Sputum smear microscopy referral rates and turnaround time in the Tonga Islands

L. Fonua,¹ K. Bissell,^{2,3} P. Vivili,¹ S. Gounder,⁴ P. C. Hill⁵

<http://dx.doi.org/10.5588/pha.13.0087>

Setting: The National Tuberculosis Programme and the National Reference Laboratory, located on the main island of Tonga, Tongatapu, and three district hospital laboratories located on the outer islands.

Objectives: To compare Tongatapu with Tonga's outer islands with respect to sputum referral rates, numbers of samples per patient, sample quality, test results and time from sending sample to obtaining results and from obtaining results to treatment initiation.

Design: Retrospective study involving record review of laboratory and TB treatment registers in Tonga's four hospitals from 2003 to 2012.

Results: Of 3078 sputum samples submitted, 71.7% were of good quality. Sputum referral rates on Tongatapu were nearly twice as high as those on the outer islands (353 vs. 180 per 100 000 population). The mean smear turnaround times on Tongatapu and the outer islands were respectively 4.02 and 4.11 days. Of 83 positive cases, 91.2% were treated within a day in Tongatapu compared with 80% in the outer islands.

Conclusions: Referral rates for sputum smear testing differed in the main and the outer islands in Tonga, but turnaround times did not. Records of sputum quality and dates had limitations, necessitating interventions with TB-specific laboratory guidelines and registers. Further research is required to understand the differences in referral rates.

Efficient and timely detection of tuberculosis (TB) cases using quality-assured bacteriology is one of the pillars of the DOTS strategy recommended by the Stop TB Initiative.¹ Tonga, an island nation in the South Pacific that adopted the DOTS strategy in 1999, relies on sputum microscopy to diagnose TB, as culture and drug susceptibility testing (DST) are not locally available.² Tonga's sputum smear-positive TB notification rate was 15 per 100 000 population in 2000,³ and 6/100 000 in 2011.⁴ Although the number of cases may be declining, making elimination an attractive target, the effect of human immunodeficiency virus (HIV) infection, diabetes mellitus and tobacco on TB should also be considered, as they may hinder progress if they are not addressed adequately.^{5–7} While HIV prevalence is low in Tonga, at 0.002%,⁸ 27.6% of the general population smoke tobacco daily and 16.4% have raised blood glucose levels.⁹ These factors can have a negative impact on TB control in Tonga; it is therefore crucial to ensure ongoing early case detection.¹⁰

All sputum smear microscopy in Tonga is performed by the National Reference Laboratory (NRL) of

the Ministry of Health, which is located on Tonga's main island, Tongatapu. Three smaller district hospitals located on the outer island groups of Vava'u, Ha'apai and 'Eua offer limited laboratory services and have to send sputum samples by boat or plane to the NRL. There has been no formal evaluation of turnaround times from diagnosis to treatment initiation or whether these differ for samples from Tongatapu and those from the outer islands.

The present study aimed to compare Tongatapu with the three outer island groups with respect to the numbers of samples sent for testing, sample quality, test results and times from sending the sample to a result being obtained and from obtaining a test result to treatment initiation.

METHODS

Study design

This was a retrospective study involving a review of laboratory records and TB treatment registers in all four hospitals in Tonga.

Setting General

Tonga is an archipelago in the South Pacific Ocean that comprises 170 islands, 36 of which are inhabited. Tonga is administratively subdivided into five divisions: Tongatapu, 'Eua, Ha'apai, Vava'u and the Niuaus.¹¹ It is spread over 360 000 km² of ocean and has a total land area of 650 km².¹² The total population of Tonga is 103 036, of which 75 158 (72.9%) reside on Tongatapu, 14 936 (14.5%) on Vava'u, 6650 (6.5%) on Ha'apai, 5011 (4.9%) on 'Eua and 1281 (1.2%) on the Niuaus.¹³ The average population density is 157 persons/km², but can range from 280/km² in Tongatapu to only 23/km² in Niua.¹²

From Tongatapu, it is 303 km to Vava'u, 171 km to Ha'apai and 40 km to 'Eua.¹⁴ There are 1–2 flights to the islands every day, with the exception of the Niuaus, which has weekly flights. The flight time to Vava'u from Tongatapu is about 50 min, 30 min to Ha'apai and 8 min to 'Eua.¹⁵ There is a daily ferry service to 'Eua and a weekly service to Vava'u and Ha'apai.

