

Multi-drug resistant TB in children at the Port Moresby General Hospital

Vela SOLOMON
MASTER OF MEDICINE
2018

MDR-TB

Global Burden:

- Cases seen: 480,000 of MDR-TB & 190,000 deaths⁽¹⁾ per annum
Half seen in India, China & Russia.⁽¹⁾
- Approximately 3.3% newly diagnosed TB cases & 20.1% are previously treated on first line TB regimen. ⁽¹⁾

PNG:

- Survey shows MDR-TB prevalence of 2.7% in new cases and 19.1% among retreatment cases ⁽²⁾

(1)Global Tuberculosis report 2015:

(2)National MDR-TB Guidelines

TB in PNG children

- Children account for 26-28% of total TB cases annually in PNG.⁽²⁾
- Reflective of an ongoing transmission of TB from adults.
- Data is scanty on Drug resistant (DR) TB in children, but world wide, estimates of 32,000 children develop this each year ^(1,3)

(1) Treatment and Outcomes in children with multi-drug resistant tuberculosis: A systematic review and individual patient data meta-analysis, Harausz E, Pratz A, Law S, Schaaf S, Seddon J et al, Plos Med 15(7):e1002591

(2) National MDR TB Guidelines, 2016

(3) Global Burden of childhood tuberculosis, Jenkins H, Pneumonia 2016 8:24

AIM

To describe the patients journey & MDR TB children caseload being managed at Port Moresby General Hospital between 2014 to 2018.

METHODS

Study description:	Descriptive Cohort analysis
Inclusion criteria:	All patients diagnosed with DR-TB
Study Site:	Paediatric TB unit, PMGH
Duration :	2014-2018
Study procedures:	Records, charts, clinic books interviews with semi-structured questionnaire.
TB Case/outcomes definitions	
Current TB/ MDR protocols used	

Drug Resistant: 50

Ex PTB: 28 (56%)

PTB:22 (44%)

**Started on
D.R Rx. (47)**

**Not started
on D.R Rx (3)**

Completed

(21)

Survived:20

died: 1

**Currently
Rx:17**

Int (4)

Cont (13)

Others:

