

Building Laboratory Capacity in a
West Timor Hospital
An UnFOHGGettable Trip

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(FOHG)

Where is West Timor?



FOHG

Flinders Overseas Health Group

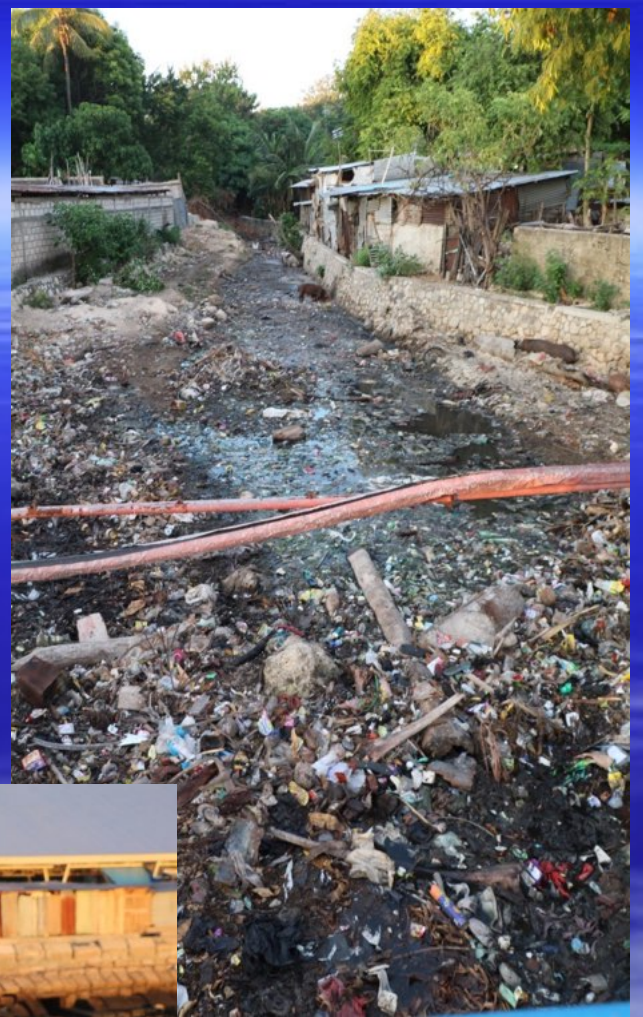
- Not for profit organisation
- Collaborative approach to meeting the health needs of rural and urban communities
- Provides professional development for local specialists in multiple areas
- Address resource issues in the hospitals
- Acts as a facilitator for long term networks between Australia and West Timor
- Provides on-going sustainable help
- Multi-disciplinary team



Flinders Overseas
Health Group Inc.
Sustainable Health Through Education

Nusa Timur Tenggara

- One of the poorest provinces in Indonesia
- Average income is 2 400 000IDR/yr (\$240Aus)
- Population of 5.466 million people, 2 million in WT
- Capital of NTT is Kupang – pop 500,000
- Catholic (56%), Protestant(35%) and Islam(8%) – Vs Indonesia 86% Islam
- Tropical and humid climate. Has dry (March-Nov) and wet (Dec-March) season
- Farming land is on coral and rock soils
- Men & women often leave for work in Malaysia



RSUD Prof. Dr WZ Johannes

- Rumah Sakit Umum Daerah (Public General Hospital) Prof. Dr WZ Johannes
- Main government hospital for NTT
- Additional Army Hospital and Police Hospital
- Well funded by NTT standards
- 3-4 medium sized private hospitals in Kupang, with laboratories of varying quality.
- 350 bed multi-disciplinary hospital

