

The Cost of Transgender Health Benefits

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Transgender at Work

ABSTRACT

This paper estimates cost of Transgender Health Benefits (THBs) for US residents. It reports on a 2001 survey of surgeons who offer Sex Reassignment Surgery (SRS) procedures. The survey measured the average cost for Male to Female (MTF) primary surgery (SRS) and for Female to Male (FTM) primary surgery (top surgery) in 2001. Nonsurgical costs are calculated empirically, with margins of error. Total THB cost is compared to the number of eligible US residents in the 2000 US Census to estimate the cost per resident.

The survey found that the average cost for MTF SRS in 2001 was about \$10,400 and for FTM primary surgery (top surgery) was about \$8,500. FTM bottom surgical costs averaged about \$9,500/patient. Total surgical cost, compared to the number of US residents in the 2000 US Census, is 5.3¢ per year.

Adding typical THB nonsurgical cost per resident for mental health (.7¢,) Hormones (6.6¢,) and doctors office visits (4.6¢,) the total estimated annual cost per resident would be 17.3¢. The margin of error analysis concludes that the total cost per resident might be as low as 9¢ or as high as \$4.01. These costs represent the total cost, including employer and employee shares, and include any costs already being covered by the employer. Increased costs to employers would be less, probably 6.6¢ or less.

Keywords

Transgender Health Benefits, THB, THB Cost, Sex Reassignment Surgery Cost, Hormone Cost, Domestic Partner Benefits Cost, Transgender Insurance Cost, Transsexual Insurance Cost, Transgender Wellness Benefits.

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1. Introduction

Many Health Care benefits policies contain an exclusion stating that any benefits related to sex reassignment surgeryⁱ are excluded from the coverage. Initially, this ban was justified by considering the procedures "Experimental" or "Cosmetic." After over 20 years of routine health care for transsexual people, benefits are now often excluded as "Too expensive." Costs as high as US \$75,000 per person have been cited as justification for exclusion. Transgender activists counter that so few people go through the process that the average cost per resident is very low.

What would it really cost to provide full or partial medical benefits to transsexual workers? How many people do go through this process each year? This study addresses these questions, by measuring the annual number of surgeries (surgical *run rate*) on US residents, measuring the cost of these surgeries, estimating the nonsurgical costs, and then developing a mathematical model of total Transgender Health Benefit (THB) cost. This paper builds on the companion paper (Horton, 2008,) which establishes the prevalence of SRS and related health benefits.

1.1. Previous Work

The prices charged by surgeons are well known. Prices of well known surgeons are posted on their web sites, or on the web sites of transgender resources. In 2001, they ranged from \$4,500 to \$26,000 for MTF surgeries, and from \$4,000 to \$60,000ⁱⁱ for FTM surgeries.

The cost of THB coverage depends on both the prevalence and the average cost per patient. Previous estimates of cost have primarily come from consultants and the media. With little actuarial data to base estimates on, these estimates have been markedly conservative (i.e. too expensive.)

1.2. Cost Experience with Employers

Some employers have decided to include full THB coverage for their employees, including surgery. A few years of experience are available to see what their costs were.

Lucent

Lucent provided coverage beginning in 2000. Originally with about 150,000 employees, Lucent has downsized and spun off most of its work force, and has about 33,000 employees as of 12/31/2003. There has been much publicity of Lucent's benefits in the transgender community. During this interval, Lucent paid for one MTF surgery in 2000 (Lucent's 80% share was "just over \$11,000") and one MTF surgery in 2003 (Lucent's share was \$8290.) A third Lucent employee had MTF SRS in 2002 and chose to fund the surgery herself rather than deal with insurance process.

Avaya

Avaya is a 2001 Lucent spin-off with about 40,000 employees. There were no claims for surgery during the period through 2003.

San Francisco

The City of San Francisco published a paper (Human Rights Commission, 1997) stating the case for THBs for City employees. They estimated costs for surgery from \$7,500 to \$36,000 for MTF transsexuals, and \$4,000 to \$75,000 for the combination of FTM surgeries, including surgeon, anesthesia, and hospitalization fees. Hormone therapy was estimated to average \$250/year for either sex. They stated that of 27,000 city employees, 12 were known to be transsexual.

