increased rates of amputation

**Treatment of DU: What Works**

- Must surgically debride ulcer to allow healing: the wound edges are dead
- Weekly debridement down to healthy bleeding tissue gives best results
- Must keep pressure off the ulcers to allow healing

**Pressure Reduction Off DU**

- Orthopedic shoes: drop recurrence rate from 83% to 17%
- Sandals
- Splints
- Crutches/wheelchairs
- Total contact casting

**Diabetic Gangren**

**Honey Base Product For Wound Care**

- Received US Federal Drug Administration approval in 2007
- Anti-inflammatory and Anti-bacterial effects without antibiotic resistance
- Promote moist wound healing
- Low pH
- Facilitate debridement

**Therapeutic Effects of Honey Dressings**

1. Anti-inflammatory
2. Debridement
3. Reducing Malodor
4. Promotes Wound Healing
5. Reduces Stressing
Female, 56th
Blood pressure: 140/100
ABI Right: 1
Left: 0.6
Albumin: 2.8

Pre op IGD 27.3.2010

Post Debri IGD 30.3.2010

Post Re debri IBP 16.4.2010

Post Re Debri IBP 2.5.2010

Post STGS 6.5.2010
**Ny.M**

55 th

Female
Blood pressure: 120/80
ABI Right: 0.98
Left: 0.98
Albumin: 3.0

Pre Op, March 10th

**Post Debridement, March 13th**

**Post STSG, March 21th**

**Ny.TKC**

Female
Blood pressure: 150/80
ABI Right: 0.91
Left: 3.0

Pre Op, March 10th
Post Op March 18th

Post STSG April 15th

First Come

MR. A

Male

50 yo

Blood pressure: Normal

After 2 weeks Wound Care

After 4 weeks Wound Care
Summary

- Wound Care Management is good enough but Health service and human resources must be improved.
- The risk factors must be evaluated by the doctor especially in diabetes patient.
- Modern wound care products are being used more and more in modern wound care (Sanoskin).