Sputum smear microscopy

Tonga's National Tuberculosis Control Programme (NTP) guidelines recommend the collection of three sputum specimens (spot, morning, spot) for TB diagnosis. Sputum samples are collected at a TB clinic, a hospital, a community health centre or at the patient's home by trained health care workers such as TB coordinators and nurses, or the patients themselves. Spu-

AFFILIATIONS

- 1 Ministry of Health, Nuku'alofa, Tonga
- 2 International Union Against Tuberculosis and Lung Disease, Paris, France
- 3 School of Population Health, University of Auckland, Auckland, New Zealand
- 4 Ministry of Health, Suva, Fiji
- 5 Centre for International Health, Faculty of Medicine, University of Otago, Dunedin, New Zealand

CORRESPONDENCE

Louise Fonua
Ministry of Health
Nuku'alofa, Tongatapu, Tonga
Tel: (+676) 24943
e-mail: lsfonua@gmail.com

KEY WORDS

sputum; access; quality; recording

Received 22 September 2013
Accepted 8 November 2013

PHA2014;4(2):S29–S33
© 2014 The Union

tum samples are labelled by health care workers at the time of collection and a completed microbiology request form accompanies each patient's sputum sample. In the outer islands, laboratory technicians are responsible for storing and packing sputum samples and transporting them by road to a plane or boat for transfer to the NRL. At Tongatapu, laboratory technicians or public health assistants are responsible for picking up the sputum samples and delivering them to the NRL. The sputum smear results are communicated back to the responsible physician or laboratory by telephone or fax; the NTP manager at the Communicable Disease Unit of the Ministry of Health is notified in case of positive acid-fast bacilli (AFB) results. Only a single positive result is required to confirm a diagnosis of TB and initiate treatment.²

Tonga's NTP undertakes internal monitoring of all laboratory activities. It also participates in external quality assurance (EQA) activities as part of the Pacific TB Laboratory Initiative (PATLAB), which includes on-site evaluation, panel testing and blinded slide re-checking.¹⁶ TB culture and DST are available off shore (LabPlus, Auckland, New Zealand) if necessary. Although the NRL has a dedicated register for TB, the outer island laboratories do not. Information about the collection, transportation and results of sputum samples is recorded in a register that also includes information on other samples such as urine and blood.

Participants

The study included all cases with presumed TB in Tonga recorded in the laboratory registers over a 10-year period from 1 January 2003 to 31 December 2012.

Variables, data collection and validation

Data were collected from the general laboratory and TB registers held at the three district hospitals in Tonga's outer island groups and from the TB laboratory and treatment register at the NRL. Variables included age, sex, number and quality of sputum samples collected, sputum smear status, geographic location of sample collection, dates when samples were sent to the NRL, dates when results were reported and, for smear-positive cases, the date of treatment initiation. Positive smear results were graded as scanty, 1+, 2+ or 3+.

Turnaround time was defined as the length of time from the date on which the sample was sent to the NRL until the date of obtaining the result. The time to treatment initiation was defined as the length of time from the date of obtaining the result to the date of treatment initiation. Sputum quality was defined as good (specimen mucoid, purulent or blood stained) or poor (specimen thin, watery or composed largely of bubbles or saliva).

Selected variables for smear-positive cases were validated by cross-checking laboratory records and patient treatment cards.

Referral rates were calculated by the total number of samples divided by the total population of the main island vs. the outer island groups together. Denominator populations were estimated by back and forward extrapolation from the 2006 and 2011 national cen-

sus, assuming a growth rate of 0.4% per annum.¹³ According to the census, age structures and male to female ratio on the main island have consistently been similar to those on the outer islands.