In 2001, San Francisco added restricted THBs for city employees. At the time, they estimated that 17 of their 37,000 employees were transgender, and that 35 employees would use the benefit in its first year. (No explanation is given for this discrepancy.) (Dozetos, 2001.) Employees had to have 1 year of city employment to be eligible, and had a \$50,000 lifetime benefit cap. They set the additional cost at \$1.70/month/employee, or about \$750,000 per year total cost to the city. Because of the culture of

acceptance in the San Francisco area, there is thought to be a higher density of transgendered residents in the city than in other large cities in the United States. If ever a claim could be made that an employer would be a magnet for transsexuals seeking surgery (the *magnet effect*), San Francisco would be expected to see the effect.

In 2004 and 2005, actual claim data were made available. In 4 years, there were 11 claims for surgery, totaling \$183,000, or \$46,000/year, not including costs for therapy or hormones. Since the city covers 60,000 insured, the surgical cost/insured is \$.72/year. The city has lowered its charge to \$10.20/year/employee, (\$.85/month,) raised its lifetime cap to \$75,000, removed the 1 year employment requirement, and offered the benefit on every health plan offered to its 30,000 employees. One can calculate that \$.85 per month for 30,000 employees adds up to about \$300,000 per year to fund the benefits. The payout was anticipated to increase from the initial experience, due to the reduced waiting period and increased cap. (Green, 2005.) In actual experience, the 4th year payout decreased (\$50,000/year for 7 patients in the first 3 years, \$43,000 for 4 patients in year 4.)

2. Methodology

The author sent a survey in 2002 to all surgeons and clinics who were members of HBGDA, asking for data of primary surgeries performed in 2001: number, cost, and fraction who were US residents, separately for MTF and FTM patients. Primary surgery was defined as penectomy for MTF patients, and bilateral mastectomy for FTM patients. Data was also requests for FTM bottom surgeries. For details of this survey, and prevalence calculations, see (Horton, 2007.)

Only costs for certain procedures were in scope for this study. These procedures were:

- mental health counseling,
- hormone drug costs (HRT Rx,)
- doctors office visits and lab tests in support of hormones (HRT MD,)
- costs for certain medically necessary surgeries:
 - MTF SRS: penectomy, orchidectomy, vaginoplasty, labiaplasty.
 - FTM top surgery: bilateral mastectomy and chest reconstruction.
 - FTM bottom surgeries: hysterectomy, metoidioplasty, phalloplasty.

These procedures were chosen because there is strong evidence for their medical necessity, and because comparable procedures are usually covered on the health benefits plans for those who are not transgender (e.g. in case of illness or injury.) Other procedures, such as electrolysis and facial feminization surgery, are currently being debated and their medical necessity is not yet clear.

Building upon the survey data and prevalence calculation, average total costs were calculated. The approach was to separately determine the total cost for each of the four types of treatment: Once total annual costs for all US residents were found, cost per resident was determined.

1. The survey data and prevalence calculations were combined with US Census data to separately determine the total amount spent by US residents on MTF and FTM primary surgeries, and on FTM bottom surgeries.
2. A standard treatment course was assumed for mental health therapy, lasting an average of 15 months, and was combined with representative price information for therapists. This price was combined with the prevalence estimate to calculate the total amount spent on therapy by US residents.
3. A standard treatment was assumed course for HRT Rx, with increasing dosages for MTF patients over a 2 year period, and steady dosages for FTM patients followed by a reduced dosage for the remainder of the patient's life. This data was combined with life expectancy data from the US Census to estimate the total amount spent by US residents.
4. Closely related to the standard HRT Rx treatment was the HRT MD treatment, based on the Standards of Care, which recommends more frequent visits and lab tests during the early years of treatment. This data was combined with life expectancy to estimate total US resident cost.

