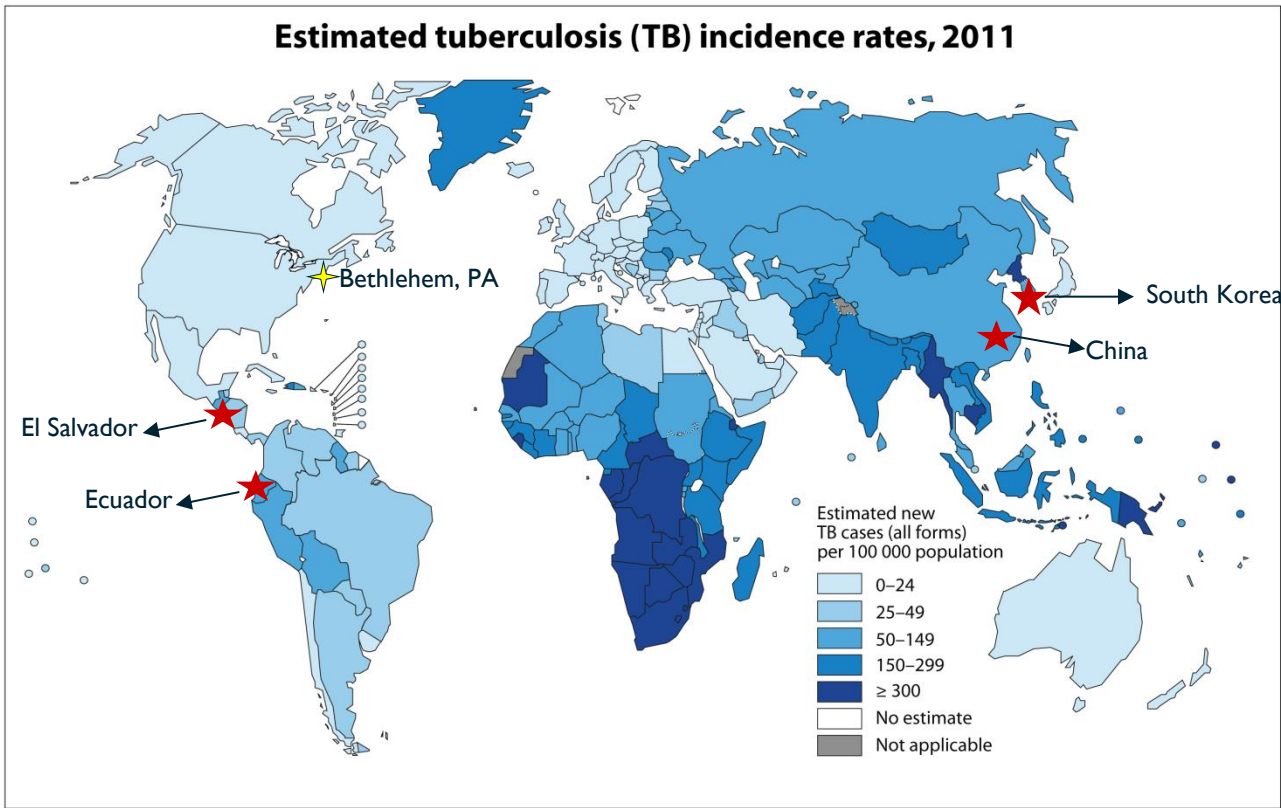


# Increasing treatment completion of LTBI in high-risk international university students

Lehigh University Health & Wellness Center *in cooperation with the Bethlehem Health Bureau*

## Background

- According to the World Health Organization, 1/3 of the world, or about 2 billion people, are infected with latent tuberculosis (LTBI).
- Left untreated these cases could become active tuberculosis (TB) and cause infection of more people.
- Proper treatment of latent TB significantly reduces the risk of developing active tuberculosis and further transmission of the disease.
- 22 countries are considered to have a high burden of TB.
- Persons who are born in countries with high TB rates have an increased chance of being infected with *M. tuberculosis* and are at high risk of developing active TB disease.
- Many international students who come to Lehigh University (LU), located in Bethlehem, PA are from these countries.
- Treating these students presents a unique challenge – the traditional regimen of 9 months of Isoniazid (INH) would last until July, almost 2 months after the semester ends and many return to their homes overseas.