Analysis and statistics

Data were collected and double-entered by independent encoders from the registries into an electronic structured questionnaire using EpiData Version 3.1 (EpiData Association, Odense, Denmark) and compared for discordance. The time from when the sputum sample was sent to obtaining the result (or treatment initiation for patients with sputum-positive TB) was represented in days. An acceptable turnaround time of 1 day was adopted from the World Health Organization (WHO) recommendations.¹⁷ Study outcomes based on variations from the acceptable turnaround time were then compared between Tongatapu and the outlying islands using the χ^2 test.

Ethics

Ethics approval was obtained from the Ethics Advisory Group of the International Union Against Tuberculosis and Lung Disease, Paris, France, and the Ministry of Health Ethics Committee in Tongatapu, Tonga.

RESULTS

The location of the laboratory sending the sample was not recorded for 13 patients, who were therefore excluded from the analysis, leaving a patient population of 1354. Table 1 shows the basic characteristics and number of sputum samples submitted by patients suspected of pulmonary TB in Tongatapu and the outer islands. Sex was recorded for 1343 patients, of whom 547 (40.4%) were female. In the outer islands, 46.9% were female compared with 39.6% in Tongatapu ($P = 0.049$). Age was recorded for 1278 patients only. The median age was 60 years (range 1–100, mean 53.8 years, standard deviation [SD] 22.6); 78 (5.8%) were in the 0–14 years age group, 231 (17.1%) 15–34 years, 412 (30.4%) 35–64 years and 557 (41.1%) ≥ 65 years. There was no significant difference in the age distribution of cases of presumed TB between the main and outer islands ($P = 0.945$).

Number of sputum smears

A total of 3078 sputum samples were sent for testing; 986 patients provided a second sputum sample and 738 a third. On Tongatapu, 71.8% provided a second sputum sample and 54% a third. In the outer islands, 78.5% provided a second sputum sample and 57% a third.

Referral rates

The sputum referral rate for Tongatapu was 353/100 000 compared to 180/100 000 for the outer islands (the Figure).

Sputum smear quality

Table 2 shows sputum quality and time from sending sputum sample to treatment initiation in Tongatapu and the outer islands. Of 3078 smears, 2208 (71.7%) were recorded as being of good quality and 175 (5.7%) of poor quality. For 695 (22.6%) samples, the quality was not recorded. There were no significant differences

ACKNOWLEDGEMENTS

This research was supported through an operational research course that was jointly developed by the Centre for Operational Research, International Union Against Tuberculosis and Lung Disease (The Union), Paris, France, and the Médecins Sans Frontières, Brussels-Luxembourg, and run in the South Pacific by The Union and the Public Health Division of the Secretariat of the Pacific Community, Nouméa, New Caledonia.

Additional support for running the course was provided by the School of Population Health, The University of Auckland, Auckland, New Zealand; the College of Medicine, Nursing and Health Sciences, Fiji National University, Suva, Fiji; the Division of TB Elimination, Centers for Disease Control and Prevention, Atlanta, GA, USA; Regional Public Health, Hutt Valley District Health Board, Lower Hutt, New Zealand; the National TB Programme, Fiji Ministry of Health, Suva, Fiji; the Sydney Emerging Infections and Biosecurity Institute, The University of Sydney, Sydney, NSW, Australia; and Dunedin School of Medicine, The University of Otago, Dunedin, New Zealand. Funding for the course was provided by the Global Fund to Fight AIDS, TB and Malaria, Geneva, Switzerland, the World Diabetes Foundation, Gentofte, Denmark, and the Australian Agency for International Development, Canberra, ACT, Australia. Conflict of interest: none declared.

