



# Diabetes Age Effects

*Blanca I. Restrepo, PhD*

*March 25, 2025*

World TB Day • March 25, 2025 • Webcast



# Blanca I. Restrepo, PhD

Has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this activity

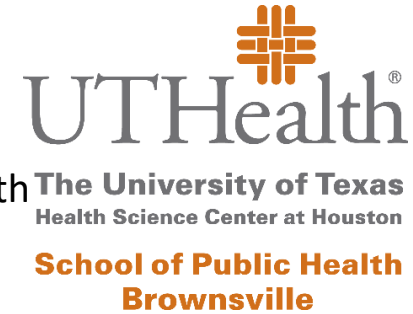


# Diabetes age effects Tuberculosis in Hispanic older adults

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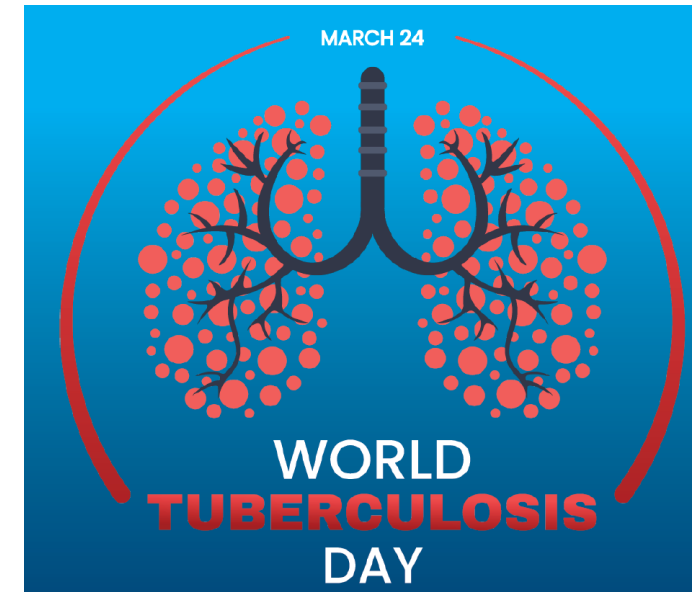
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**World Tuberculosis Day**  
**Heartland National TB Center and Texas Department of State and Health Services**  
**Live Webcast**  
**Monday March 24, 2025**

# Why study TB in older adults?

- **The global population is aging**
  - **2015:** 8.5%  $\geq$  65y
  - **2050:** 17%  $\geq$  65y  $\curvearrowright$  2x
- **Old age is a risk factor for:**
  - **Active TB disease**
  - **Death from TB (6 to 8-fold)**
- **Knowledge gaps**
  - **Older adults** are neglected and understudied
  - Most studies in Asian populations

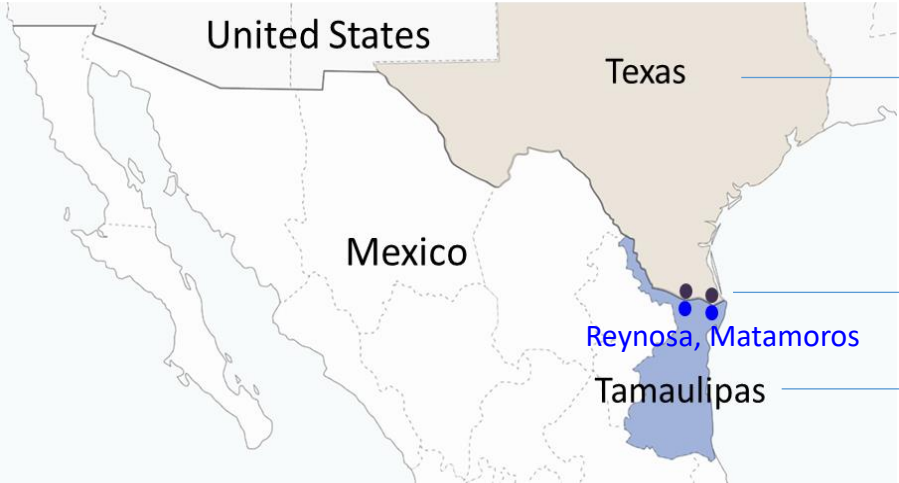


# Study design and Hypothesis

## Age groups:

<b>Young adults (YA)</b> 18-44 yrs	<b>Middle age adults (MAA)</b> 45-64 yrs	<b>vs.</b>	<b>Older adults (OLD)</b> 64+ yrs
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## Study site and populations:



