

Diabetes Knowledge and Self-Management among Tuberculosis Patients in Hawai'i, 2013

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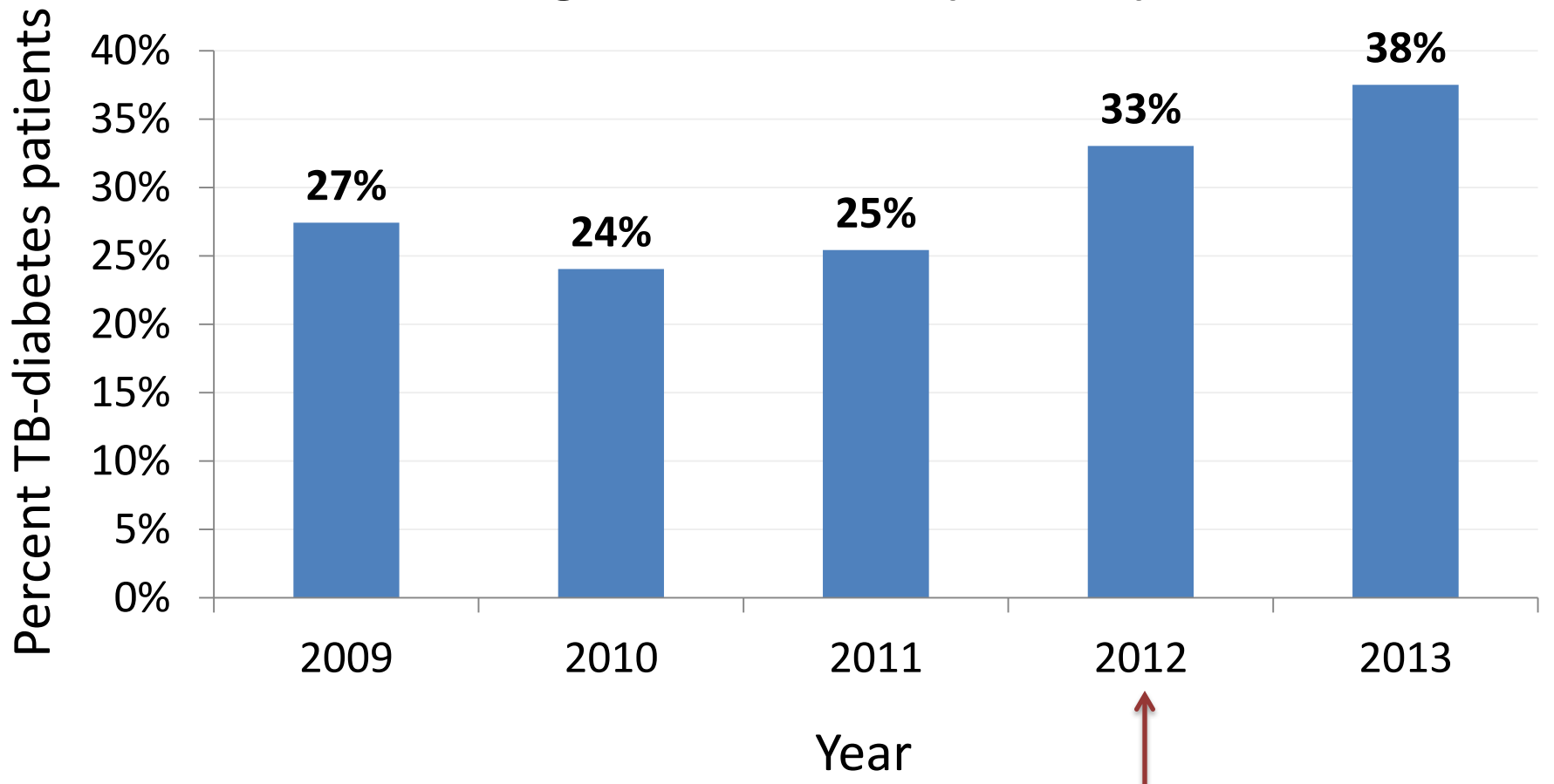
³CDC, Division of TB Elimination, Atlanta, GA

The Union – North American Region
18th Annual Conference, Boston, MA
February 28, 2014



Hawai'i, 2009 – 2013: TB-diabetes

Percentage of TB cases aged 21 or older with diagnosed diabetes (N = 551)



