A Story of Tuberculosis in Contra Costa County

Mario was 18 years old in 1938 when he was diagnosed with tuberculosis (TB). His illness was discovered during a school health screening at his high school in Martinez. At that time, one in nine adults died of TB and there were no medications to treat it. Mario was sent to Alum Rock sanatorium in San Jose. He was put on bed rest (he was only allowed to get up to go to the bathroom), required to eat a large amount of healthy food daily, and had air pumped into his chest cavity to collapse the part of his lung that was most affected by the TB infection. When he was sent home two months later, he continued on a strict regimen of diet and rest. He went to his doctor regularly to make sure his lung remained collapsed for the next 4 years, though he was able to return to school in the fall of 1939.

Mario continued to report to the Contra Costa County Health Department for yearly chest x-rays until 1977 when he was 57 years old. If Mario contracted TB today, he would be one of only 40 cases in the county. The rate of people who get TB in California has decreased 24 fold since 1938. Mario would take 6-9 months of medications for his TB in his community instead of having to leave his family and suffer a painful procedure far from home. He would have to stay home from school for 2-3 weeks instead of 11/2 years. Due to the hard work of scientists, healthcare professionals, and the public health workforce, in the past 100 years, TB has gone from a terrifying disease that was the number one cause of death and disability in the US, to an illness that is treatable and curable. We are lucky here in Contra Costa County to have access to the benefits of TB care and prevention that are still not available in many parts of the world today.

Public Health Department Role in Managing Tuberculosis

The Contra Costa Public Health Department TB Control Program is responsible for protecting the health of both individuals and our community. We are charged with investigating persons with known or suspected TB disease as well as persons exposed to TB to ensure successful TB treatment and to prevent the spread of TB in our community. The team of Public Health Nurses (PHN) and Disease Intervention Technicians monitor each person closely to ensure those with TB disease receive effective treatment, and those exposed to TB disease or are new Americans from TB-endemic countries (B-Immigrants) are located and receive prompt evaluation and treatment services. This is accomplished by intensive case management, thorough contact investigations and daily home visits to provide Directly Observed Therapy (DOT).

TB in Contra Costa County during the COVID-19 Pandemic

- TB cases were down 33% in 2020, likely due to underdiagnosis.
- Similar trends were seen statewide and nationally.
- The number of contacts to pulmonary TB patients completing evaluation also decreased.
- Patients were likely not seeking care for symptoms or exposures.

Remember, THINK TB to FIND TB!
Consider TB disease in patients with clinical and radiological features compatible with both TB and COVID-19.

During the first COVID-19 wave (April to September) there was a significant decrease in reported cases.
- Delayed diagnosis leads to more advanced disease and spread in our community.
- We must stay vigilant during the COVID-19 pandemic and not let TB go undiagnosed.
And, remember to screen and test for Latent Tuberculosis Infection (LTBI)

- Screen and test all persons with risk factors [https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/TB-Risk-Assessment.aspx](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/TB-Risk-Assessment.aspx)
- LTBI should be treated regardless of age or country of birth
- Always consider LTBI treatment in the elderly. We are living longer with a higher quality of life. It is easier to treat LTBI in the elderly than it is to treat active TB disease
- Short-course LTBI treatment regimens result in higher completion rates [https://www.cdc.gov/mmwr/volumes/69/rr/rr6901a1.htm?__cid=rr6901a1_w](https://www.cdc.gov/mmwr/volumes/69/rr/rr6901a1.htm?_cid=rr6901a1_w)

Patients are most likely to complete short-course treatment for LTBI:

**3HP and 4R are the *preferred* regimens**

### INH+rifapentine (3HP)

- Once-weekly isoniazid (INH) and rifapentine for 12 weeks
- Recommended for all patients ≥ 2 years old except:
  - People taking medications with significant drug-drug interactions with rifapentine (e.g. some antiretrovirals, diabetes, cardiac and seizure medications)
  - Contacts to persons with INH or rifampin resistant TB
  - Pregnant women or women planning to become pregnant during treatment
  - Persons who have had prior adverse events or hypersensitivity to INH or rifampin
- Treatment completion is highest with directly observed therapy (DOT) although self-administered therapy (SAT) is an approved option.

#### Possible Side Effects

- Hypersensitivity reaction
- Rash
- Hepatotoxicity (rare)
- Thrombocytopenia (rare)

#### Dosing of INH/rifapentine:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Maximum dose</th>
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<tbody>
<tr>
<td>INH</td>
<td>15 mg/kg in patients ≥ 12 years</td>
<td>900 mg</td>
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<tr>
<td></td>
<td>25 mg/kg in patients 2-11 years</td>
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<tr>
<td>Rifapentine</td>
<td>10.0 – 14.0 kg = 300 mg</td>
<td>900 mg</td>
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<td>14.1 – 25.0 kg = 450 mg</td>
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<td></td>
<td>25.1 – 32.0 kg = 600 mg</td>
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<td>32.1 – 49.9 kg = 750 mg</td>
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</tbody>
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Rifapentine and INH tablets can be crushed and administered with semi-solid food for patients unable to swallow pills.

* 6-9 mos of daily isoniazid and 3 mos of daily isoniazid and rifampin are approved regimens but with low-moderate levels of evidence.

### Rifampin (4R)

- Rifampin daily for 4 months
- Recommended for persons of any age except:
  - People taking medications with significant drug-drug interactions with rifampin (e.g. some antiretrovirals, and some diabetes, cardiac and seizure medications)
  - People presumed infected with rifampin resistant TB
  - People who have had prior adverse events or hypersensitivity to rifamycins

#### Possible Side Effects

- Orange staining of body fluids
- Rash and pruritis
- GI upset
- Rarely:
  - Hepatotoxicity
  - Hematologic abnormalities, thrombocytopenia

#### Dosing of Rifampin

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
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</thead>
</table>
| Rifampin | Adults
|         | 10mg/kg up to 600mg |
|        | Children
|        | 10-15mg/kg up to 600mg |

Rifampin capsules can be opened and the contents mixed with semi-solid food for patients who are unable to swallow pills.

### For More Information:

Contra Costa Health Services Tuberculosis Control Program
925-313-6740

Centers for Disease Control and Prevention Division of Tuberculosis Elimination

California Department of Public Health Tuberculosis Control Branch (TBCB)
[https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/TBCB.aspx](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/TBCB.aspx)

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