Main corridor



Emergency Department





Surrounding buildings



**RUANG ISOLASI
SARS DAN FLU BURUNG**



Hospital Canteen



Clinical Pathology Department

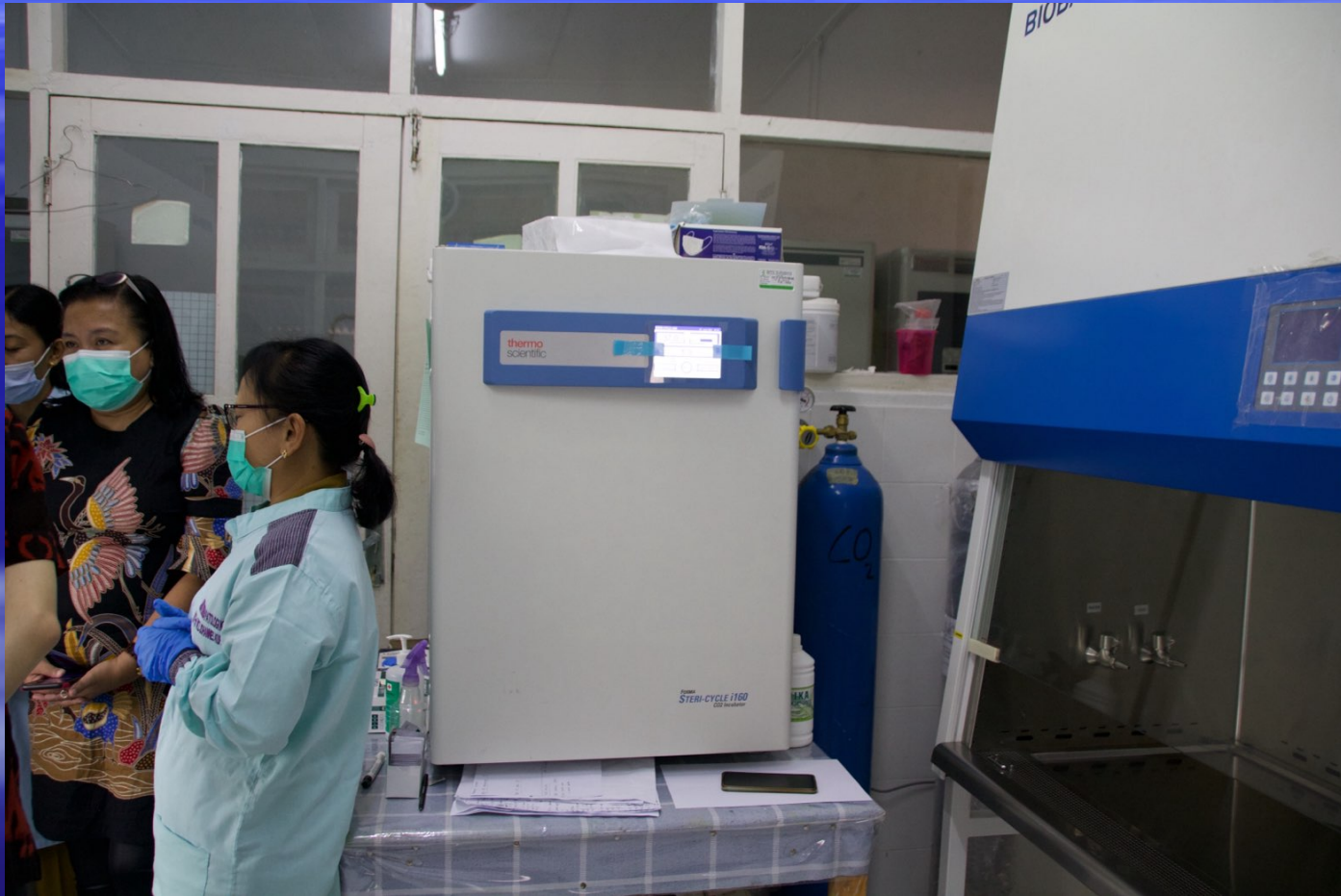
- Approx 15 laboratory staff
- 3 Pathologist (1 Microbiologist)
- 2 “analysts” in Microbiology
- Work load Microbiology past 6 months =
Total 580 specimens
 - Positive Urines, 69
 - Positive Pus, 107
 - Positive Sputum, 67
 - Positive Blood culture, 317
 - TB smears, 1000 patients.











Lab handwashing facilities





No	TGL	No. BHN/SIAMP NAMA	MC	AD	Bakteri	Σ Colonies	RES	IMVIC	APY VITEK	SUB	Gram	ANTI- SERA
10.	08/02/11	Johanes Tabesi/Urine	⊕ tumbuh	⊕ tumbuh	⊕ Staphylococcus sp.	7.	-	-	-	-	- gram ⊕	-
11.	08/02/11	Kristofel Elimanape/Urine	⊕ tumbuh	⊕ tumbuh	⊕ Staphy sp	<10 ³	-	-	-	-	- gram ⊕	-
12.	08/02/11	Hanintus Lado/Urine	⊕ tumbuh	⊕ tumbuh	⊕ Staphy sp	<10 ²	-	✓	-	-	- gram ⊕	-
13.	10/02/11	Mrs Elisabeth da Silva/ Kultur Penis	⊕ -	⊕ tumbuh	⊕ Staphy sp	-	✓	✓	-	-	- gram ⊕	-
14.	10/02/11	Tn Benjamin Ika/Darah	⊕ tumbuh	⊕ tumbuh	⊕ Staphy sp	-	✓	-	-	-	- gram ⊕	-
15.	12/02/11	Tn Oletuvianus B. Arnold/ pus	⊕ tumbuh	⊕ tumbuh	⊕	-	-	-	-	-	- gram ⊕	-
16.	12/02/11	Hilda Tuntiv/Urine	⊕ tumbuh	⊕ tumbuh	⊕ Serratia Odont sp.	<10 ⁴	✓	✓	✓	-	- gram ⊖	-