**Texas TB surveillance.**  
TB → end of treatment or death.  
2008-2020

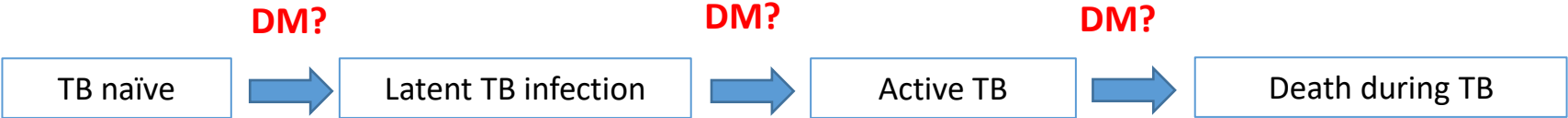


**Border Research cohort.** Community → TB contacts → new TB

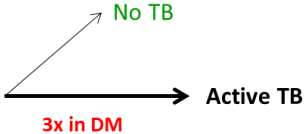
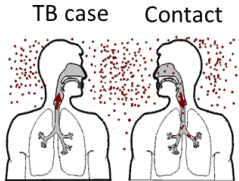
**Tamaulipas TB surveillance.**  
TB → end of treatment or death.  
2006-2013



## Hypothesis:

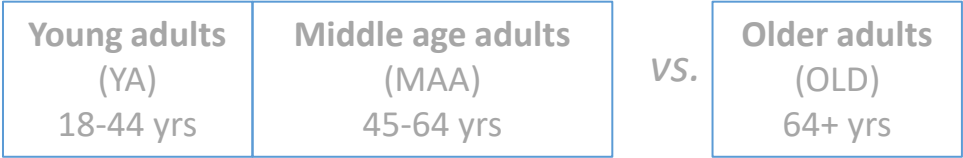


**>50% DM**



# Study design and Hypothesis

## Age groups:



## Study site and populations:



**Texas TB surveillance.**  
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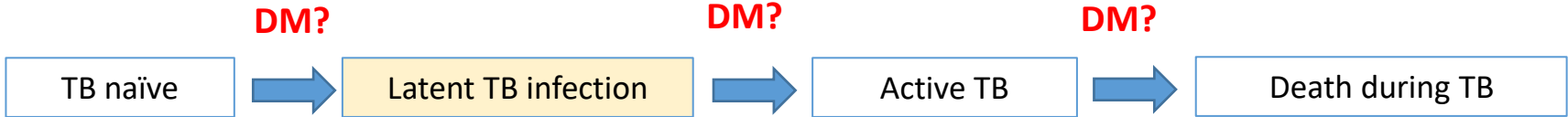