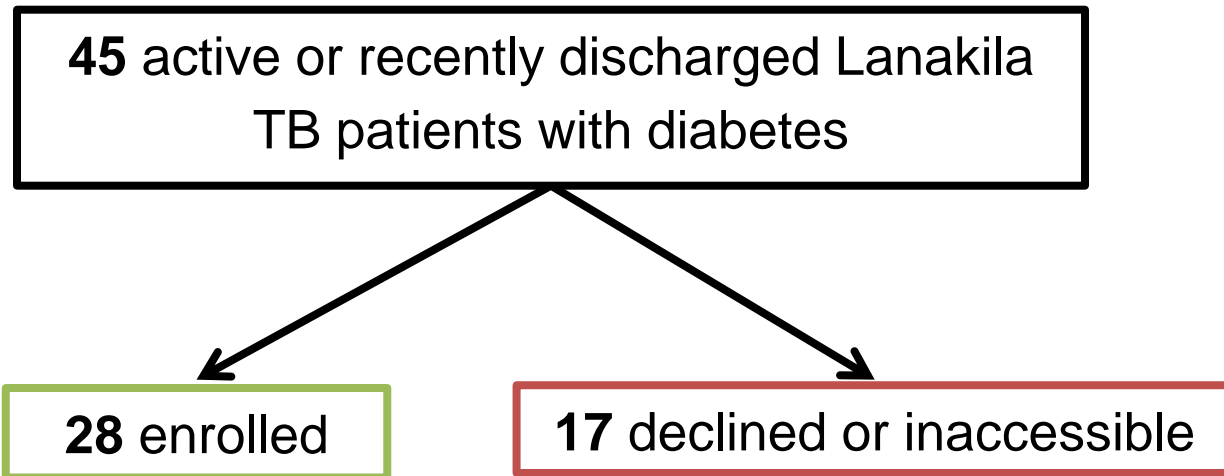
Routine diabetes testing

Research questions

1. What do our TB patients know about diabetes?
2. How are they managing their diabetes?
3. How does diabetes knowledge relate to self-management and glucose control?

Methods: April – December, 2013

Lanakila TB Clinic, Honolulu



- Confirmed diabetes (HbA1c \geq 6.5%) and TB disease
- 30-minute semi-structured interviews in-clinic or patient's home
- Medical charts, EpiAnywhere, HbA1c testing

Results (N=28)

Sample summary	
Age at TB diagnosis	61.7 ± 14.2
Sex	
Female	11 (39%)
Male	17 (61%)
Health insurance	
None	5 (18%)
Public	15 (54%)
Private, work-based	8 (29%)
Completed high school	
No	15 (54%)
Yes	13 (46%)
Place of birth	
Philippines	18 (64%)
Pacific Islands (FSM, RMI)	5 (18%)
Other (S. Korea, Laos, U.S.)	5 (18%)
Years lived in United States	22.5 ± 13.5

Diabetes 5-point knowledge scale (N=28)

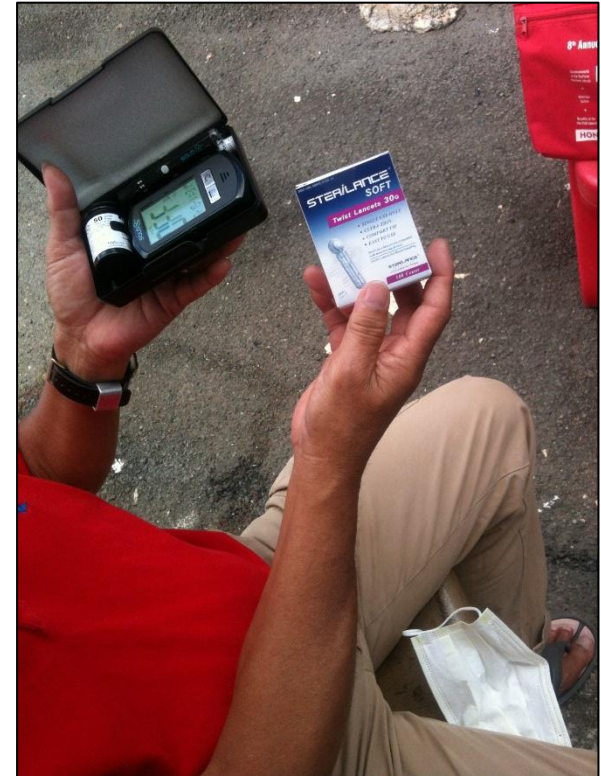
Diabetes knowledge question	“No” (0 pts)	“Yes” (1 pt)
1. Aware that diabetes is related to blood sugar	13 (46%)	15 (54%)
2. Recognizes at least one long-term complication of uncontrolled diabetes	5 (18%)	23 (82%)
3. Knows their most recent HbA1c or blood glucose measure	11 (39%)	17 (61%)
4. Knows their “target” Hb A1c or blood glucose measure	11 (39%)	17 (61%)
5. Can list at least one diabetes support group	24 (86%)	4 (14%)