TABLE 1 Number of sputum samples submitted and results among patients with presumed TB, Tonga, 2003–2012

	Patients with presumed pulmonary TB (<i>n</i> = 1354)		
	Tongatapu <i>n</i> (%)	Outer islands <i>n</i> (%)	Total <i>n</i> (%)
Age group, years			
0–14	67 (5.9)	11 (5.1)	78 (5.8)
15–34	202 (17.7)	29 (13.5)	231 (17.1)
35–64	347 (30.4)	65 (30.4)	412 (30.4)
≥65	473 (41.5)	84 (39.3)	557 (41.1)
Unknown	51 (4.5)	25 (11.7)	76 (5.6)
Sex			
Female	449 (39.4)	98 (45.8)	547 (40.4)
Male	685 (60.1)	111 (51.9)	796 (58.8)
Unknown	6 (0.5)	5 (2.3)	11 (0.8)
Number of sputum samples submitted			
One	1140	214	1354
Two	818 (71.8)	168 (78.5)	986 (72.8)
Three	616 (54)	122 (57)	738 (54.5)

TB = tuberculosis.

between the main and outer islands with respect to quality ($P = 0.85$), and between the first, second and third smears ($P = 0.67$). However, on the whole, smears from children (aged 0–14 years) were less likely to be of good quality than those from older age groups (63.6% vs. 72.5%, $P = 0.0021$).

Time between sending sputum samples and obtaining results

Of all the sputum samples sent for testing, 80 (2.7%) had information missing on dates, and were therefore excluded from turnaround time analysis, leaving 2998 smears. For smears from Tongatapu, the mean turnaround time was 4.02 vs. 4.11 days for smears sent from the outer islands (SD 3.74, range 0–27 vs. SD 3.47, range 0–17, $P = 0.62$). The median turnaround time for the study population was 3 days, with 8.8% ($n = 263$) of smears reported within 1 day and 74.5% reported within 5 days.

Time between obtaining test results and treatment initiation

Of the 83 sputum smear-positive patients, 68 were from Tongatapu and 15 from the outer islands (6.0% vs. 7.0% of presumptive

TB cases, $P = 0.34$). Overall, 89.2% started on treatment within 1 day: 91.2% in Tongatapu vs. 80% in the outer islands ($P = 0.21$).

DISCUSSION

This is the first study in Tonga to evaluate and compare referral rates, turnaround times for sputum smear microscopy and treatment initiation, and sputum quality in the main and outer islands of Tonga. Referral rates for sputum smear testing from the outer islands were much lower than those from the main island, where the referral laboratory is located; individuals with presumptive TB from the outer islands were more likely to be women. While sputum quality was worse overall for children, there were no significant differences between the main and the outer islands with respect to sputum quality or turnaround times. Smear-positive patients were less likely to be started on treatment within 1 day if they were from the outer islands, but the difference was not statistically significant.

We are not aware of any other studies to have examined referral rates for sputum smear microscopy by geographic location. This was not explained by any difference in the number of sputum samples per patient, and the proportion of smear-positive suspects was not significantly different. The fact that there was no difference in the proportion of positive smears strongly suggests that the incidence of TB notifications in the outer islands is much lower than on Tongatapu. Lower incidence in remote locations has been reported elsewhere, in both developing¹⁸ and industrialised countries.¹⁹ It is not certain whether or not the differences in incidence rates obtained using passive case detection are real: active case detection is necessary to resolve the issue.²⁰ It is highly likely that reduced access to diagnostic services in the outlying islands leads to underdiagnosis and low referral rates for sputum smears.²¹

In settings using passive case detection, more TB cases are male than female; the male to female ratio is more evenly balanced when active case detection is used.²² It should be noted that around 60% of study samples from Tongatapu were from males, whereas just over 50% of sputum samples were from males in the outer islands. This may be a chance finding, but requires further

FIGURE Sputum referral rates for Tongatapu and the outer islands, Tonga, 2003–2012.

