

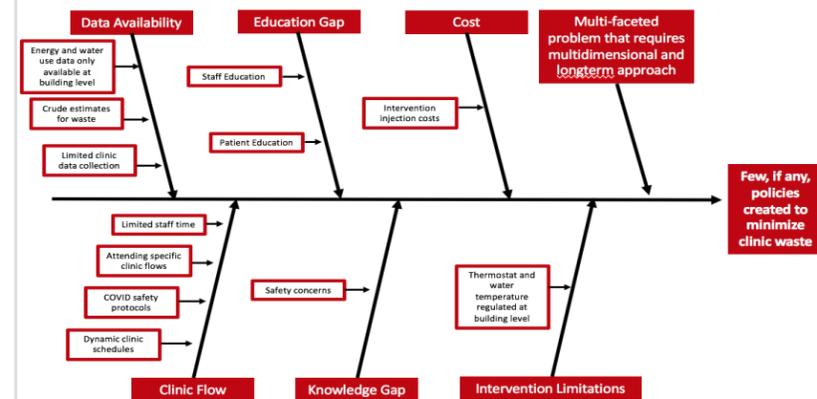
## Problem Statement/Background

The World Health Organization has declared climate change to be "the greatest threat to global health of the 21st century." Pollution associated with healthcare results in the loss of 405,000-470,000 disability-adjusted-life-years annually in the United States. The healthcare system contributes 10% of carbon emissions and 9% of harmful non-greenhouse air pollutants in the United States.

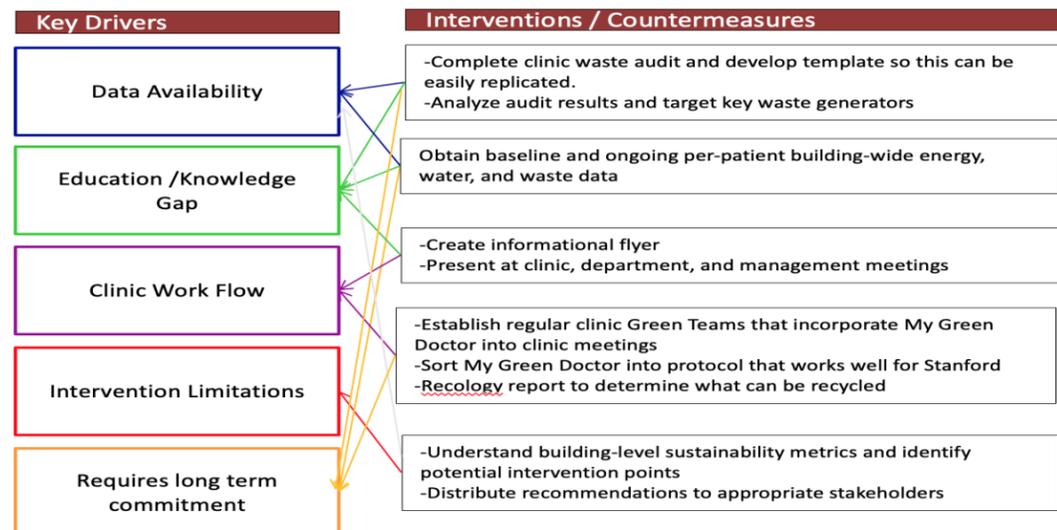
## Target State: SMART Goal

"Our SMART goal is to reduce the amount of per-patient clinical and administrative waste in selected Stanford Physical Medicine and Rehabilitation (PM&R) and Orthopedic outpatient clinics by 30% by May 2021 and to create a template for implementing these waste-reduction strategies that can be adopted by other clinics."

## Root cause Analysis

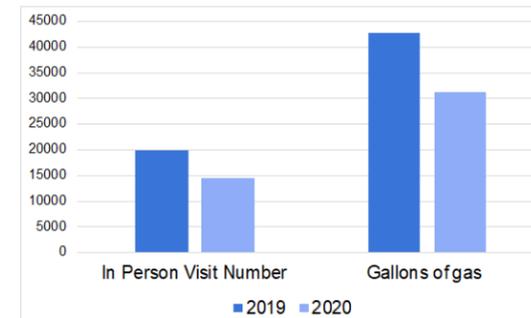


## Key Drivers / Interventions / Countermeasures



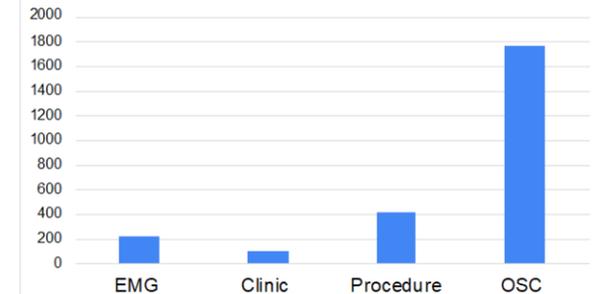
## Results of Waste Audit

**Gas Used for Roundtrip Transportation to Patient Visits in 2020**



**Figure 1.** Televisits in 2020 saved an estimated 11,000+ gallons of gasoline compared to 2019.

**Mean Weight in Grams by Visit Type 2020**

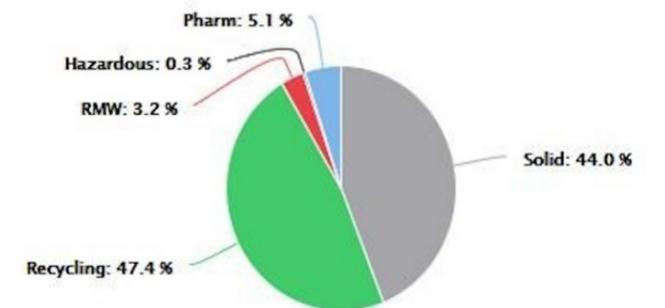


**Figure 2.** The OSC produced by far the most waste per patient visit, up to 6x the waste of other procedure visits.



**Figure 3:** Sample of waste produced by different sterile injection techniques. Method B produces twice the waste.

**Total Waste Summary for Redwood City Outpatient Center 2020**



**Figure 4.** 129 tons of solid waste cost \$97,500, while 139 tons of non-clinical recycling cost \$13,700 during the year 2020 at the RWC outpatient center. Courtesy of Key Green Solutions.

## Key Learning

A waste audit of the PM&R Sports and Spine clinics revealed that Outpatient Surgical Center (OSC) visits produced by far the most waste, despite representing the lowest number of patient visits. In fact, an OSC visit creates up to 6x the waste of a procedure visit in clinic. Different clinic procedure techniques produce dramatically different waste patterns. By using individual components instead of kits for procedures, the PM&R Sports and Spine clinics could save an estimated 1.17 tons of waste from the landfill annually. Due to a reluctance of recycling companies to accept items that appear clinical, none of the clinic or OSC waste is recycled. Of non-clinical waste that is recycled, recycling costs 7x less than solid waste disposal. When looking at patient transportation to visits, an estimated 5,000+ video visits in 2020 saved an estimated 270,000+ driving miles, equating to approximately 11,000+ gallons of gasoline. That is enough miles to drive around the ENTIRE Earth 11 times.

Next steps include 1) additional educational campaigns to providers, clinic staff, and building stakeholders, 2) assessing if recycling can be implemented in select clinic areas, 3) establishing green teams within clinics, and 4) expanding to other departments.