Diabetes 5-point self-management scale (N=28)

Diabetes self-management question	“No” (0 pts)	“Yes” (1 pt)
1. Takes diabetes medications correctly most of the time (correct timing always or usually, and forgets never or rarely)	8 (29%)	20 (71%)
2. Meets recommended goal for exercise of three or more hours per week	19 (68%)	9 (32%)
3. Eats overall healthy diet or practices portion control	1 (4%)	27 (96%)
4. Self-monitors blood sugar daily or weekly	15 (54%)	13 (46%)
5. Receives annual flu vaccine	12 (43%)	16 (57%)

Results

- Knowledge correlations
 - Education ($r=0.51^{**}$), self-management ($r=0.48^{**}$)
 - Age ($r=-0.41^*$), years lived in U.S. ($r=-0.42^*$)
- Knowledge and self-management were not correlated with HbA1c
 - Limited sample size
 - Complexity of factors related to HbA1c



Patient showing his glucometer

* $p<0.05$; ** $p<0.01$

Quotes: Patients want help managing their diabetes

- *I want more diet and food information, eating the right food.*
 - Filipino, Male
- *I have a diabetes doctor [PMD] but don't ask him these questions.*
 - Marshallese, Female
- *[I] want you to teach me because I want to control my diabetes. Food is the hardest thing.*
 - Chuukese, Male

Next steps

- Apply findings at TB clinic
 - Continue screening for diabetes at TB intake
 - Collect HbA1c every 3 months
 - Formalize clinic-based brief intervention



TB-diabetes educational flipchart
(Australian Respiratory Council)



Lanakila TB Clinic

Conclusions

- Diabetes is a major co-morbidity with TB patients in Hawai'i
- Knowledge is correlated with self-management
- Food and exercise are biggest challenges
- TB clinic offers unique setting for intervention
- Move forward with clinic-based brief intervention for diabetes

Thank you!