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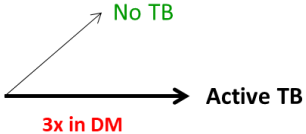
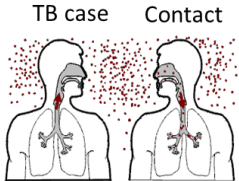
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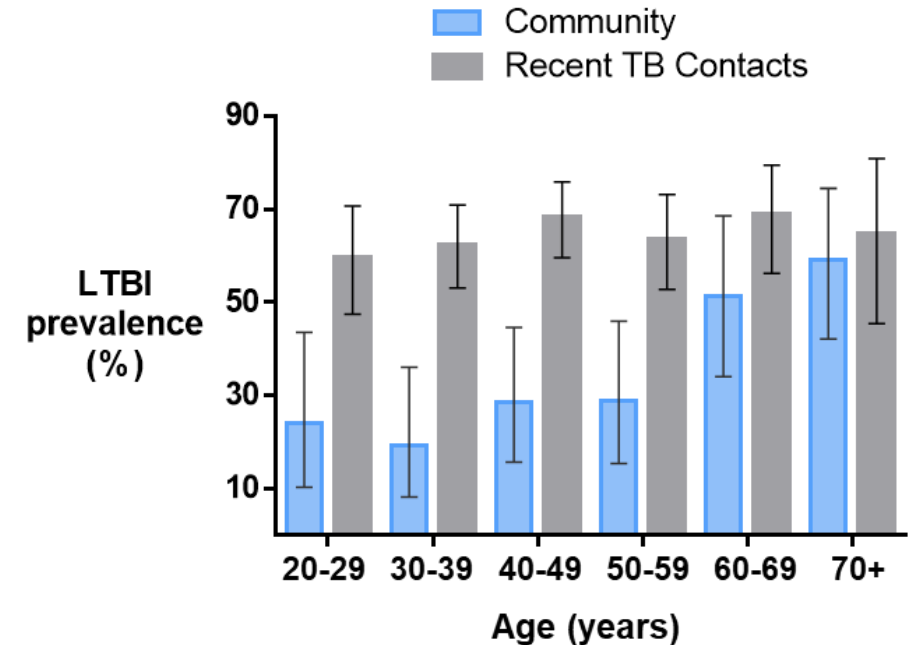
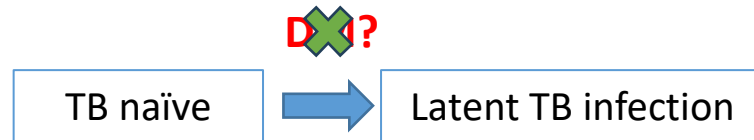
>50% DM



# Latent TB infection in older adults

## Findings:

- Prevalence of latent TB Infection  $\nearrow$  with age in community controls
  - Clinical implications:
  - LTBI in OLD **Recent TB contacts**: High risk of progression to TB!
  - LTBI in OLD **Community controls**: More resistant to TB?
- Diabetes a not a risk factor for latent TB Infection in older adults