Died: 5

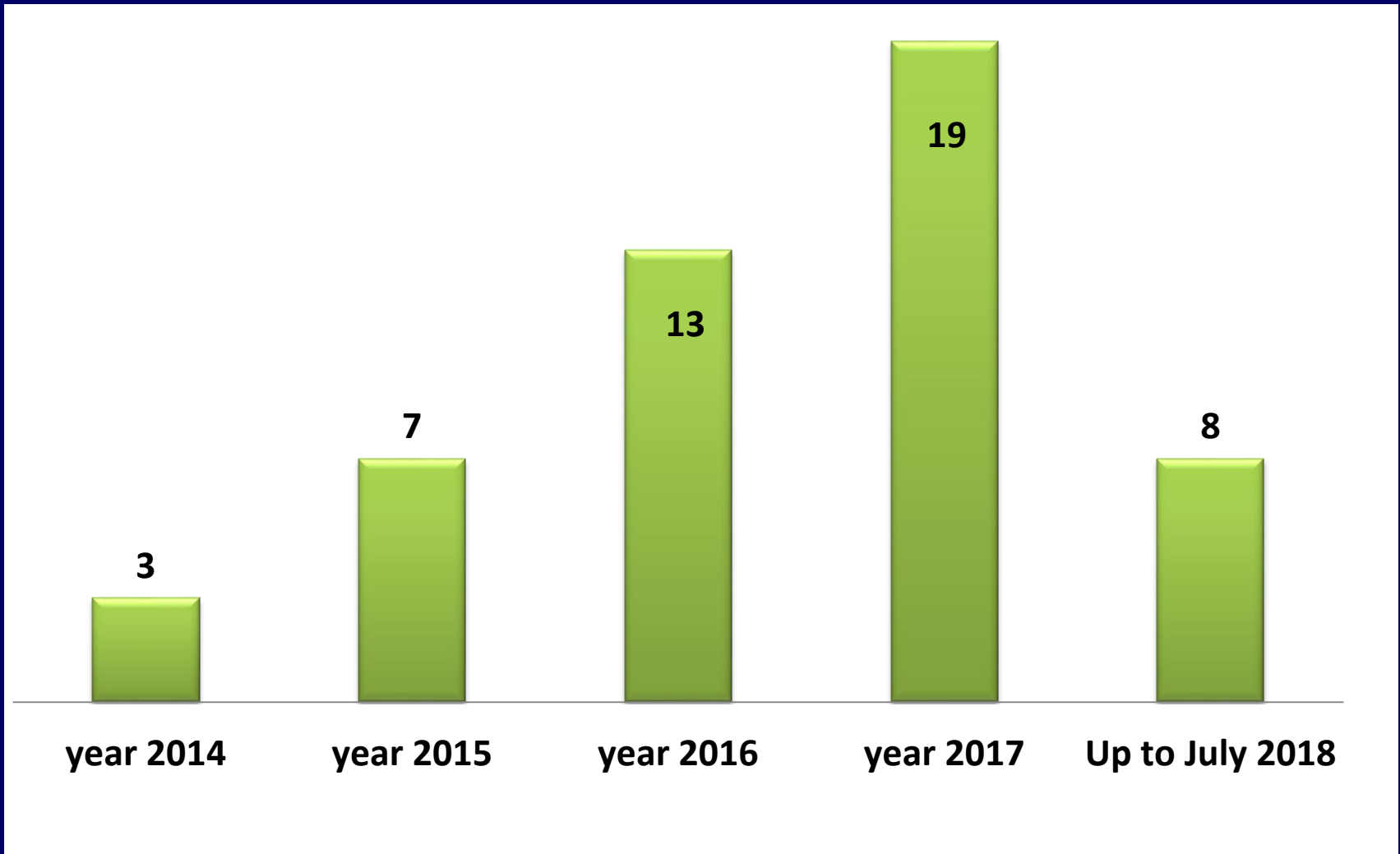
Transferred:2

LTFU: 2

Died: 2

Abscond (1)

TRENDS in PMGH-Diagnosing DR TB



PATIENT CHARACTERISTICS

<u>Characteristic</u>	<u>N(%)</u>
Sex	
Female	23 (46)
Male	27 (54)
Median age	6.7 (3-10)
Socio-economic state	
Poor	32 (64)
Vaccination	
Fully vaccinated for age	40 (80)
HIV status	
Positive	2 (4)
Negative	48 (96)
Nutrition	
<3SD	20 (40)
Origins	
Central province	27 (54)