HASIL

	AM	DA	O	KF	CRU	CFP	E	AMC	AMP	P	TE	K	R	CTX	CIP	NA	S
STERIL																	
STERIL																	
<i>Lactobacillus</i>	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R
<i>Streptococcus Cloacae</i>	R	R	R	S	S	S	R	R	R	R	R	R	R	S	R	R	R
<i>Pseudomonas aeruginosa</i>	R	R	S	R	R	S	R	R	R	R	R	R	R	R	S	R	R
STERIL																	
<i>Staphylococcus Sp.</i>	S	S	S	S	S	S	S	S	R	R	R	S	S	S	S	R	S
<i>Serratia Marcescens</i>	R	R	S	R	R	R	R	R	R	R	R	S	R	R	S	S	R
Candida @, jml kuman: 10																	
<i>Candida Americana</i>	S	R	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
jml kuman = 2.																	
<i>Proteus Mirabilis</i>	R	R	R	R	S	S	R	R	R	R	R	S	R	S	S	R	R
jml kuman < 10 ⁴																	
<i>Staphylococcus Sp</i>	R	S	R	R	R	R	R	R	R	R	R	R	S	R	R	R	S
<i>Staphylococcus Sp</i>	S	S	S	S	S	S	R	S	S	R	S	S	S	S	S	S	S
<i>Staphylococcus Sp.</i>	S	S	R	S	S	S	S	S	R	R	R	S	S	S	R	R	S
<i>Staphylococcus Sp</i>	R	R	S	R	R	S	R	R	S	R	R	S	R	S	S	S	S
<i>Staphylococcus Sp.</i>	R	S	R	S	R	S	S	S	R	R	S	R	R	R	R	R	R
<i>Serratia Odorifera</i>	R	R	R	S	S	S	R	R	R	R	R	S	R	S	R	R	R
STERIL																	

Boquevil

1H.
ml.
ml.

2,25 gr → 125
2,3.

125
125
125
125
125
125
125
125
125
125

1H.

500 ml

250 ml

325
4 — 125

1H.

500 ml

250 ml

225 — 125

Overall aims

- Primarily to upskill Microbiology Lab Staff
- Increase utilisation of the lab by clinicians in the hospital.
- Provide methods and guidelines for the lab
- Troubleshoot current problems
- Deliver lectures for trainee “analysts” at the polytechnic
- Provide some equipment

Equipment

- Biomerieux Vitek 2 compact
- Biomerieux BacT Alert
- GeneXpert
- Sysmex urine analyser for chemistry and counts
- Centrifuge
- Incubator
- Media sterilizer
- Hot air oven
- Fridge –freezer
- Leica Microscope
- Oxoid disc dispenser

Vitek

- No error manual in Bahasa Indonesian
- Very limited instructions in Bahasa
- Contamination of saline dispenser
- Procurement is difficult
- Lab heavily reliant on the Vitek for ID

BacTAlert

- Lack of training and instruction in Bahasa
- 14 samples per week (120 cell capacity)
- Primarily NICU samples
- O₂ or paediatric bottle only no ANO₂
- Small volumes collected – low yields
- No direct susceptibilities performed
- High rate of contamination-15% grew STCN
- Inexperience with direct gram staining

Media available

- Blood agar (previously made with human blood from expired blood bank bags, now receive sheeps blood once a fortnight)
- Chocolate agar
- MacConkey 3 agar
- Mannitol Salt agar
- Saline
- Blood culture bottles





TB in the lab

- 20-25 samples per day
- 2-3 positive per day
- No culture or sensitivity testing performed
- X 3 Specimens delivered often in person
- Patients wait for their results
- Biological Safety Cabinet x2 now installed
- Given Fixed Dose Combination (FDC) treatment of 4 drugs x 3 per week
- Oncology patients given a chest X-ray