**Latent TB infection:**  
Quantiferon.Gold.IT-positive or T.Spot-TB positive



Latent TB infection

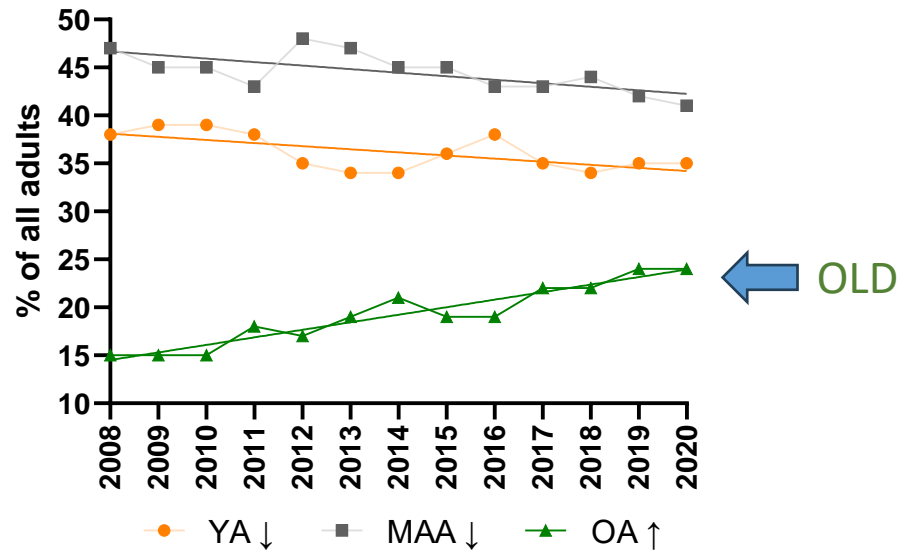


Active TB in older adults

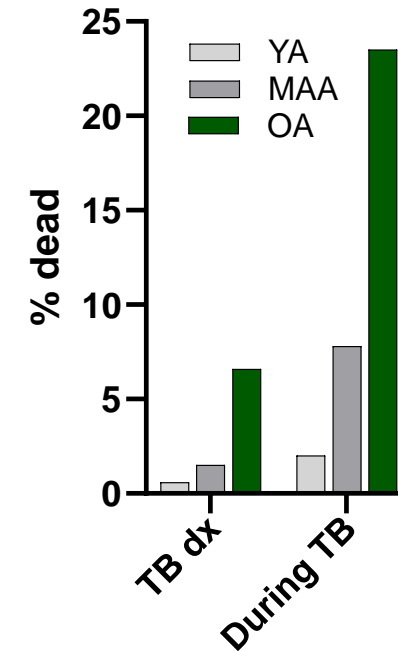
Trends in Texas TB surveillance dataset

2008→2020:

Significant ↑ proportion of OLD-TB over time



↑ proportion of OLD-TB die during TB



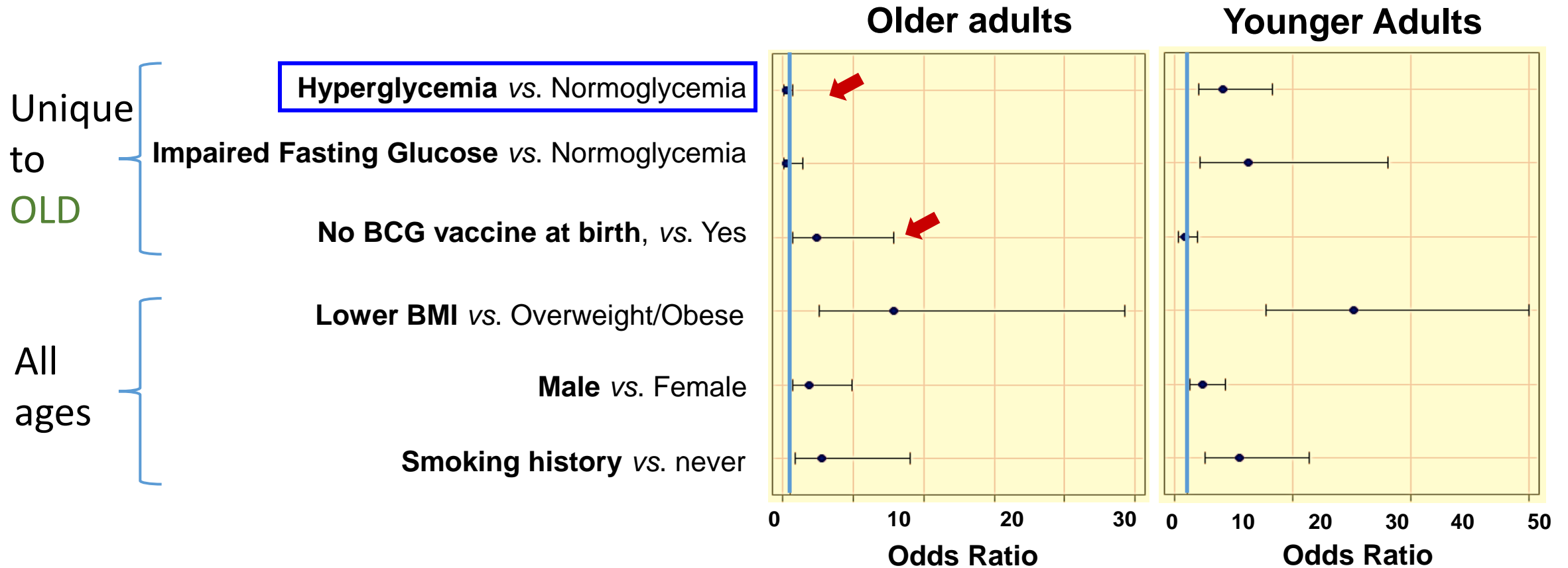
Conclusion:

- Importance of preventing TB in older adults
- Need for primary healthcare workers to “think TB” in older adults
  - ↓ CXR cavities
  - Unusual sociodemographics