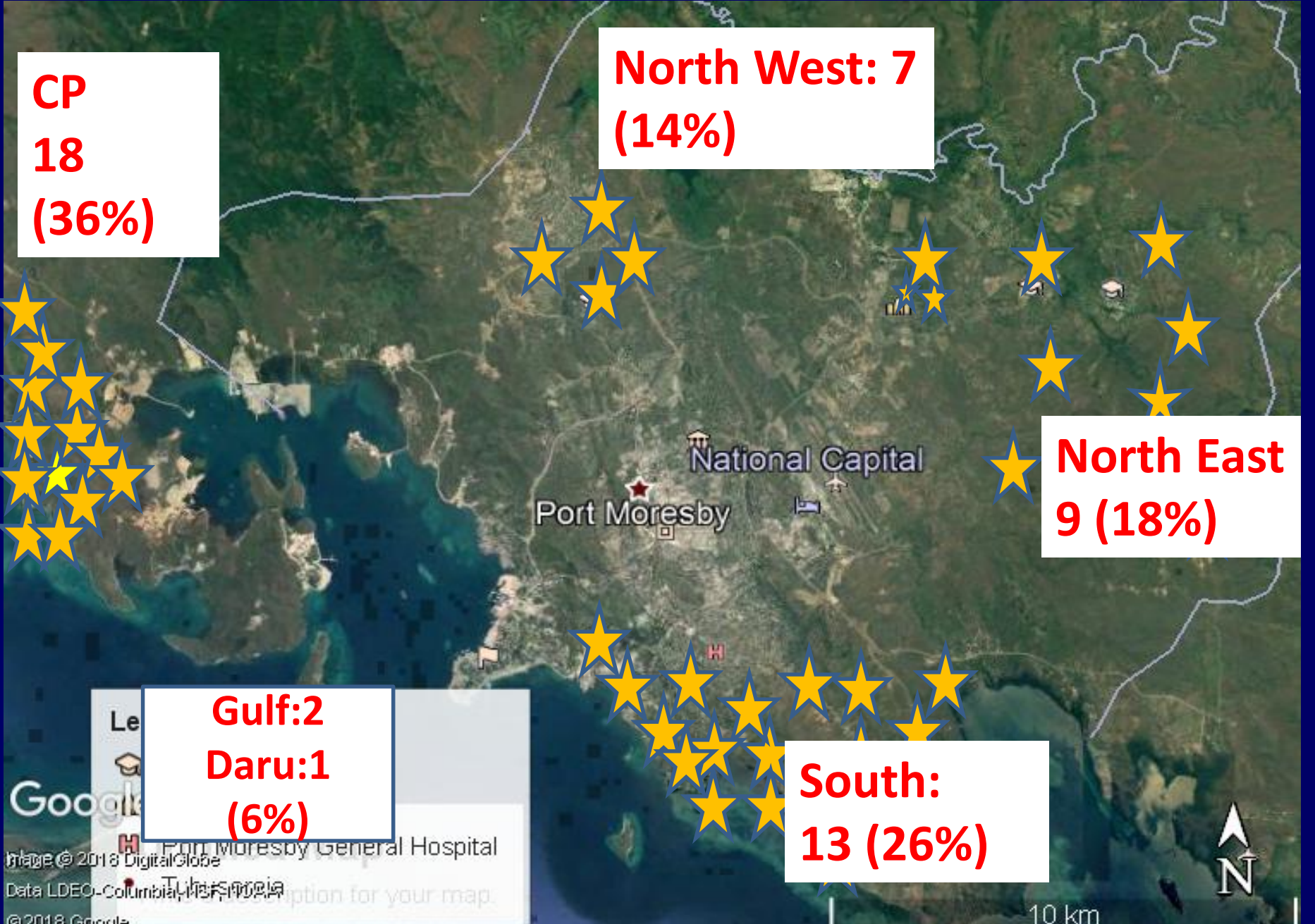
**CP
18
(36%)**

**North West: 7
(14%)**

**North East
9 (18%)**

**Gulf:2
Daru:1
(6%)**

**South:
13 (26%)**

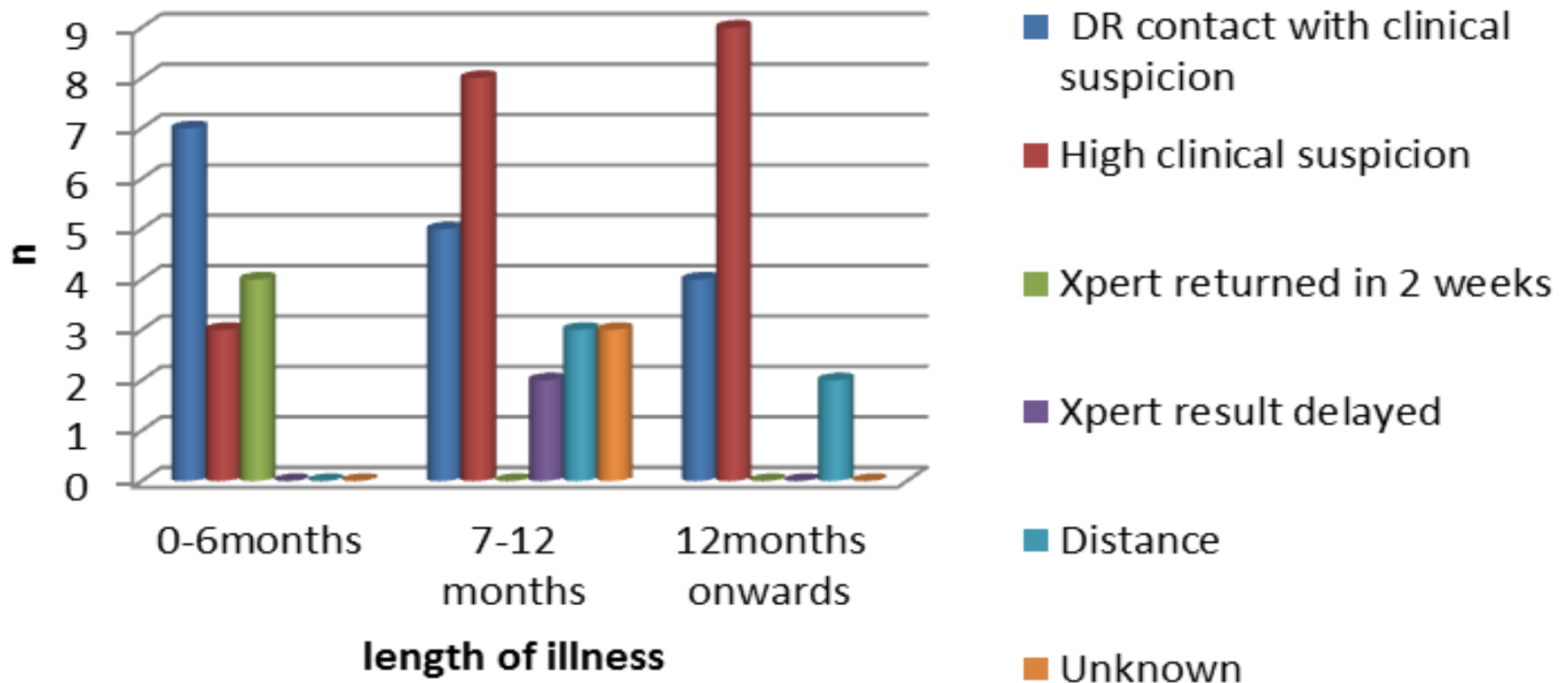


<u>DS- TB Characteristics</u>	<u>N (%) or median</u>
Previous DS-TB Rx	
Yes	38 (76)
Previous DS-TB Rx completed	
Not applicable	12(24)
Completed	31 (62)
No	4 (8)
Unknown	3 (6)
Type of TB Disease	
PTB	19 (38)
EXPTB	19 (38)
Not applicable	12 (24)
TB Source contact	
DR confirmed	25 (50)
Type of contact (n=25)	
mother	10 (40)
2 nd degree relatives	6 (24)

