



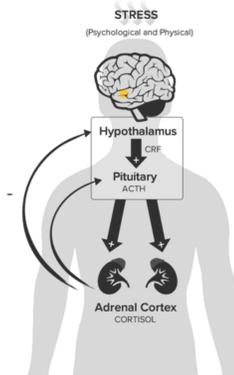
## BACKGROUND

### Transgender patients and minority stress:

Transgender (trans) patients experience poor healthcare access and severe discrimination. Minority stress is increasingly implicated as a contributor to cardiovascular disease; “dose-response” associations are seen with exposure to specific, interrelated stressors such as workplace harassment. Ability to control public/third-party knowledge of transgender status, threat perception and hypervigilance in public spaces, and experiences of harassment and violence are well-characterized social determinants of health in trans people.

### The White Coat Syndrome (WCS)

WCS describes elevated office blood pressure associated with anxiety and normal average pressures in daily life. WCS is associated with increased cardiovascular risk, but it remains unclear how WCS causes vs. reflects this risk in individuals. Mechanistic explorations of WCS generally focus on the role of autonomic and inflammatory signaling in response to generic stressors.



Source: Integrative Therapeutics

### Public Spaces and Clinic Workflow

The minority stress model may help explain heterogeneity in this research by describing how stress events can be provoked by and contribute to broader feedback mechanisms (cognitive, emotional, behavioral, biochemical) in different minority populations. Waiting in a mixed public setting may foreseeably expose our TG patients to stress of this nature. We do not propose any clinic implement a policy of selectively rooming transgender or and/or minority patients, as this would be impractical and stigmatizing. A PDSA cycle that removes individual components of the patient experience, however, might exert a dose-dependent effect on recorded vitals. This would identify the waiting experience as an unrecognized source of minority stress to target future QI projects and potentially suggest the value of this approach in detecting QI “blind spots.”

## RESEARCH QUESTION

Will rooming transgender patients ASAP upon check-in result in relative decreases in measured heart rate and blood pressure?

## METHODS

Project developed in consultation with the clinic PDSA committee and Institutional Review Board (IRB) which verified HIPAA-exempt status. Patients were passively enrolled from a resident outpatient practice with a high volume of trans patients.

**Inclusion:** Established trans patients ages 17-45 visiting during study period.

**Exclusion:** Beta-blocker medications or <2 previous recorded vitals.

Enrolled patients were roomed as quickly as possible after check-in, without regard to appointment time. Vitals were recorded just prior to the start of our appointment. Time of arrival, rooming, and vitals were recorded. Recent average vitals were determined using 2-3 past records.

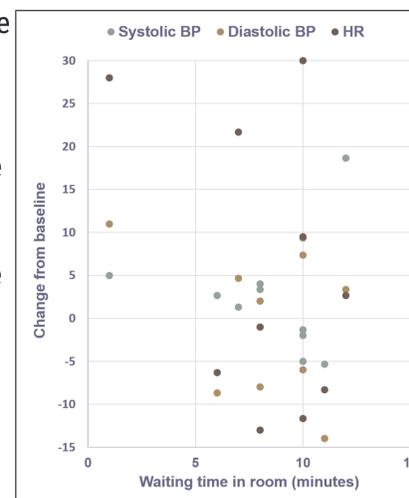
**Primary Endpoint:** difference between experimental and recent average HR/BP as a function of time waiting in exam room.

**Process measures:** eligible patient volume, frequency with which patients arrived early and staff/exam room were available, narrative observations. Our initial study plan called for enrollment of 12 transgender patients and 12+ cisgender patients for at least one visit in which they were roomed early over three months of data acquisition.

## RESULTS

We acquired data on 10 trans patients across 9 clinic half-day shifts. Sample included 4 patients on exogenous testosterone replacement, 4 on estrogen, and 2 (one nonbinary, one male) patients not currently receiving HRT. Average patient age was 24, ranging from 19-30 years. Average calculated baseline blood pressures and heart rates were **120/76 (SD±12/10)** and **84.1 (SD±7)** respectively. Enrollment and data collection were severely restricted by unexpected staffing and programmatic constraints. The most unfortunate result was that patients faced unrecorded delays prior to formal “arrival” in the EHR, representing uncontrolled and arbitrary exposure to the waiting room environment under unexpected and stressful conditions. Planned collection of cisgender control patients and secondary study of comorbidities was unfeasible.