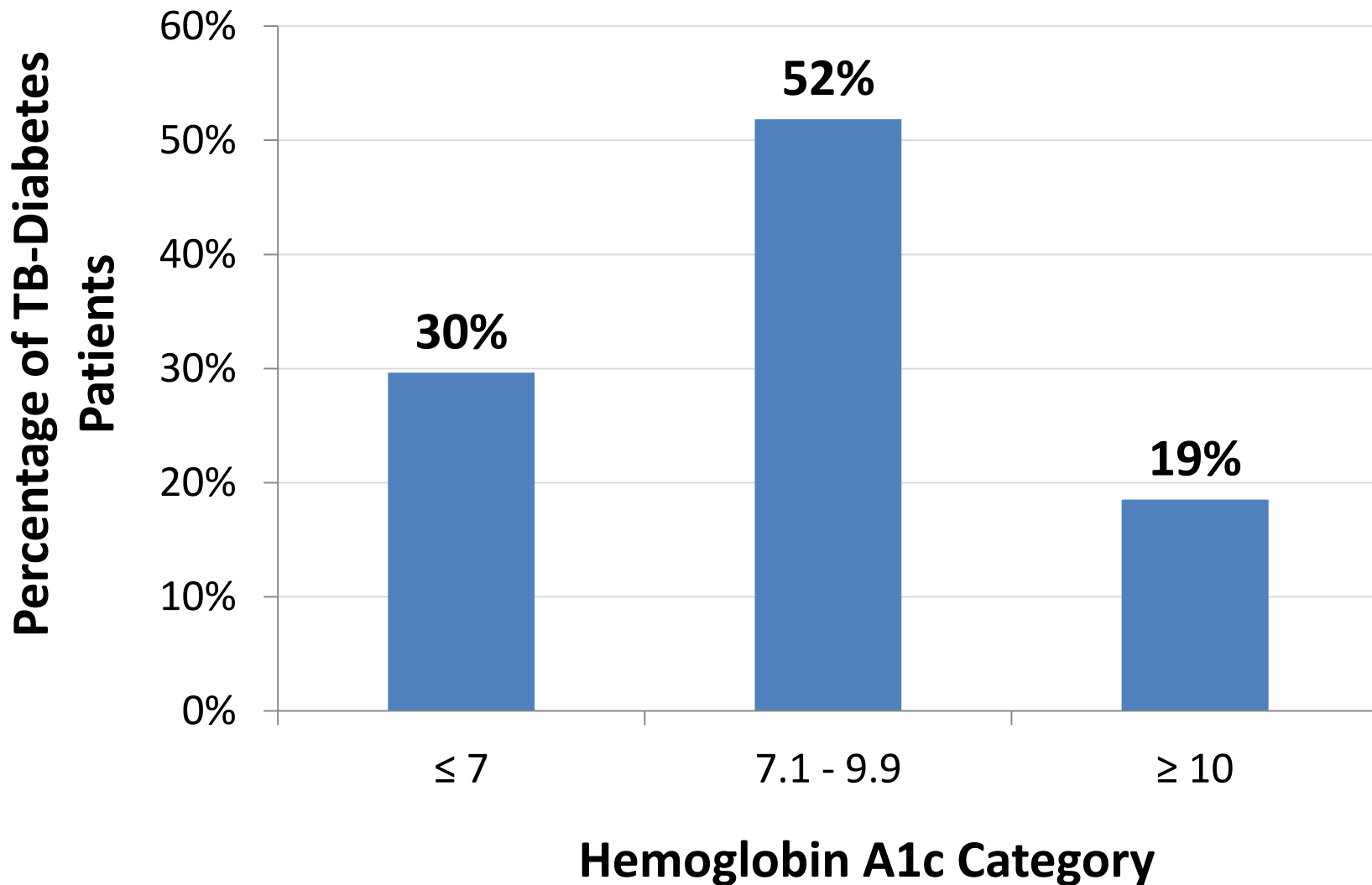
- We gratefully acknowledge
 - Lanakila TB nurses and staff
 - Hawai'i State Department of Health
 - Council of State and Territorial Epidemiologists (CSTE)