# What host factors are associated with **active TB** in older adults?

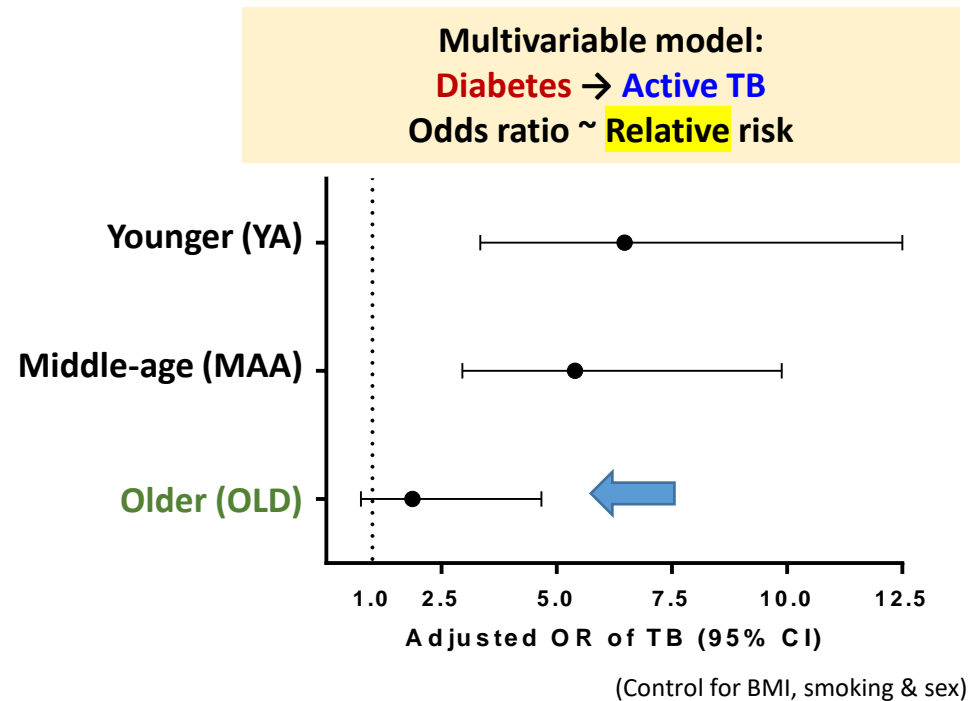
Border research cohort



If Odds Ratio  $\geq$  1.0 = Risk for TB

# Confirmation: DM x Age → TB