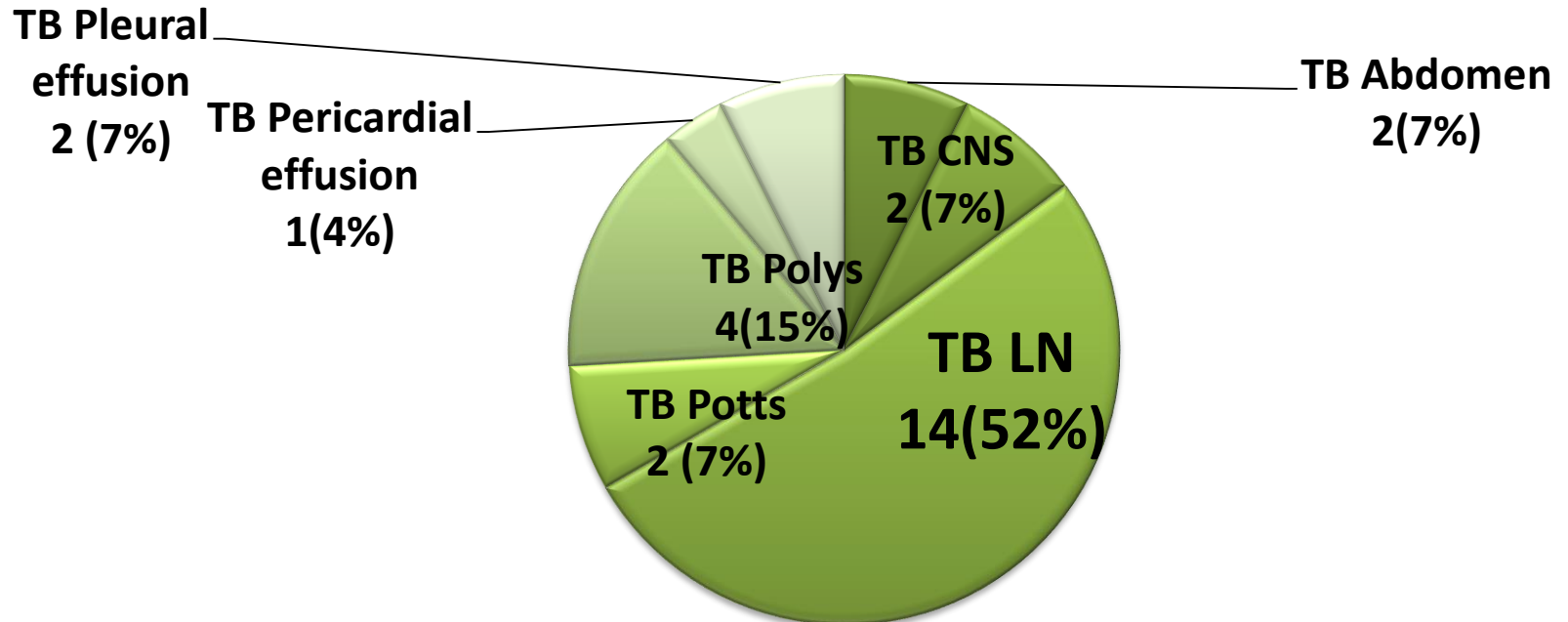
Drug Resistant characteristics

<u>Characteristics</u>	<u>N (%) / median</u>
Length of Illness (median months)	7 (IQR1.43-12)
Confirmation of D.R TB	
Clinical only	15 (30)
Rifampicin resistance on X-pert testing	35 (70)
Culture of specimen	
MTB growth	16 (32)
No MTB growth	24(48)
Pending	5 (10)
Unknown	5 (10)
Adverse Events	26 (52)

determining factors for treatment



- Extra-pulmonary disease: 28 (56%)



- Samples sent (50):

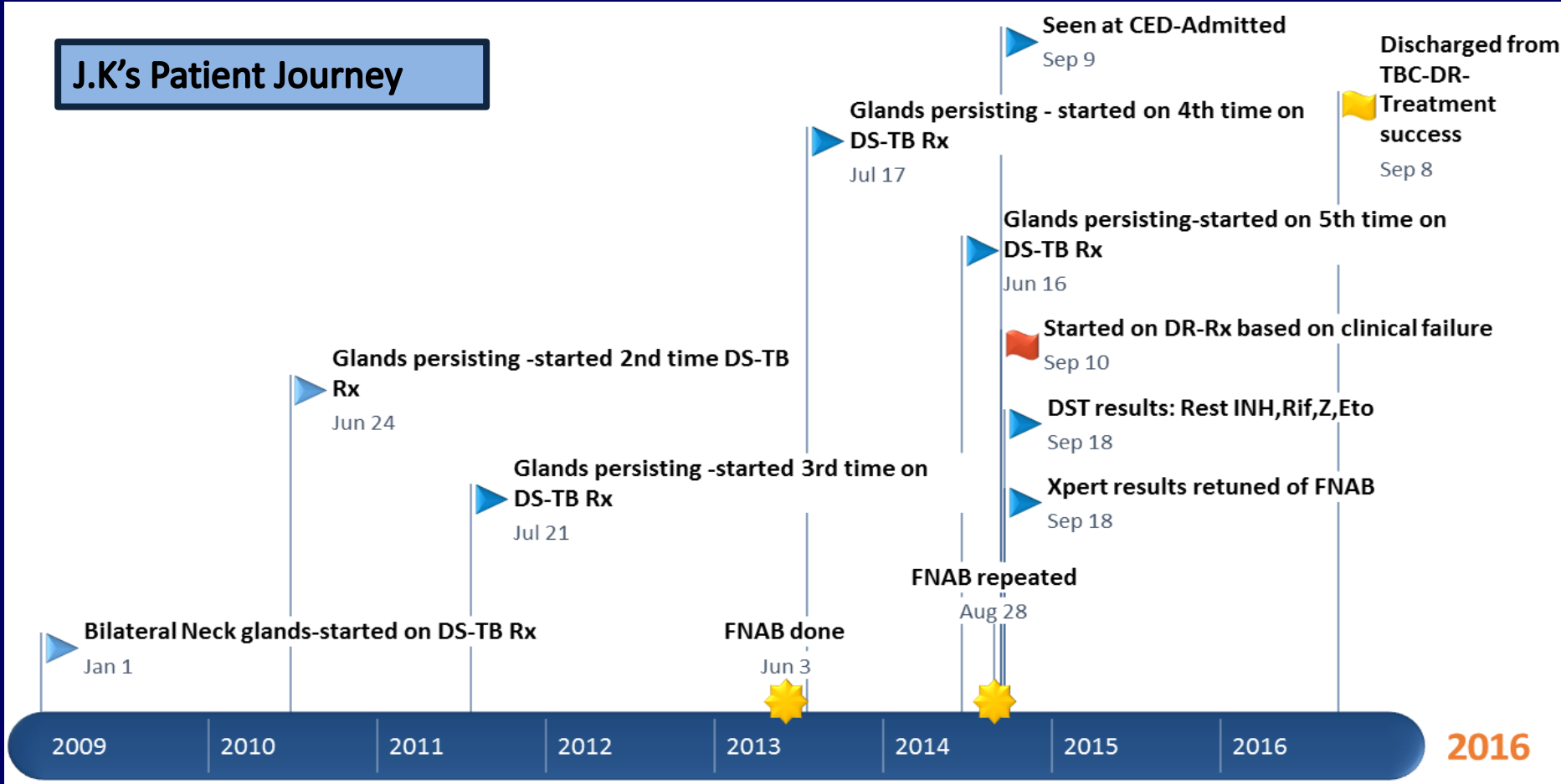
<u>Sample:</u>	<u>n (%)</u>
Gastric aspirate	21 (43)
Sputum	15 (31)
FNAB	11 (22)
Pleural asp.	1 (2)
No sample sent	2 (4)