Fewer than expected patients were available with time before their appointments, and patients successfully enrolled and documented in the intervention **waited an average of eight minutes (SD±3)** before vitals were recorded. It is unclear that this is sufficient time to permit for measurable hemodynamic changes in this context, and the resulting data do not suggest a meaningful correlation (Figure.) **R<sup>2</sup> was <2** for change in HR, systolic, and diastolic BP vs wait time. One patient who was seen multiple times during the study window declined early rooming once, as the timing did not work for his partner’s appointment.



## CONCLUSIONS

Our study did not identify modification of rooming procedures as a feasible or effective intervention for improvement of patient experience or support relative vitals change as a reliable indicator of subtle stressors in trans patients. Unforeseen logistical and staffing/resource issues limited study efficiency, intervention “dose,” and recruitment. Prior data for “baseline” vitals was especially problematic, as patients who visited during study had relatively fewer prior visits and these records did not account for baseline variation in rooming.

## FUTURE IMPLICATIONS

This trial uncovered numerous unforeseen process barriers that cast doubt on the usefulness of a larger repeat trial. Advanced bioinformatics may allow for more convenient sampling of a larger set of rooming events through the EHR, and may represent a future avenue for the identification of useful biomarkers of stress and discrepant patient experiences.

## REFERENCES & ACKNOWLEDGMENTS

Many thanks to our wonderful staff for their invaluable support on this project, especially Crystal, Monica, Rinchen, Cheryl, and Krista, and to our research support staff, Olivia Pipitone and Paulina Kaiser.

Grant, J. M., Mottet, L. a, Tanis, J., Harrison, J., Herman, J. L., & Keisling, M. (2011). Injustice at Every Turn: A Report of the National Transgender Discrimination Survey. *Washington National Center for Transgender Equality and National Gay and Lesbian Task Force*, 25, 2011.

Reisner, S. L., White, J. M., Bradford, J. B., & Mimiaga, M. J. (2014). Transgender Health Disparities: Comparing Full Cohort and Nested Matched-Pair Study Designs in a Community Health Center. *LGBT Health*, 1(3), 177–184.

Frost, D. M., & Meyer, I. H. (2016). Minority stress and physical health among sexual minority individuals. *Journal of Behavioral Medicine*, 38(1), 1–8.

Känel, R. Von, & Koenen, K. (2018). Association of Sexual Harassment and Sexual Assault With Midlife Women’s Mental and Physical Health. *JAMA - Internal Medicine*, 152(13), 1–6.

Kosenko, K., Rintamaki, L., Raney, S., & Maness, K. (2013). Transgender Patient Perceptions of Stigma in Health Care Contexts. *Medical Care*, 51(9), 819–822.

Clements-nolle, K, Marx, R, Katz, M. (2006). Attempted Suicide Among Transgender Persons. *Journal of Homosexuality*, 51(3), 53–69.

Banegas, J. R., Ruilope, L. M., de la Sierra, A., Vinyoles, E., Gorostidi, M., de la Cruz, J. J., ... Williams, B. (2018). Relationship between Clinic and Ambulatory Blood-Pressure Measurements and Mortality. *New England Journal of Medicine*, 378(16), 1509–1520.

Lagraauw, H. M., Kuiper, J., & Bot, I. (2015). Brain , Behavior , and Immunity Acute and chronic psychological stress as risk factors for cardiovascular disease : Insights gained from epidemiological , clinical and experimental studies. *Brain Behavior and Immunity*, 50, 18–30. <https://doi.org/10.1016/j.bbi.2015.08.007>

Bochud, M., Bovet, P., Vollenweider, P., Maillard, M., Paccaud, F., Wandeler, G., ... Burnier, M. (2009). Association Between White-Coat Effect and Blunted Dipping of Nocturnal Blood Pressure. *American Journal of Hypertension*, 22(10), 1054–1061.

Cobos, Briana, Haskard-zolnierok, Kelly, Howard, K. (2015). White coat hypertension : improving the patient – health care practitioner relationship. *Psychology Research and Behavior Management*, 8, 133–141.

Myers, M. G., Godwin, M., Dawes, M., Kiss, A., Tobe, S. W., & Kaczorowski, J. (2010). Measurement of Blood Pressure in the Office: Recognizing the Problem and Proposing the Solution. *Hypertension*, 55, 195–200.