★ Denotes country of origin for international students in fall 2012

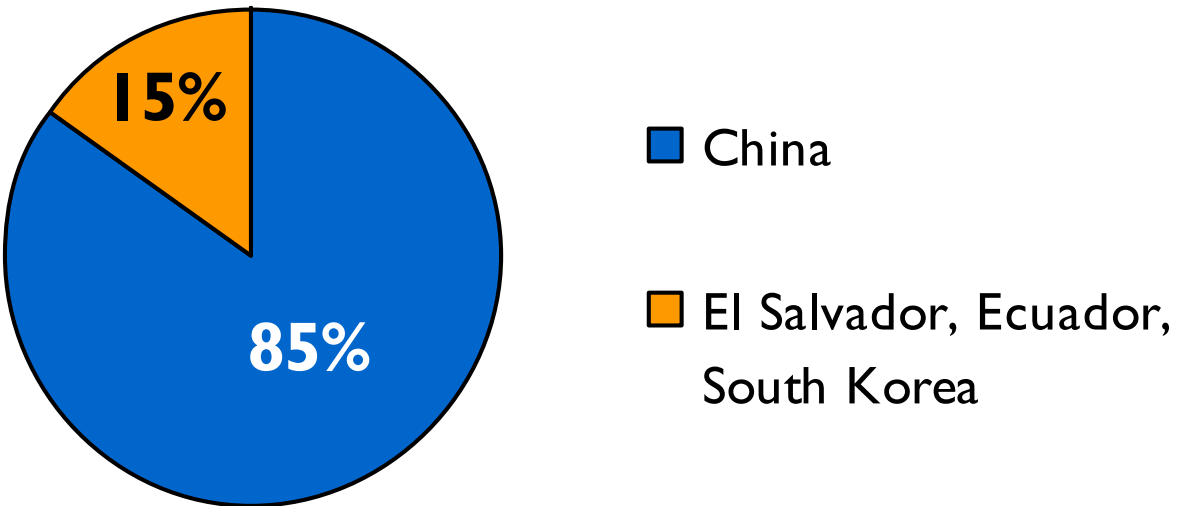
## Purpose

With the approval of a new 12 week INH/Rifapentine regimen in December 2011, there was now another way to treat this group of patients in a way that could possibly increase treatment completion. The Bethlehem Health Bureau (BHB) sought to evaluate issues around treatment completion for this population by offering the 12-week regimen as a treatment option.

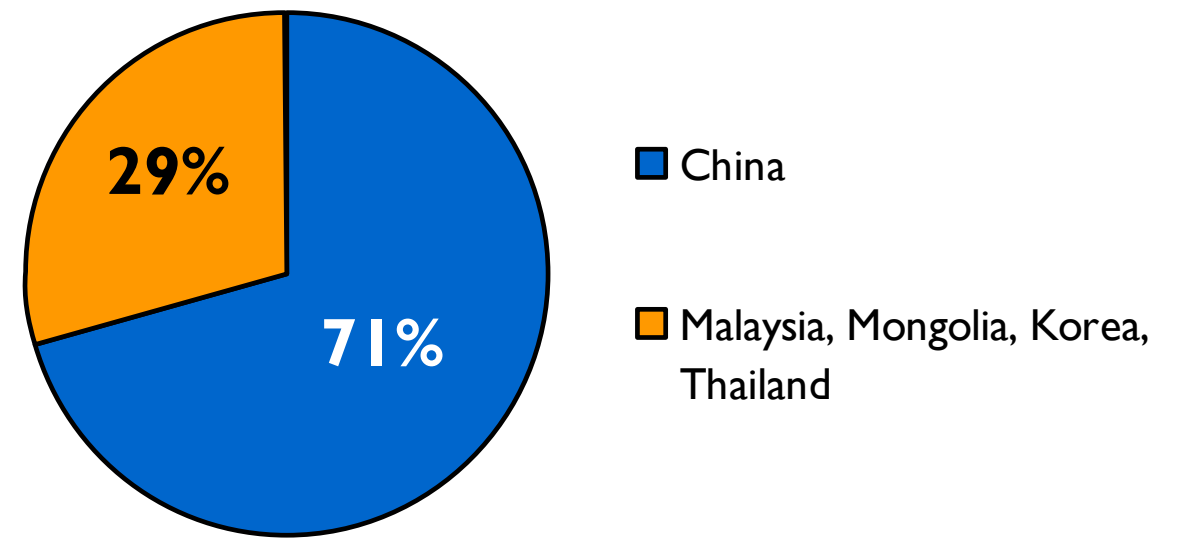
## Demographics

In fall 2012, 85% (17 out of 20) of these students were from China and 15% (3 students) were from other countries – El Salvador, Ecuador and South Korea.