Drug Resistance Patterns seen

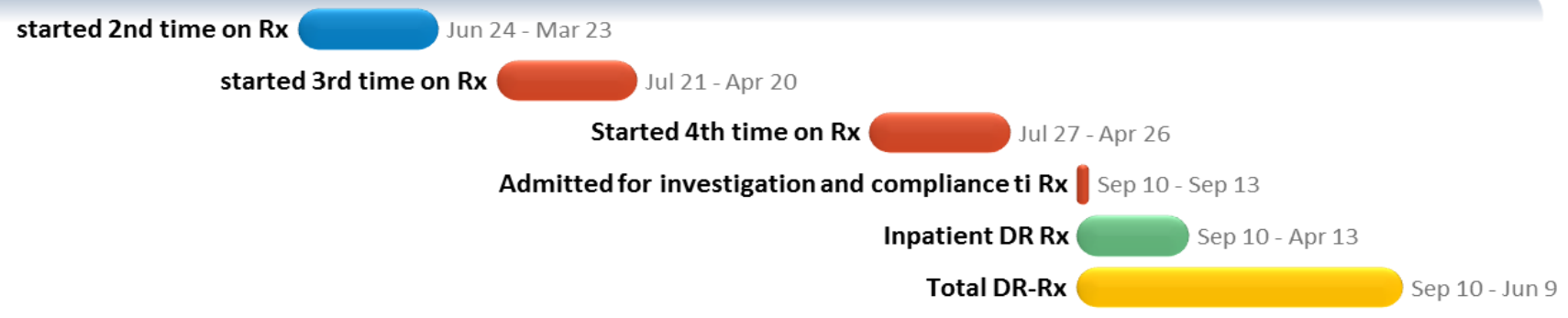
Out of 16 Positive cultures, 15 DST patterns

Drug Resistant Patterns (n=15)	N
Rifampicin resistance only	2
Rifampicin & Ethionamide	2
Rifampicin, Isoniazid, Ethionamide	2
Rifampicin, Ethambutol, Pyrazinamide, Ethionamide	1
Rifampicin, Isoniazid, Ethionamide, Streptomycin	2
Rifampicin, Isoniazid, Ethionamide, Pyrazinamide, Streptomycin	1
Rifampicin, Isoniazid, Ethionamide, Pyrazinamide, Ethambutol, Strept.	2
Rifampicin, Isoniazid, Ethionamide, Pyrazinamide	1
Rifampicin, Isoniazid, Ethionamide, Ethambutol, Streptomycin	1
Rifampicin, Isoniazid, Ethionamide, Pyrazinamide, Ethambutol	1

J.K's Patient Journey



2016



Igat sampla toktok long marasin pikinini blo yu kisim long dispela stronpla sik TB?