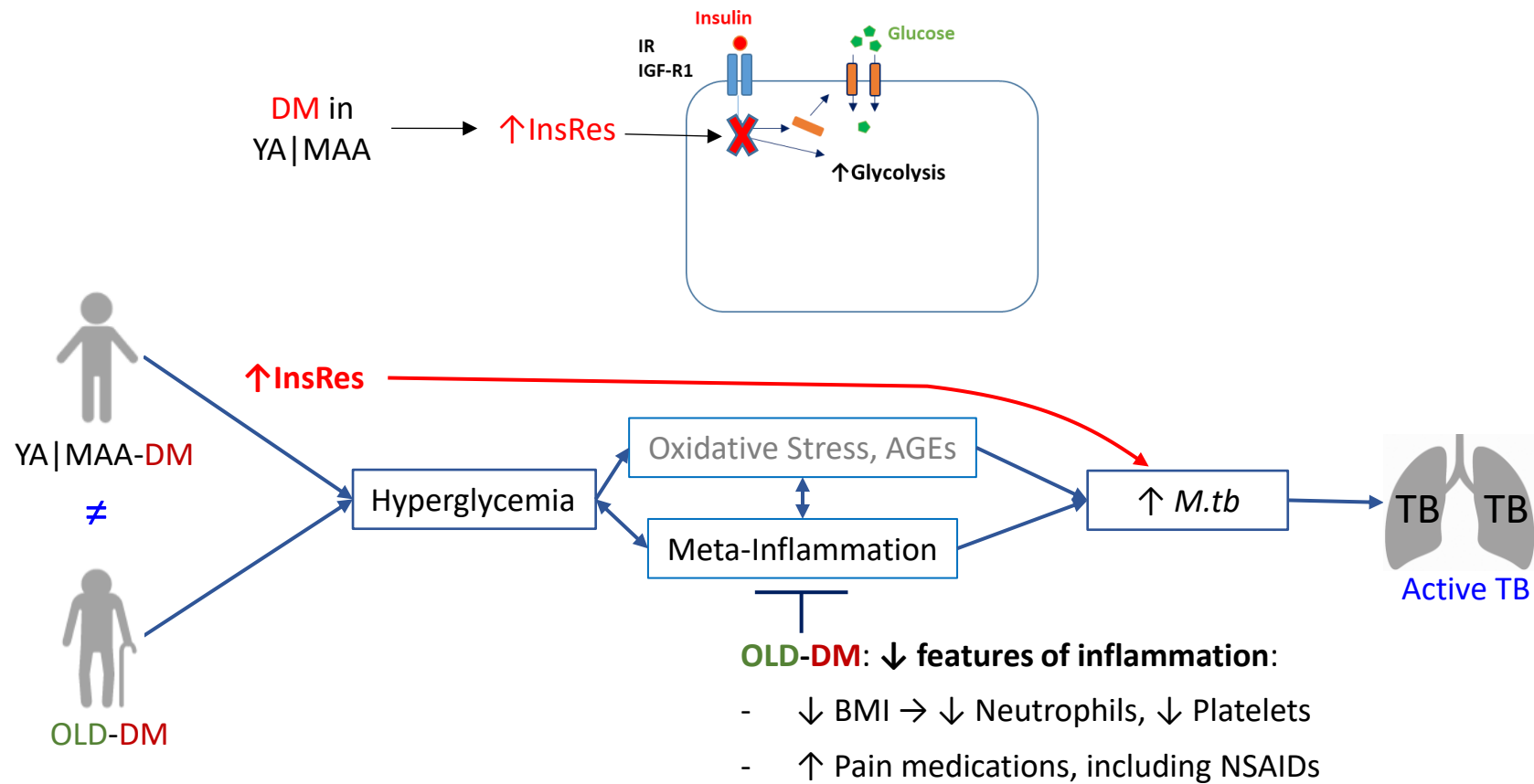
## Border research cohort



## Conclusion:

Confirm TB-DM wanes with older age

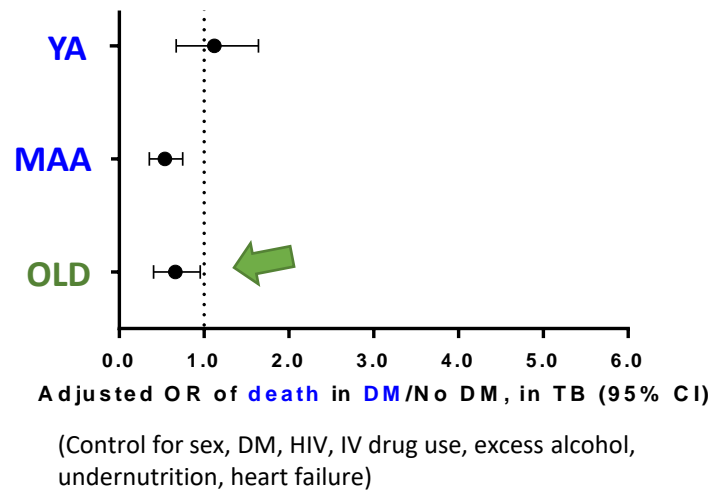
# Difference between YA-DM vs OLD-DM → active TB