### Country of Birth, Fall 2012



### Country of Birth, Fall 2011



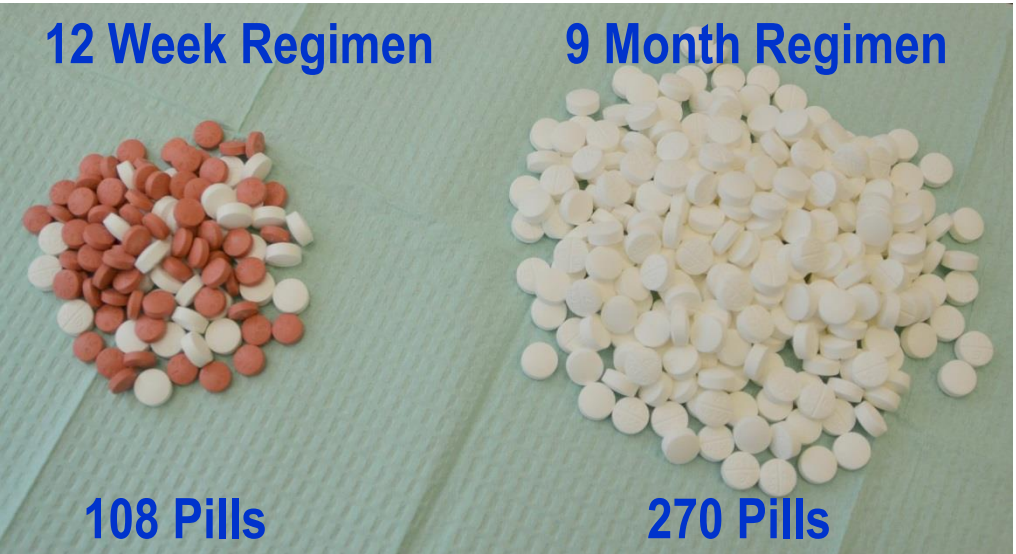
## Methods

A meeting was held with representatives from Pennsylvania Department of Health (PA DOH), BHB and LU Health and Wellness Center staff to discuss using the new LTBI regimen for students with a goal of treatment completion before students left campus for summer break.

- An electronic screening form was implemented to better identify students at risk, including international students (students who are not US citizens or US citizens who have lived abroad for six months or more).
- Nearly 1300 forms were reviewed in 2012.
- Students with a risk factor identified from the screening questionnaire are required to have an Interferon Gamma Release Assay (IGRA) test.
- Students with a positive IGRA test have a chest radiograph and complete evaluation.
- Students who do not complete their testing requirements are blocked from registration.
- All students diagnosed with LTBI are offered treatment. Students now have two options:
  - New 12 week regimen
  - Traditional 9 month regimen
- At the first appointment students were given:
  - First dose of INH/RPT treatment
  - HIV test

## Methods (continued)

- Contact information for BHB TB nurse
- Schedule of appointments through the end of treatment
- E-mail reminders were sent the day before the next appointment.
- Students' weight and blood pressure were assessed monthly at doses 1, 4, 8 and 12.
- Students were asked to complete an online survey through Survey Monkey after completion of the regimen to assess their knowledge, perception and attitudes towards this treatment regimen.



## Results

In fall 2012, 19 out of 20 (95%) students chose to be treated. Previously, in fall 2011 when the only treatment offered was 9 months of INH, 17 out of 44 (38.6%) students chose to be treated.

Out of the 19 students who began the regimen, 13 (68.4%) students successfully took all 12 doses of the medication, completing the regimen. Of the 6 who did not complete, 3 stopped taking the medication due to adverse effects of medication and 3 were lost to follow up.

Of the previous group of students who were only offered the 9 month INH regimen, 17 began treatment and 9 finished the full 9 months, for a completion rate of 52.9%.

	Fall 2011 (9 Months Only)	Fall 2012 (9 months or 12 weeks)
Total # of Students Referred	44 (includes indeterminate IGRA results)	20
# who accepted treatment	17 (38.6%)	19 (95%)
# who completed	9 (52.9%)	13 (68.4%)
Stopped due to adverse reactions	0	3 (15.8%)
Stopped medication after further consideration	2 (11.8%)	0
Lost to follow up	6 (35.3%)	3 (15.8%)

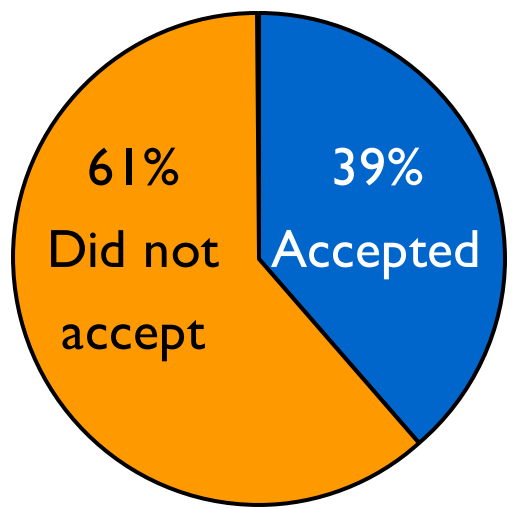
## Discussion

The new 12 week regimen has not only increased treatment completion from 52.9% to 68.4% but has also greatly increased the number of students who chose to initiate treatment from 38.6% to 95%.