“nogat wanpla toksave long ol side-effects blong marasin, na pikinini nau em hard long harim gut na mipla rausim em long skul” -

M.H

“dokta, ol lain lo peles na long skul wok long mekim funny long skin blong pikinini” - A.K

“em sa les long sut na stap long hausik sixpela mun”

Negative responses= 8%

“Mipla femili hamamas olsem nau em orait na ol gland pinis na bel bilong pikinini em slak go daunn” - S.M

Positive responses = 63%

Unknown records= 29%

DISCUSSION

- First 50 children managed for MDR TB as per the national guidelines, which are however adult guidelines.
- Limitations
 - Lack of past admission charts and clinic books
 - Rely on the memory of caregivers - recall biases

DISCUSSION

- A cross sectional study documented risk factors of MDR –TB disease in children seen in high TB burden areas₁
 - HIV disease, ages 2 years older, previous past DS TB treatment, and an adult Drug resistant source contact whom shares the same bed.
- Consistent in ours 76% had previous TB treatment.
- Half of our DR children having a TB source contact which is drug resistant₍₂₎ whom had nurturing roles.

(1) The Impact of drug resistance on the risk of TB infection & disease in child household contacts: A cross sectional study,Gola,Snow,Mandalakas, Schaaf et al 2016,BMC Infectious disease

(2) Consensus statement on Research definitions for Drug resistant Tuberculosis in children, Seddon,Velez,Schaaf, Marais et al, Journal of the Paediatric Infectious Disease Society, Vol2,N#2 pp100-9,2013

- Diagnosis is difficult in children (1)
 - Paucibacillary nature of TB disease
 - Obtaining quality specimens is tiresome & difficult (GA)
- But our study revealed 70% of the children were diagnosed with positive Xpert of which gastric aspirates brought in the most yield.
- Treatment schedules are long & initial 6 months consists of painful injections. Need other alternatives.
- Bedaquiline recommended by WHO. However costly. (2)
- Treatment outcomes generally good in children, 78% in show overall treatment success (1).

(1) Treatment and Outcomes in children with multi-drug resistant tuberculosis: A systematic review and individual patient data meta-analysis, Harausz E, Pratz A, Law S, Schaaf S, Seddon J et al, Plos Med 15(7):e1002591

(2) MSF press release 17th August 2018

CONCLUSION

- This study has Identified Risk Factors for MDR TB disease in children in POMGH common to what seen overseas.
- Individual patient's journey shows that there needs to be strengthening of clinical and diagnostic parameters
- Vital to keep accurate data and records in emerging disease such as MDR – TB.

Tanikiu maparamui...

“Philippians 4:13”

- All Honor praise to God
- My Family: Dr Mano Mao, Mum, Leiyanna, Wavuri, Lala & Registrars of PMGH..
- My Mentors: All Paediatricians of PMGH, Prof Vince & Prof Duke
- My Team: Dr Welch, Dr Machine, Verlyn Apis, Sr Meai, all the nurses of 1D and TB ward & Cons clinic
- My “50 patients” n parents.

References

1. Global Tuberculosis report 2015, 2015
2. PNG National MDR-TB Guidelines, 2016
3. Consensus statement on Research definitions for Drug resistant Tuberculosis in children, Seddon, Velez, Schaaf, Marais et al, Journal of the Paediatric Infectious Disease Society, Vol2, N#2 pp100-9, 2013
4. The Impact of drug resistance on the risk of TB infection & disease in child household contacts: A cross sectional study
5. Risk factors Multi-drug resistant tuberculosis at the central Chest institute of Thailand, Chuchottaworn C et al. Plos ONE 10(10):e0139986.doi:10.1371.
6. Treatment and outcomes in children with multi-drug resistant tuberculosis: A systematic review and individual patient data meta-analysis, Harausz E, Prats A, Law S, Shaaf S, Seddon J, et al. Plos ONE 15(7):e1002591
7. Twenty Years of Global surveillance of Antituberculosis-Drug Resistance, Zignol M, Dean A, et al. The New England Journal of Medicine 375;11, 2016