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5. The four types of treatment were combined into a total amount spent by US residents, and then divided by the US resident population to determine a cost per resident. This cost per resident is not precisely the same as a cost per insured for any given insurance pool, but can serve as a reasonable estimate of cost per insured.
6. An employer cost model is proposed to assist an employer in estimating any additional costs it would incur if it should choose to cover these benefits. It takes into account the employer paid cost vs. the employee paid cost, and any of these costs already being paid by the employer.

3. Surgical Data

The data received from the surveys are summarized in this section. First, the raw data as received is summarized. This raw data contained a few errors and omissions that were correctable. The second section describes the reconstruction process and the data after reconstruction.

3.1 Primary Surgeries

(Horton, 2007) calculates a run rate of approximately 1166 primary surgeries performed on US residents in 2001 (736 MTF and 430 FTM.) The surgeons also provided total cost data for their services in 2001. Of 15 surgeons responding to the survey, 9 provided usable cost data in their original surveys. Correspondence with the surgeons and their staff, as well as data published in a book, permitted reconstruction of cost data for 13 surgeons. The remaining two were extrapolated from the other surgeons. The total cost of all primary surgeries is shown in Table 1. The average cost per patient was \$10,306 for MTF and \$8507 for FTM primary surgeries

3.2 Additional Surgeries

Estimating costs for FTM bottom surgeries (hysterectomy, metoidioplasty, phalloplasty) is more difficult. The *primary surgery* concept does not apply to bottom surgeries. The estimates made here are based on interviews with a subject matter expert in the FTM community, and should be considered less precise than measured data. It is known from subject matter experts and web sites how much the bottom surgeons charge, but the number of FTM transsexuals who choose the different bottom surgeries must be estimated. Also, any qualified surgeon may do hysterectomies, so they are impractical to count directly. The actuarial costs for hysterectomies are publicly available, and the fraction of FTM patients undergoing chest surgery who also undergo the various bottom surgeries were estimated.

Subject matter experts estimate that 50% of FTM patients having top surgery have a hysterectomy, 5% have a Metoidioplasty, and 6% have a Phalloplasty. The survey calculates the average cost of a hysterectomy at about \$15,000, of a Metoidioplasty at about \$10,500, and of a Phalloplasty at about \$24,000. This results in an estimated incidence of 250 hysterectomies totaling \$3,750,000, 25 metoidioplasties totaling \$262,000, and 30 phalloplasties totaling \$720,000, for a total cost of \$4,720,000.

Adding primary and additional surgeries brings the total spent by all US resident transsexuals for these medically necessary surgeries in 2001 to about \$19.3 million.

	MTF	FTM	Total
Total Cost of Primary Surgeries (millions)	\$10.31	\$4.25	\$14.56
Cost of additional surgeries (FtM bottom surgeries, millions.)	\$0.00	\$4.72	\$4.72
Total Cost of All Surgeries (millions)	\$10.31	\$8.97	\$19.28
Extrapolated Total Primary Surgeries	995	500	1,495
Average cost per Surgery	\$10,358	\$17,944	\$12,895
Average cost per Surgery (US surgeons)	\$14,867	\$15,825	\$15,139
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Total Cost of All Surgeries (millions)	\$10.31	\$8.97	\$19.28
Extrapolated Total Primary Surgeries	995	500	1,495

Average cost per Surgery	\$10,358	\$17,944	\$12,895
Average cost per Surgery (US surgeons)	\$14,867	\$15,825	\$15,139

Table 1: Total Surgical Cost Data (all patients)

4. Cost Analysis

4.1. Surgical Cost Analysis

Dividing the total amount spent worldwide on MTF and FTM surgeries in 2001 (\$19.3 million,) by the total number of surgeries (1495,) the average surgery price per patient was calculated at about \$12,900. (Horton, 2008) shows that about 1170 of these surgeries were performed on US residents in 2001. Multiplying the US count by the average cost per surgery yields a total of \$15 million for surgery on US residents. Dividing this figure by the US population in 2001 (281,421,906) produces a cost of about \$.053 (5.3¢) per US resident . (See Tables 3 and 4.)