TABLE 2 Sputum quality and date from sending sputum to treatment initiation in Tongatapu and the outer islands of Tonga, 2003–2012

	Sputum samples submitted (n = 3078)		
	Tongatapu n (%)	Outer islands n (%)	Total n (%)
Quality of sputum sample			
Good	1849 (71.8)	359 (71.2)	2208 (71.7)
Poor	148 (5.8)	27 (5.4)	175 (5.7)
Not recorded	577 (22.4)	118 (23.4)	695 (22.6)
Sputum result			
Negative	2391 (93.2)	466 (91.0)	2857 (92.8)
Positive	170 (6.6)	44 (8.6)	214 (7.0)
Not recorded	5 (0.2)	2 (0.4)	7 (0.2)
Time from sample sent to results reported, days			
0–1	667 (26.7)	124 (24.9)	791 (26.4)
2–4	982 (39.3)	185 (37.1)	1167 (38.9)
5–7	526 (21.0)	115 (23.0)	641 (21.4)
>7	324 (13.0)	75 (15.0)	399 (13.3)
Time from reporting of results to treatment initiation, days			
0–1	62 (91.2)	12 (80.0)	74 (89.2)
>1	6 (8.8)	3 (20.0)	9 (10.8)

research. While the differences in turnaround times were not statistically significant, the fact that 20% of newly diagnosed TB cases in the outer islands are not placed on anti-tuberculosis treatment within a day suggests that there is room for improvement in treatment initiation.

This study has exposed some issues with the recording and reporting practices used for sputum smear microscopy in Tonga. In nearly 22.6% of the samples submitted, sputum quality was not recorded in the laboratory register. Where quality was recorded, 5.7% of samples were recorded as being poor, although this was not more common among samples from the outer islands. Incomplete data entry also affects the accuracy and comprehensiveness of TB laboratory and treatment registers.^{23,24} Furthermore, key data related to the process of sputum smear microscopy—for example, key dates in the process of collection, transportation and reception of samples and reporting results—had not been consistently and rigorously recorded over the 10-year period. Without this information, the NTP cannot monitor turnaround times in the diagnostic and treatment initiation process or determine when delays or other problems occur. Laboratories on the outer islands tend to wait for a full set of samples from each patient before sending them to the NRL. This practice of ‘batching’ could not be clearly documented in this study, as the date of sample collection was not recorded in the laboratory registers of the outer islands. It is possible that significant delays occur between the collection of the first and the third sample. Efficient TB diagnosis is dependent on sputum being properly collected and transported and on the correct communication of results.²⁵

The strengths of the study are that all four laboratories in Tonga were included, making it a large, nationally representative sample for a 10-year period. In addition, the protocol and reporting follow STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines.²⁶ Limitations are related to the operational nature of the research conducted, mainly missing data. In particular, the turnaround time from the date of sputum collection could not be calculated. Further research is required to determine if active case finding should be performed in the Ton-

gan outer islands. Steps could be taken to ensure completeness of data recorded on age, sex, name of submitting laboratory and dates. Training should be considered to enhance sputum quality along with enhanced routine supervision of all laboratories. The NTP should also consider creating TB-specific laboratory guidelines, creating laboratory registers dedicated to TB and updating the NTP treatment guidelines to include indications on an acceptable sputum turnaround time.