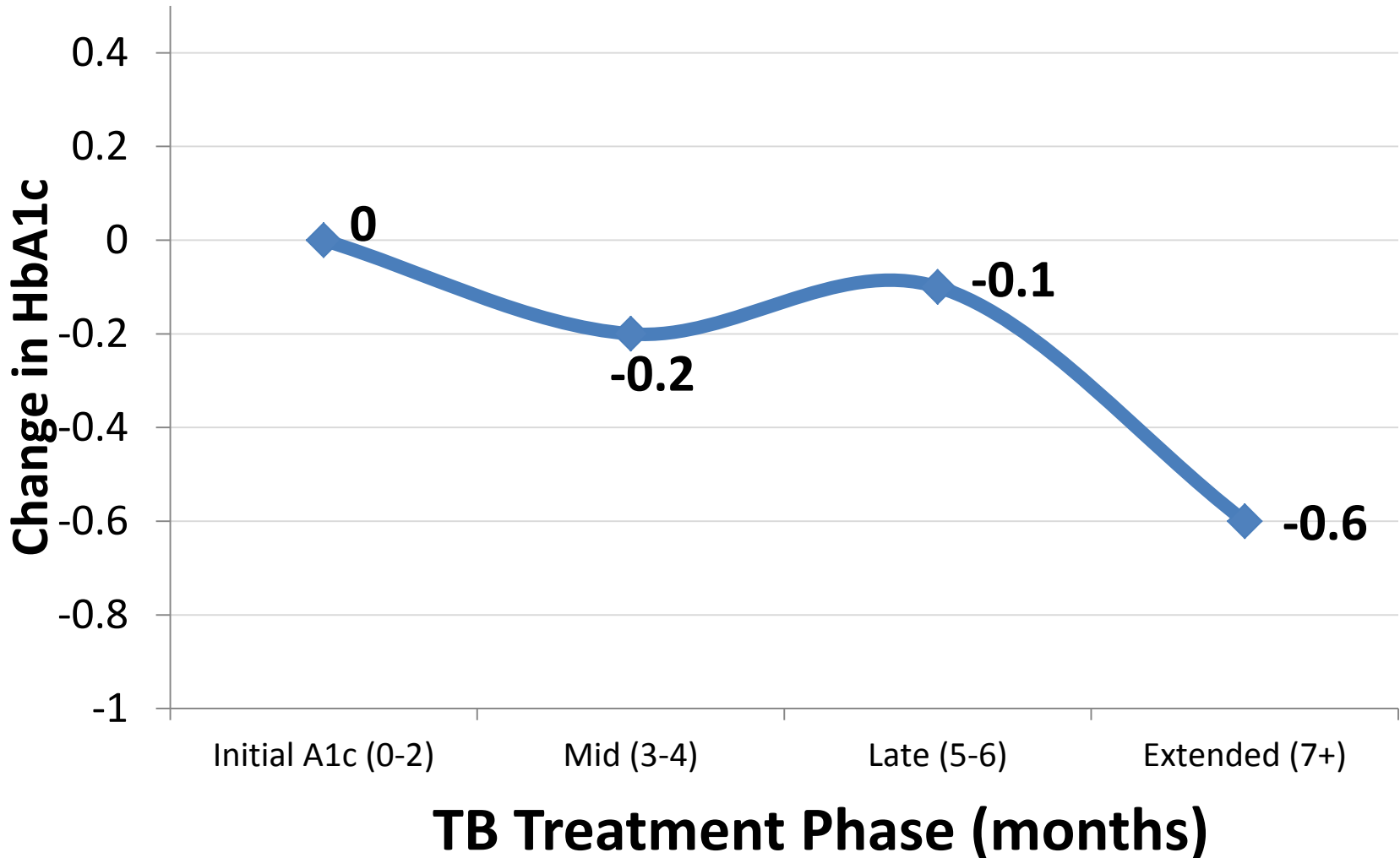
Lanakila TB staff



HbA1c value at TB diagnosis (N=28)



Average change in HbA1c from first measure during TB treatment (N=28)



Results (N=28)

Extended sample summary

Interpreter needed in interview

No 18 (64%)

Yes 10 (36%)

Occupation

Working 14 (50%)

Not working 9 (32%)

Retired 5 (18%)

Marital status

Married 16 (57%)

Divorced, single, widowed 12 (43%)

TB Clinical Measures (N=28)

TB treatment (days)	278 ± 86
Time for culture conversion	33.2 ± 24.7
Culture conversion	
≤ 60 days	7 (78%)
> 60 days	2 (22%)
Previous TB	
No	23 (82%)
Yes	5 (18%)
Cavitary disease among abnormal x-rays	
No	14 (56%)
Yes	11 (44%)
Sputum smear results	
Negative	12 (43%)
Positive	15 (57%)

Diabetes Clinical Measures (N=28)

Time since diabetes diagnosis	6.5 ± 8.9
Average A1c during TB tx	8.2 ± 1.7
DM diagnosis	
> 1 year of TB diagnosis	19 (67.9%)
≤ 1 year of TB diagnosis	9 (32.1%)
Taking DM pills	
No	7 (25.0%)
Yes	21 (75.0%)
Taking insulin	
No	22 (78.6%)
Yes	6 (21.4%)
Has a primary care doctor to help with diabetes	
No	3 (10.7%)
Yes	25 (89.3%)

Hawai'i 2013: TB vs. TB-diabetes patients (N = 116)

Characteristic	TB-only (n=77)	TB-diabetes (n=39)	p-value
Age (years)	45.3 ± 22.8	62.7 ± 14.1	<0.001
Treatment time (days)	189 ± 64	226 ± 70	0.16
Female	36 (47%)	18 (46%)	0.95
Male	41 (53%)	21 (54%)	
Foreign-born	62 (80%)	32 (84%)	0.63
U.S.-born	15 (20%)	6 (16%)	
No previous TB	67 (87%)	36 (92%)	0.54 (Fisher's)
Previous TB	10 (13%)	3 (8%)	
Negative sputum smear	43 (62%)	15 (42%)	0.04
Positive sputum smear	26 (38%)	21 (58%)	
No x-ray evidence of cavitation	61 (91%)	19 (51%)	<0.001
Yes x-ray evidence of cavitation	6 (9%)	18 (49%)	
Place of birth			0.59
Philippines	42 (55%)	23 (59%)	
Pacific Islands (FSM, RMI, Kiribati, Guam)	7 (9%)	6 (15%)	
United States	14 (18%)	5 (13%)	
Other (Korea, Laos, Burma, Vietnam, China)	14 (18%)	5 (13%)	

Average HbA1c among TB-DM patients during TB treatment (N=28)