# TB in old age: Diabetes (?) → Death during TB

Tamaulipas

Model: Diabetes → Death in TB, by Age

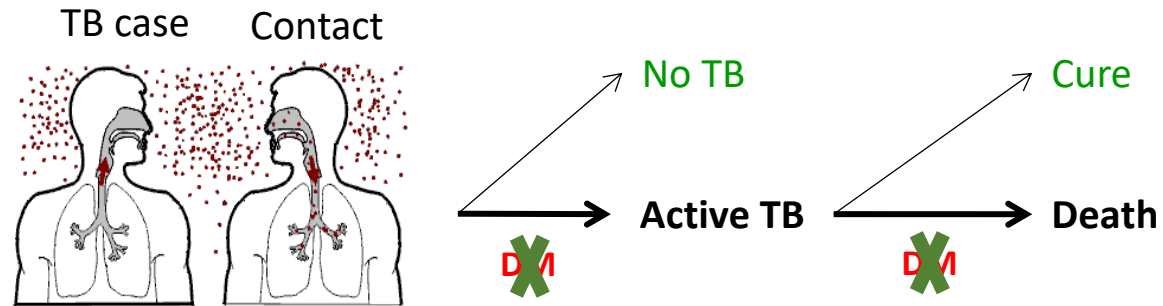


## Conclusion:

- DM does not increase odds of death in any age group ... In old age, DM is protective

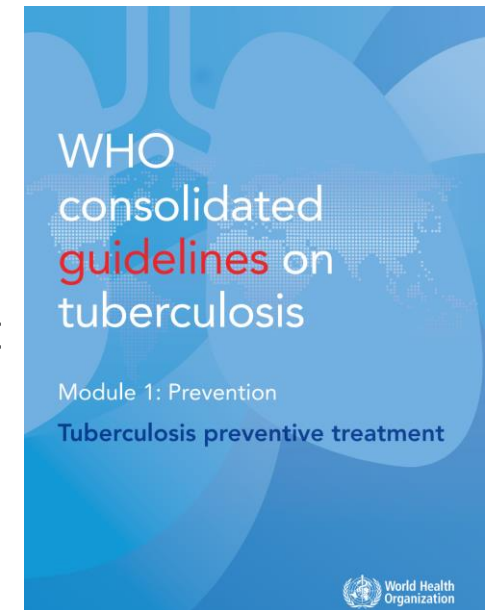
# Summary: TB x OLD age

- Impact of **DM** on TB is different in **Older adults** vs Younger adults



- **Older adults:**

- **Deserve to be studied** → Improved clinical care
- **Deserve to be added to WHO's priority list** for LTBI testing and treatment
- **Primary care healthcare workers:** Awareness of TB in older adults



# Acknowledgments

## Restrepo field and lab team:

- Past: **Belinda Medrano**
- Current: **Texas:** Yoscelina Martinez-Lopez, Aquiles R. Ocaña, Doris Ayala, J. Felipe Joya, Mia Aguirre, Aurelio Garcia, Jaime Saveron; **Reynosa:** Génesis Aguillón-Durán, Abi Aguillón-Durán, Odalis Loredó-Loredó, Selena Zavala, Wendy de la Cruz, Jorge E. Pérez; **Matamoros:** Ilse E. Domínguez, Priscila Dominguez, Carolina Rodriguez

## Collaborators:

### Texas Biomedical Research Institute, San Antonio, TX

- **Drs. Joanne Turner, Larry Schlesinger, Jordi Torrelles.** Scientists: **Julia Scordo,**

### Houston Methodist Research Institute, Houston, TX

- Drs. C. Jagannath

### UTHealth Houston, School of Public Health

- Dr. H. Shelton Brown. Student: Robert McGowan

### UT Rio Grande Valley (UTRGV), Edinburg, TX

- Drs. Sarah Williams-Blangero, Juan C. Lopez-Alvarenga, Bassent Abdelbary, John Thomas. Student: Xavier Rios,

### UAT Reynosa-Aztlán, Reynosa, Mexico: Esperanza Garcia-Oropesa

### Other collaborators

- Dr. L. Lu (UT Southwestern); K. Ronacher, L. Kleynhans (U. Queensland, Australia); M. Yotebieng (Albert Einstein SOM, NY), Dr. Adrián Rendón (U Autónoma de Nuevo León, Monterrey, México)

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- Matamoros SSA: **Dr. Raúl Loera-Salazar, Dr. Moncerrato Garcia-Viveros,** and staff
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- DIF Reynosa: Ing. Gabriela M. Rosas-Blanco and staff
- ICEST: M.Sc. Luis R. Ramirez-Garcia; Dr. Alberto Salazar

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#### Cameron County Health Department

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