

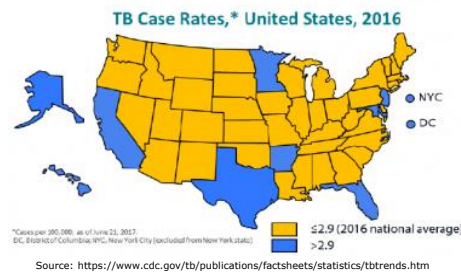
# Video Directly Observed Therapy (VDOT)- A Useful Approach to Tuberculosis (TB) Treatment in a Natural Disaster

Harris County Public Health – Tuberculosis Elimination Program

Alexis Medrano, MPH; Vishaldeep Sekhon, MPH; Dana Wiltz-Beckham, DVM, MPH, MBA; Kimberly Fields, RN, MSN, FNP; Jennifer LaRue, LVN; Denese Carrera, MA; Mary Scott, RN, BSN; Brian C. Reed, MD; Les Becker, MBA; Umair A. Shah, MD, MPH

## Tuberculosis in USA and Texas

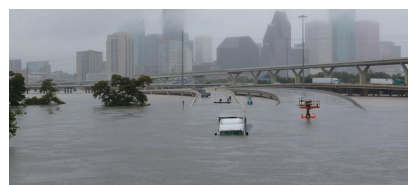
- Tuberculosis (TB) is an infectious disease, which spreads from person-to-person through airborne transmission of *Mycobacterium tuberculosis*.
- The nationwide incidence of TB was 2.9 cases per 100,000 persons in 2016<sup>1</sup>.
- The incidence of TB cases in Texas was 4.5 per 100,000 persons<sup>1</sup>.
- In Harris County jurisdiction (excluding City of Houston), the incidence of TB was 4.4 per 100,000 persons.
- Harris County Public Health (HCPH) jurisdiction covers over 1778 square miles and ranks the third most populous county in the nation.
- HCPH is responsible for TB control and surveillance in the county.



Source: [https://www.cdc.gov/tb/modules/worldtbdays/EndTB\\_Logo\\_color.jpg](https://www.cdc.gov/tb/modules/worldtbdays/EndTB_Logo_color.jpg)

## Impact of Hurricane Harvey

Hurricane Harvey made landfall in Harris County on August 26, 2017. The Category 4 hurricane caused heavy rainfalls and flooding, bringing down an estimated 1 trillion gallons of water onto Harris County throughout a four day period<sup>2</sup>. Tuberculosis treatment and services were impaired for a period of two weeks due to impassable/closed roads and road hazards.



Source: <https://www.cnbc.com/2017/08/28/the-stunning-images-from-record-setting-flooding-in-houston-texas.html>

## Video Directly Observed Therapy (VDOT)

- The standard of care for TB patients is Directly Observed Therapy (DOT).
- HCPH implemented Video Directly Observed Therapy (VDOT) in 2014 as an ancillary aid for TB treatment.
- VDOT is an asynchronous smartphone-based technology that allows patients to remotely record medication doses and submit videos on a Health Insurance Portability and Accountability Act (HIPAA) compliant platform.

### Benefits of VDOT

- Better medication adherence
- Time and cost-savings
- Convenient for patient and staff
- Allows patients autonomy and flexibility

### Cons of VDOT

- Not reliable with patients who are likely to have poor DOT adherence
- Smartphone-based technology required

## VDOT during Hurricane Harvey

- On August 26, 2017, 61 patients were on VDOT and 47 patients were on DOT for treatment of active TB disease or TB Infection (TBI).
- This includes patients taking TB medication daily, once a week, biweekly, or three times a week.
- During Hurricane Harvey, patients were instructed to continue taking their TB medication.
- Tuberculosis Elimination Program outreach staff initially delivered a month's supply of medication to VDOT patients and a week's supply to DOT patients prior to Hurricane Harvey.
- All 47 DOT patients were instructed to self-medicate due to outreach staff being unable to travel to the patient during the hurricane.
- All 61 VDOT patients were instructed to continue taking their medication and submit videos to the HIPAA compliant platform.
- TB staff reviewed VDOT videos daily in a remote location.

## Results

- 97% (59 out of 61) of VDOT patients had no treatment interruptions during Hurricane Harvey.
- Two patients with treatment interruptions resumed after 2 and 12 days, respectively.
- The 47 DOT patients were required to self-medicate, prolonging treatment for an average of 16 days.

## Conclusion

Hurricane Harvey marks the first time HCPH has used VDOT in a natural disaster of this magnitude. VDOT proved to be successful for the continuation of TB treatment due to its flexible, asynchronous and remote nature.

## Acknowledgments

We would like to thank the Tuberculosis Elimination Program staff and outreach workers for all their dedication and hard work.

## References

1. Centers for Disease Control and Prevention (CDC). Data and Statistics, Retrieved from: <https://www.cdc.gov/tb/statistics/default.htm>
2. Harris County Flood Control District. Hurricane Harvey. Retrieved from: <https://www.hcfdc.org/hurricane-harvey/>