Some employers may choose to require that US resident transsexuals have their surgery done by a US surgeon. Of the major surgeons surveyed, 4 MTF and 8 FTM surgeons practice in the US. Restricting the data to these surgeons yields a slightly higher average cost per resident of \$.063, (\$.079 MTF and \$.047 FTM.)

	MTF	FTM	Total
Primary Surgeries on US residents	736	430	1,166
Total cost all surgeries on US Residents (millions)	\$7.63	\$7.72	\$15.04
Annual surgery cost per insured (\$)	\$0.055	\$0.054	\$0.053
Annual surgery cost per insured if only US surgeons are used (\$)	\$0.079	\$0.047	\$0.063

Table 2 Surgical Cost Analysis (US Residents)

4.2. Nonsurgical Cost Analysis

If nonsurgical treatment costs are included, a more complete picture of total costs for THBs can be created. For this study, these nonsurgical costs include Mental Health Therapy, HRT Rx, and HRT MD.

Not considered were the costs of other treatments such as electrolysis, breast augmentation surgery, tracheal shave, facial feminization surgery, and similar treatments. The medical necessity of these other treatments has yet to be determined. This study focuses on four procedures that are certainly medically necessary, based on standard insurance practice for non-transsexuals.

The approach taken here is to build on the prevalence result (Horton, 2008) and the known cost per patient of standard nonsurgical treatment. Combining the run rates with the cost of treatment of a typical patient, the total cost can be calculated.

While time lines vary from patient to patient, a typical time line is assumed here. Starting with the first therapy session, hormones start three months later, and the real life experience begins about six months after the first therapy session. After a one year real life experience and six months waiting for a surgery date, surgery occurs about two years after the first therapy session. After the first two years, with or without surgery, hormones have achieved their maximum effects and the dosage is reduced to maintenance levels.

4.3 Mental Health Therapy

A typical patient will begin the process with therapy from a mental health provider. Today's transsexual usually already understands the need to transition, permitting the therapist to focus on practical issues. Hormones are often prescribed in the first few visits, and the counselling typically lasts about one year. It is assumed that an average patient will undergo minimal therapy prior to transition and spend one year from transition to surgery (in accordance with the one year Real Life Experience described in the SOC.) Patients

have a wide range of needs, ranging from 2 or 3 sessions (for someone who has already transitioned and is functioning well in their new gender role) to as many as 20 sessions over the course of a full year.

For this study, a plan with a rate of \$125/hour is assumed for 4 clinical sessions per year, plus \$250 in group sessions or support groups, for a total first year cost of \$750. A second evaluation for the second letter required for SRS is estimated at a negotiated group rate of \$150. Many patients complete the program in a year, but an additional three months of therapy and group sessions, totaling \$188, are added to represent those who take longer than 1 year. This results in a total treatment cost at \$1088 per patient.

By definition, 100% of the MTF and FTM patients diagnosed with GID in the USA each year seek therapy. Using the estimate that 63% of those with a GID diagnosis eventually go on to have SRS (60% MTF, 67% FTM) there will be about 1870 US residents beginning therapy each year, at a total annual cost of \$2.03 million, or \$.0072 per resident.

4.4 Hormones (HRT Rx)

A typical MTF patient will begin hormones on a low dose, gradually increasing the dose to a maximum level in preparation for surgery. After surgery, or after about 2 years of HRT Rx, the hormone dose is reduced to a low maintenance level, which may continue for life. 2 years of hormones are assumed before surgery, with years 3 and on at the maintenance level. The regimens are different for MTF and FTM patients.

MTF patients will take estrogen in increasing doses, an anti-androgen in steady or increasing doses, and optionally may take a progesterone. A typical path is assumed based on Premarin, Spironolactone, and Prometrium. In the first year, the Premarin dose gradually increases from .625 mg/day to 3.75 mg/day, the dosage of Spironolactone remains steady at 100 mg/day, for a total cost of \$1,088ⁱⁱⁱ. In the second year, 5 mg/day of Premarin, 100 mg/day of Spironolactone, and 200 mg/day of Prometrium is assumed, costing a total of \$2,376. (All drug costs are based on 2004 mail order prices from Medco.)