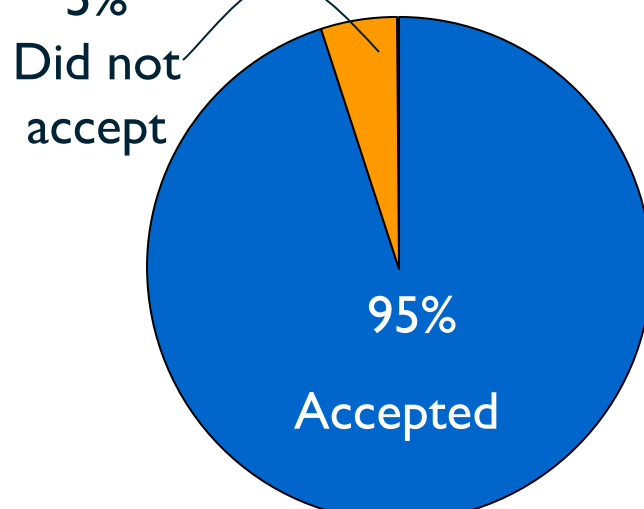
Requirements of directly observed therapy with the new regimen ensures students took each dose because each dose is observed by the nurse. Previously, the students were trusted to take each dose on their own and report when they missed a dose.

High student satisfaction rates – 63% were either satisfied or very satisfied – indicates the regimen was viewed favorably.

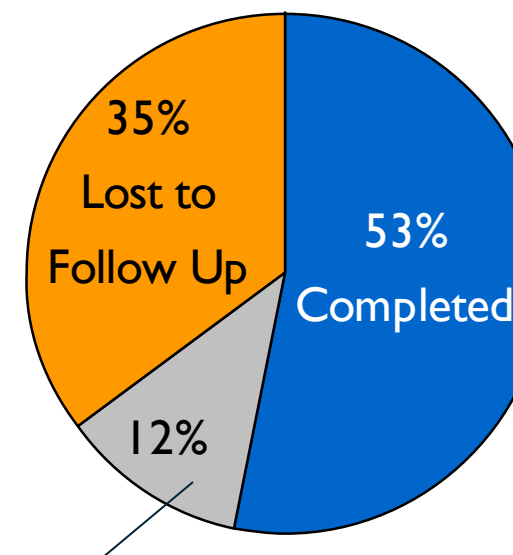
### Fall 2011 Treatment Acceptance



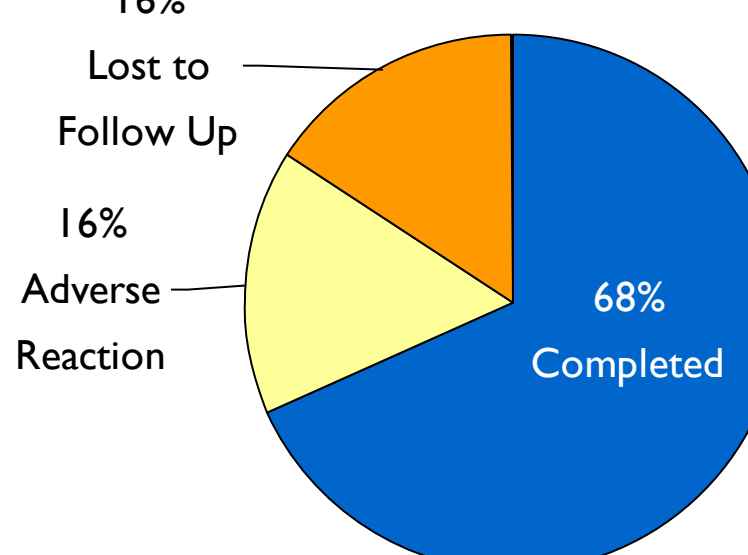
### Fall 2012 Treatment Acceptance



### Fall 2011 Treatment Completion



### Fall 2012 Treatment Completion



Stopped after further consideration

## Additional Comments

- In 2013 completion of electronic TB screening forms became mandatory for all incoming students, more than 1700 forms submitted and reviewed by nursing staff at LU.
- 432 at risk students required testing, just over 25% of entering students.
- Approximately 20% increase in testing of at risk students in 2013 as compared to 7% increase in 2012.
- Efforts continue in the treatment of LTBI with 100% acceptance of new medication regimen and 87% treatment completion in fall 2014.
- In addition, during fall 2014 orientation more than 100 international students were vaccinated with Tdap, as recommended to prevent the spread of pertussis.