Comparative Risks and Benefits of Gender Reassignment Therapies

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| **Project Name:**  Comparative Risks and Benefits of Gender Reassignment Therapies | |
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| **Principal Investigator institution:**  Emory University |  |
| **Funder** PCORI |  |
| **Funding Period:**  05/2013 – 04/2016 |  |
| **Abstract:**  The study included three components. The first component was a cohort study that collected data using electronic medical records (EMR) of transgender individuals enrolled in the participating Kaiser Permanente plans between 3 and 86 years of age at initial presentation. The second component was a cross-sectional survey of selected Kaiser Permanente cohort participants. The third component was a retrospective cohort study of transgender veterans. The Kaiser Permanente EMR cohort was used to examine incidence of acute cardiovascular events in relation to hormone therapy, prevalence of mental health problems and cancer incidence. The Kaiser Permanente survey component examined measures of quality of life by history and extent of gender affirmation. Most self-reported outcomes in the survey were ascertained using existing previously validated instruments. The VA EMR cohort was used to examine all-cause mortality and cancer incidence among transgender veterans. |  |
| **Grant Number:**  AD-12-11-4532 |  |
| **Participating Sites:**  Emory University Kaiser Permanente Georgia Kaiser Permanente Northern California Kaiser Permanente Southern California The Veterans Health Administration |  |
| **Investigators:** Michael Goodman Ashli Owen-Smith Dennis Tolsma Enid Hunkeler Virginia Quinn Douglas Roblin  Theresa Gillespie |  |
| **Major Goals:** The goals of this study were to assess morbidity among transgender people in general and after gender affirming treatments at Kaiser Permanente health plans in Georgia and Northern and Southern California and in the US Department of Veterans Affairs (VA) national health system |  |
| **Description of study sample:** The search of Kaiser Permanente and VA EMR data yielded two cohorts that collectively included 11,442 transgender people of all ages with known TM/TF status and over 200,000 age, race/ethnicity and site-matched referents (i.e., cisgender male and females used as comparison groups) selected from the same underlying populations. . |  |
| **Current Status:**   04/18: No-cost extension; data analysis. |  |
| **Study Registration:**  HSRP20143115 |  |
| **Publications:**  Collin L, Reisner SL, Tangpricha V, Goodman M[. Prevalence of Transgender Depends on the "Case" Definition: A Systematic Review](https://www.ncbi.nlm.nih.gov/pubmed/?term=Prevalence+of+Transgender+Depends+on+the+%22Case%22+Definition%3A+A+Systematic+Review). J Sex Med. 2016 Apr;13(4):613-26. doi: 10.1016/j.jsxm.2016.02.001. Epub 2016 Mar 25.  Holz LE, Goodman M. [Epidemiology of advanced prostate cancer: overview of known and less explored disparities in prostate cancer prognosis](https://www.ncbi.nlm.nih.gov/pubmed/?term=Epidemiology+of+Advanced+Prostate+Cancer%3A+Overview+of+Known+and+Less+Explored+Disparities+in+Prostate+Cancer+Prognosis). Curr Probl Cancer. 2015 Jan-Feb;39(1):11-6. doi: 10.1016/j.currproblcancer.2014.11.003. Epub 2014 Nov 26.  Reisner SL, Deutsch MB, Bhasin S, Bockting W, Brown GR, Feldman J, Garofalo R, Kreukels B, Radix A, Safer JD, Tangpricha V, TʼSjoen G, Goodman M. [Advancing methods for US transgender health research](https://www.ncbi.nlm.nih.gov/pubmed/?term=Advancing+methods+for+US+transgender+health+research). Curr Opin Endocrinol Diabetes Obes. 2016 Apr;23(2):198-207. doi: 10.1097/MED.0000000000000229.  Roblin D, Barzilay J, Tolsma D, Robinson B, Schild L, Cromwell L, Braun H, Nash R, Gerth J, Hunkeler E, Quinn VP, Tangpricha V, Goodman M.  [A novel method for estimating transgender status using electronic medical records](https://www.ncbi.nlm.nih.gov/pubmed/?term=A+novel+method+for+estimating+transgender+status+using+electronic+medical+records). [Ann Ep](https://www.ncbi.nlm.nih.gov/pubmed/?term=A+novel+method+for+estimating+transgender+status+using+electronic+medical+records)i[demiol.](https://www.ncbi.nlm.nih.gov/pubmed/?term=A+novel+method+for+estimating+transgender+status+using+electronic+medical+records) 2016 Mar;26(3):198-203. doi: 10.1016/j.annepidem.2016.01.004. Epub 2016 Feb 4.  