MTF patients who have completed surgery no longer require large doses of estrogen or anti-androgen. MTF patients who do not have surgery will usually reduce their dosage after 2 years, because the desirable changes from hormones occur during the first 2 years. In either case, a lower lifetime maintenance level of hormones is typical. In years 3 and on, a maintenance dose of 1.25 mg of Premarin, costing \$382 per year is assumed.

FTM patients are assumed to have a simpler regimen of 1.0 cc of injectable Depo-Testosterone every 2 weeks, costing about \$229/year. This is assumed to be a constant dosage that does not change over the lifetime of the patient.

Transsexuals usually transition as adults. If the age of transition is assumed to range from 18 to the Census life expectancy (74 MTF, 80 FTM, 77 combined,) there are about 59 possible years for the transition to occur, and maintenance costs will begin in year 3 of the transition (age 20 and up) and continue for life. If the patients who begin HRT each year are assumed to be evenly distributed from age 18 to 77, a 59 year span, about 1/59 will transition at age 18, 1/59 at age 19, etc.

There are about 1870 US resident new GID diagnoses each year (Horton, 2008) of which an estimated 1637 (87%) begin HRT. It is assumed that HRT begins within a few months after diagnosis. Some transsexuals obtain hormones without therapy or a diagnosis, but these cases are excluded as they are usually not covered by insurance, or are already being covered under another diagnosis. HRT may occur at any age, and if a linear age distribution is assumed, about 3743/59 or 63.4 transition at 18, 63.4 at 19, etc. After 2 years of transition HRT, those in maintenance will range from age 20 to 77. Maintenance HRT usually continues in low dosages for life.

The number of patients in maintenance HRT was calculated using the formula $N*((E-2)*(E-1)/2)/E$, where N is the number of patients in year 1, and E is the number of years of eligibility (life expectancy minus 18.) This formula was calculated separately for MTF and FTM and summed. 1104 1st year MTF patients with 56.3 years of eligibility account for 29,453 MTF maintenance HRT patients; 533 1st year FTM patients with

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61.7 years of eligibility account for 15,643 FTM maintenance HRT patients, for a total of about 45,100. Total annual HRT Rx costs are \$18.6 million.

All cost and prevalence calculations were made separately for MTF and FTM patients, then summed for a combined total. Table 3 shows the calculations for year 1, year 2, and year 3+ (maintenance.)

	MTF	FTM	Total
Number of patients in year 1 of HRT Rx	1,104	533	1,637
Cost per patient: year 1 of HRT Rx	\$882	\$229	\$670
Total cost: year 1 of HRT Rx (millions)	\$0.97	\$0.12	\$1.10
Number of patients in year 2 of HRT Rx	1,085	524	1,609
Cost per patient: year 2 of HRT Rx	\$2,376	\$229	\$1,676
Total cost: year 2 of HRT Rx (millions)	\$2.58	\$0.12	\$2.70
Number of patients in year 3+ of HRT Rx	29,453	15,643	45,096
Cost per patient: year 3+ of HRT Rx	\$382	\$229	\$329
Total cost: Years 3+ of HRT (millions)	\$11.25	\$3.58	\$14.84
Total Cost: HRT (millions)	\$14.81	\$3.82	\$18.63

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Total cost: year 1 of HRT Rx (millions)	\$0.97	\$0.12	\$1.10
Number of patients in year 2 of HRT Rx	1,085	524	1,609
Cost per patient: year 2 of HRT Rx	\$2,376	\$229	\$1,676
Total cost: year 2 of HRT Rx (millions)	\$2.58	\$0.12	\$2.70
Number of patients in year 3+ of HRT Rx	29,453	15,643	45,096
Cost per patient: year 3+ of HRT Rx	\$382	\$229	\$329
Total cost: Years 3+ of HRT (millions)	\$11.25	\$3.58	\$14.84
Total Cost: HRT (millions)	\$14.81	\$3.82	\$18.63

Table 3: HRT Rx Cost

Dividing by the number of US residents, transitional HRT Rx costs (the first two years of treatment) are \$0.013 per resident. Maintenance HRT Rx costs (the third and subsequent years of treatment) are \$14.8 million or \$0.053 per resident. Total HRT Rx costs are \$18.6 million/year or \$0.066 per resident. About 80% of HRT Rx costs are maintenance costs, currently covered on most insurance plans because the patient is documented as their new gender.