References

- 1 World Health Organization. The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals. WHO/HTM/TB/2006.368. Geneva, Switzerland: WHO, 2006.
- 2 Secretariat of the Pacific Community. Guidelines for the control of tuberculosis in Tonga through the DOTS strategy. 2nd ed. Noumea, New Caledonia: Multipress, 2007.
- 3 World Health Organization. Global Tuberculosis Control 2011. WHO/HTM/TB/2011.16. Geneva, Switzerland: WHO, 2011.
- 4 World Health Organization. Tuberculosis country profile 2011. Geneva, Switzerland: WHO, 2011. https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=TO&LAN=EN&outtype=html Accessed January 2014.
- 5 Jeon C Y, Murray M B. Diabetes mellitus increases the risk of active tuberculosis: a systematic review of 13 observational studies. PLOS Med 2008; 5: e152.
- 6 World Health Organization. Tuberculosis & tobacco fact sheet. Geneva, Switzerland: WHO, 2009. http://www.who.int/tobacco/resources/publications/factsheet_tb_tobacco_sep09.pdf Accessed January 2014.
- 7 World Health Organization. Fact sheet no 104. Geneva, Switzerland: WHO, 2013. <http://who.int/mediacentre/factsheets/fs/104/en/> Accessed January 2014.
- 8 Secretariat of the Pacific Community. 2011 HIV surveillance in Pacific Island countries and territories. Nouméa, New Caledonia: SPC, 2011. http://www.spc.int/hiv/index.php?option=com_docman&task=cat_view&gid=108&Itemid=148 Accessed January 2014.
- 9 Palu T, Phongsavan P, Li D, Riley L, et al. Kingdom of Tonga NCD risk factors: STEPS report. Suva, Fiji: DesignLab Ltd, 2012.
- 10 World Health Organization & The International Union Against Tuberculosis and Lung Disease. Collaborative framework for care and control of tuberculosis and diabetes. WHO/HTM/TB/2011.15. Geneva, Switzerland: WHO, 2011.
- 11 Ministry of Finance and National Planning. 2nd National Millennium Development Goals report: status and progress between 1990–2010. Nuku'alofa, Tonga: Ministry of Finance and National Planning, 2010.
- 12 Tonga Department of Statistics. Tonga 2006 analytical census report. Nu-

- ku'alofa, Tonga: Tonga Department of Statistics, 2006. <http://www.phtpacific.org/content/tonga2006analyticalcensusreport> Accessed January 2014.
- 13 Tonga Statistics Department. Tonga national and household census 2011: preliminary report. Nuku'alofa, Tonga: Tonga Department of Statistics, 2011. <http://www.spc.int/prism/tonga/> Accessed January 2014.
 - 14 Tonga Airports Limited. TAL: visiting Tonga. Nuku'alofa, Tonga: TAL, 2013. www.tongaairports.com?visiting-tonga/ Accessed January 2014.
 - 15 Tonga Airports Limited. TAL: domestic arrivals and departures. Nuku'alofa, Tonga: TAL, 2013. www.tongaairports.com/flight-schedules/domestic/ Accessed January 2014.
 - 16 Dawson D. Situation report on TB laboratories in Pacific Island countries and territories 2009: PATLAB initiative. Pacific TB Laboratory Initiative, 2009. http://www.spc.int/tb/en/publications/cat_view/83-patlab-reports Accessed January 2014.
 - 17 World Health Organization. Same-day diagnosis of tuberculosis by microscopy: policy statement. WHO/HTM/TB/2011.7. Geneva, Switzerland: WHO, 2011.
 - 18 Banerjee A, Harries A D, Salaniponi F M. Differences in tuberculosis incidence rates in township and in rural populations in Ntcheu District, Malawi. *Trans R Soc Trop Med Hyg* 1999; 93: 392–393.
 - 19 O'Reilly G, O'Reilly D, Rosato M, Connolly S. Urban and rural variations in morbidity and mortality in Northern Ireland. *BMC Public Health* 2007; 7: 123.
 - 20 Touray K, Adetifa I M, Jallow A, et al. Spatial analysis of tuberculosis in an urban west African setting: is there evidence of clustering? *Trop Med Int Health* 2010; 15: 644–672.
 - 21 Huong N T, Vree M, Duong B D, et al. Delays in the diagnosis of tuberculosis patients in Vietnam: a cross sectional study. *BMC Public Health* 2007; 7: 110.
 - 22 Jackson-Sillah D, Hill P C, Fox A, et al. Screening for tuberculosis among 2381 household contacts of sputum-smear positive cases in The Gambia. *Trans R Soc Trop Med Hyg* 2007; 101: 594–601.
 - 23 Dunbar R, Lawrence K, Verver S, et al. Accuracy and completeness of recording of confirmed tuberculosis in two South African communities. *Int J Tuberc Lung Dis* 2011; 15: 337–343.
 - 24 Gounder S, Tayler-Smith K, Khogali M, Raikabula M, Harries A D. Audit of the practice of sputum smear examination for patients with suspected pulmonary tuberculosis in Fiji. *Trans R Soc Trop Med Hyg* 2013; 107: 427–431.
 - 25 Parsons L M, Somoskovi A, Gutierrez C, et al. Laboratory diagnosis of tuberculosis in resource-poor countries: challenges and opportunities. *Clin Microbiol Rev* 2011; 24: 314–350.
 - 26 von Elm E, Altman D G, Egger M, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Bull World Health Organ* 2007; 85: 867–872.