Owen-Smith A, Sineath C, Sanchez T, Dea R, Giammattei S, Gillespie T, Helms M, Hunkeler E, Quinn V, Roblin D, Slovis J, Stephenson R, Sullivan P, Tangpricha V, Woodyatt C, Goodman M. [Perception of community tolerance and prevalence of depression among transgender persons](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5695724/). Journal of Gay & Lesbian Mental Health 2017 21(1) 64-76  Sineath C, Woodyatt C, Sanchez Y, Giammattei S, Gillespie T, Hunkeler E, Owen-Smith A, Quinn V, Roblin D, Stephenson R, Sullivan P, Tangpricha V, Goodman M. [Determinants of and barriers to hormonal and surgical treatment receipt among transgender people](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5012371/). Transgender Health 2016 1(1):129-136  Owen-Smith A, Woodyatt C, Sineath C, Hunkeler E, Barnwell L, Graham A, Goodman M. [Perceptions of barriers to and facilitators of participation in health research among transgender people](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5549538/). Transgender Health 2016 1(1): 187-196.  Braun H, Nash R, Tangpricha V, Brockman J, Ward K, Goodman M. Cancer in transgender people: Evidence and methodological considerations. Epidemiologic Reviews 2017 39(1):93-107  Silverberg M, Nash R, Becerra-Culqui T, Cromwell L, Getahun D, Hunkeler E, Lash T, Millman A, Quinn V, Robinson B, Roblin D, Slovis J, Tangpricha V, Goodman M. [Cohort study of cancer risk among insured transgender people](http://www.annalsofepidemiology.org/article/S1047-2797(17)30717-2/fulltext). Annals of Epidemiology 2017 27(8):499-501  Quinn V, Nash R, Hunkeler E, Contreras R, Cromwell L, Becerra-Culqui T, Getahun D, Giammattei S, Lash T, Millman A, Robinson B, Roblin D, Silverberg M, Slovis J, Tangpricha V, Tolsma D, Valentine C, Ward K, Winter S, Goodman M. [Cohort profile: study of transition, outcomes & gender (STRONG) to assess health status of transgender people](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5770907/). BMJ Open 2017 7(12):e018121  Owen-Smith A, Gerth J, Sineath C, Barzilay J, Becerra-Culqui T, Getahun D, Giammattei S, Hunkeler E, Lash T, Millman A, Nash R, Quinn V, Robinson B, Roblin D, Sanchez T, Silverberg M, Tangpricha V, Valentine C, Winter S, Woodyatt C, Goodman M. [Association between gender confirmation treatments and perceived gender congruence, body satisfaction and mental health in a cohort of transgender individuals](http://www.jsm.jsexmed.org/article/S1743-6095(18)30058-4/fulltext). Journal of Sexual Medicine 2018 [Epub ahead of print]  Nash R, Ward KC, Jemal A, Sandberg DE, Tangpricha V, Goodman M. [Frequency and distribution of primary site among gender minority cancer patients: An analysis of U.S. national surveillance data](https://www.sciencedirect.com/science/article/pii/S1877782118300730?via%3Dihub). Cancer Epidemiology. 2018 Mar 9;54:1-6. doi: 10.1016/j.canep.2018.02.008. [Epub ahead of print] |  |
| **Resources:**  MHRN SAS codes were used to characterize mental health outcomes and patterns of psychiatric drug use among study participants |  |
| **Lessons Learned:** Notable associations in the Kaiser Permanente cohort of TF include elevated risk of venous thromboembolism (VTE) and ischemic stroke (IS). The increase in risk was particularly pronounced after 6 years of follow-up in the estrogen initiation subcohort (a subset of participants who started estrogen therapy at Kaiser Permanente after the index date). For example, the hazard ratio (95% confidence interval) for VTE among TF on estrogen (N=17 events) compared to cisgender males was 1.9 (1.0, 3.6) for the first six years of follow-up and 4.7 (1.4, 16.2) after six years. The corresponding estimates for IS (N=17 events) were 1.1 (0.5, 2.2) and 6.8 (2.4, 18.9). Another notable finding was the high prevalence of mental health conditions among transgender people, particularly children and adolescents. The prevalence of estimates for suicidal ideation and self-inflicted injuries were orders of magnitude higher in transgender children and adolescents than in the matched reference groups of the same age. The survey component of the study demonstrated that transgender congruence and body image, and to a lesser extent, “passing status” were higher among persons who completed their gender affirmation compared to those who received less treatment. Both Kaiser Permanente and VA EMR cohorts demonstrated that transgender people do not experience higher incidence of cancers. Risk of prostate cancer was lower among TF than among reference males, an observation that was not explained by the differences in screening. |  |
| **What’s next?** Data analysis, publication and presentation of findings; planning for subsequent grant proposal to fund a follow-up study. |  |