Previous TB processing

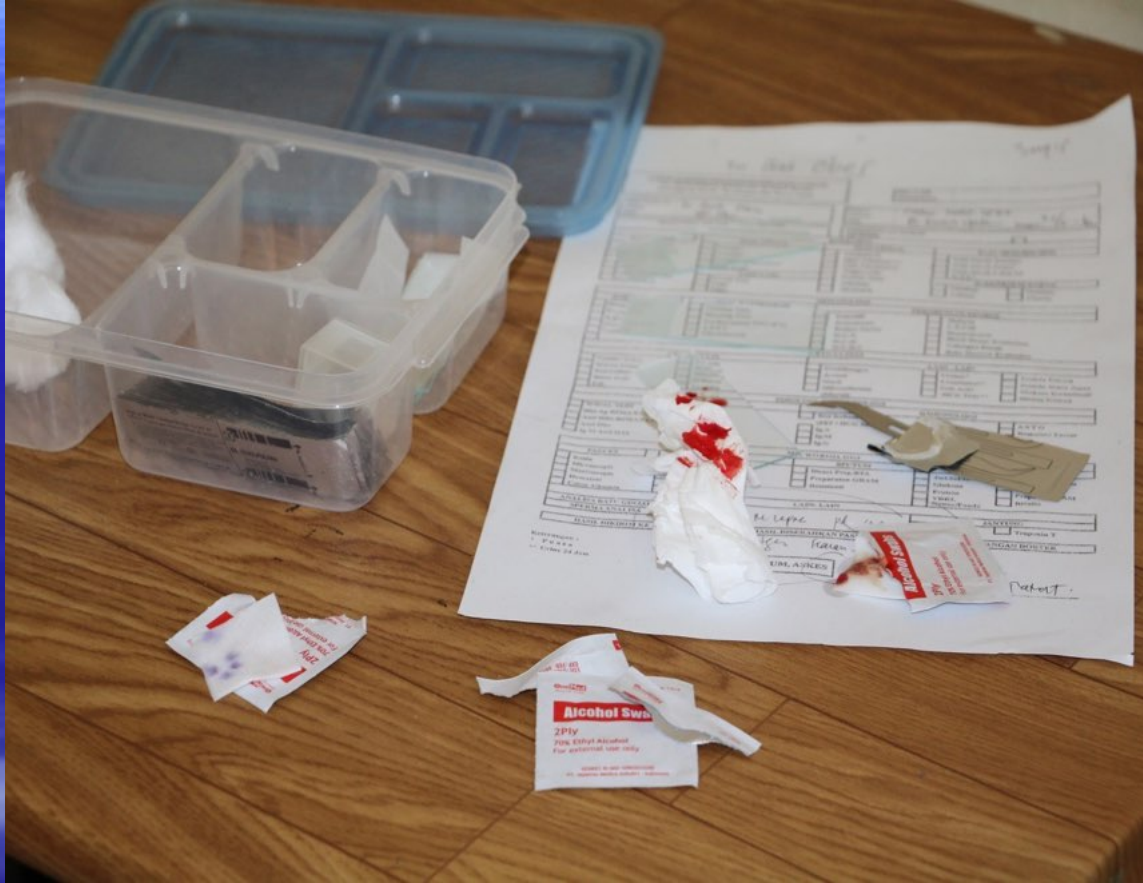


Leprosy

- 1-4 specimens per week
- 0-1 positive per week
- Patients have a slit smear performed in lab
- Patient examined for Leonine facies (face that resembles that of a lion) and or lesions
- Questioned about loss of feeling
- Wait for their results

Slit-skin smear











Antimicrobial resistance



Antimicrobial Data previous 6 Months

- Total 23 *E.coli* isolates
- 11 ESBL (2 CPE)
- Total 50 *K. pneumoniae* isolates
- 25 ESBL (2 CPE)
- Total 32 *Staph aureus* isolates (40%MRSA)
- 14 Acinetobacter/Pseud isolates varying Resistance patterns
- No Enterococcus isolated!

Other tests

- HIV (rapid test) confirmed by EIA
- HepBsAg & Hep C EIA
- Syphilis RPR
- No testing for Japanese encephalitis, Chikungunya virus etc. - referred to Jakarta
- Dengue testing available through Private Pathology Lab
- Rabies recently introduced from Flores

Whole Genome Sequencing



Recommendations Lab

- Alerts placed on Vitek as prompts
- Implement anaerobic culture
- Guidelines introduced for sensitivity testing
- QC sheets drawn up and implemented
- Improve isolation/identification of Streps
- Improve microscopy genital specimens
- Education of nursing staff in collection of Blood cultures

Future FOHG

- FOHG hope to continue links with lab and gain further funding
- Ongoing support for the Oncology unit
- Develop Antimicrobial stewardship program
- Further develop Infection Control policies
- Ongoing support of Soe Hospital (Muder Ignacia Hospital)
- Develop further relationships within the ministry of health e.g. Cancer council

Terima kasih