Contexte : Le programme national de lutte contre la tuberculose et le laboratoire de référence de Tonga, situé sur l'île principale, Tongatapu, et trois laboratoires d'hôpitaux de district situés sur d'autres îles.

Objectifs : Comparer Tongatapu avec les autres îles en ce qui concerne le taux de référence des crachats, le nombre d'échantillons par patient, la qualité des échantillons, les résultats de l'examen, le délai de retour du résultat et le délai entre le résultat et la mise en route du traitement.

Schéma : Etude rétrospective par revue des dossiers de laboratoire et des registres de traitement anti tuberculeux des quatre hôpitaux des Tonga entre 2003 et 2012.

Résultats : Parmi 3078 échantillons de crachats, 71,7% étaient de

bonne qualité. Le taux de référence des crachats était presque deux fois plus élevé à Tongatapu que dans les îles extérieures (353 contre 180/100 000). Le délai de retour des crachats à Tongatapu et dans les îles extérieures était respectivement de 4,02 et 4,11 jours. Sur 83 cas positifs, 91,2% étaient traités le jour même à Tongatapu contre 80% dans les îles extérieures.

Conclusion : Entre l'île principale et les îles extérieures, on note des différences en matière de taux d'examen de crachats mais pas en termes de délai de retour. Les données relatives à la qualité des frottis et aux dates de réalisation ont des limitations qui méritent une intervention avec des directives et des registres spécifiques de la TB. Une recherche supplémentaire est requise pour comprendre les différences entre les taux de référence.

Marco de referencia: El Programa Nacional contra la Tuberculosis y el Laboratorio Nacional de Referencia de Tonga, localizados en la isla principal de Tongatapu, y tres laboratorios de los hospitales de distrito en las islas periféricas.

Objetivos: Comparar la isla de Tongatapu con las islas periféricas en relación con las tasas de remisión de las muestras de esputo, el número de muestras por paciente, la calidad de las muestras, los resultados del examen y el tiempo transcurrido entre el envío de la muestra y la notificación de los resultados y entre la obtención de los resultados y el comienzo del tratamiento.

Método: Fue este un estudio retrospectivo en el cual se analizaron los registros de tratamiento antituberculoso y los registros de laboratorio de cuatro hospitales de Tonga del 2003 al 2012.

Resultados: De las 3078 muestras de esputo recibidas, el 71,7% eran de buena calidad. La tasa de remisión de muestras de esputo fue

cerca de dos veces más alta en la isla de Tongatapu que en las islas periféricas (353 contra 180 por 100 000 habitantes). El promedio del lapso hasta la obtención del resultado de la baciloscopia en Tongatapu fue 4,02 días y en las islas periféricas fue 4,11 días. El 91,2% de los 83 casos con resultados positivos comenzó el tratamiento en el lapso de un día en Tongatapu, en comparación con el 80% en las islas periféricas.

Conclusión: Existen diferentes tasas de remisión de las muestras de baciloscopia, pero el lapso hasta obtener los resultados es equivalente en la isla principal y las islas periféricas de Tonga. Se observaron deficiencias en los registros sobre la calidad del esputo y las fechas, lo cual justifica una intervención con normas específicas y registros de laboratorio en materia de tuberculosis. Se precisan nuevas investigaciones que permitan una mejor comprensión de las diferencias en las tasas de remisión de las muestras.