4.5 Doctor's visits in Support of Hormones (HRT MD)

A patient undergoing hormone treatment should see a physician on a regular basis to monitor the hormones' effects, and to have blood tests taken to monitor hormone levels. The SOC recommend lab tests at onset (as a baseline,) at 6 months, 12 months, and every 12 months thereafter for both MTF and FTM patients. Hormones are usually prescribed by an endocrinologist or by an internist or family practitioner that is experienced in the treatment of transsexuals. Quarterly office visits are the norm during the transition, changing to semiannual visits after the regimen levels off. These office visits and lab tests are referred to here as *HRT MD*.

Office visit charges are estimated at \$65 per visit (a negotiated insurance rate.) The lab tests for blood hormone levels are estimated at \$125 each. This will mean typical costs (both MTF and FTM) of \$510 in the first year (4 visits and 2 labs,) \$385 in year 2 (4 visits and 1 lab) and \$255 in subsequent years (2 visits and 1 lab.) All costs are based on prevailing 2002 prices in central Ohio, with ranges in the Limit Analysis to take regional variance into account.)

Using the same approach used for HRT Rx, transitional HRT MD costs (first two years) are calculated at \$1.45 million/year or \$0.005 per resident. Maintenance HRT MD costs (third and subsequent years) are \$11.5 million/year or \$0.041 per resident. Total HRT MD costs are \$12.95 million/year or \$0.046 per

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resident. About 89% of HRT MD costs are maintenance costs, currently covered on most insurance plans because the patient is documented as their new gender.

4.6 Total Costs

Table 4 shows that the total cost for the four THBs is about \$49 million, or, as shown in Table 5, 17¢ per resident. Most of the cost is for hormones and their associated doctor's office visits. About \$26.3 million, or 9.4¢/resident, is for maintenance HRT Rx and HRT MD costs, and \$7.3 million, or 2.6¢/resident, is for nonsurgical transitional costs: therapy, HRT Rx, and HRT MD for the transsexual currently engaged in the transition process.

	MTF	FTM	Total
Total surgical cost (combined) (millions)	\$7.63	\$7.72	\$15.04
Total therapy cost (combined) (millions)	\$1.33	\$0.70	\$2.03
Total cost: HRT Rx (combined) (millions)	\$14.81	\$3.82	\$18.63
Total cost: HRT MD (combined) (millions)	\$8.49	\$4.46	\$12.95
Total annual cost (millions)	\$32.26	\$16.70	\$48.66

Table 4: Total Costs for US Residents

	MTF	FTM	Total
Cost per resident for therapy	\$0.010	\$0.005	\$0.007
Cost per resident for HRT Rx	\$0.107	\$0.027	\$0.066
Cost per resident for HRT MD	\$0.062	\$0.031	\$0.046
Cost per resident for Surgery	\$0.055	\$0.054	\$0.053
Total cost per resident	\$0.234	\$0.116	\$0.173

Table 5: Total Cost per Resident

5. Margin of Error Limit Analysis

Using the same limit analysis technique described in (Horton, 2008) boundaries around the total cost per resident were established. The total costs lie somewhere between a minimum cost estimate of 9¢ and a maximum cost estimate of \$2.52. These are based on extremely optimistic and pessimistic assumptions for every patient, and the actual cost is almost certainly in between the extremes.

Total cost per resident	Best Estimate			Minimum Cost			Maximum Cost		
	MTF	FTM	Total	MTF	FTM	Total	MTF	FTM	Total
Cost per resident for all surgeries	\$0.055	\$0.054	\$0.053	\$0.050	\$0.021	\$0.035	\$0.106	\$0.241	\$0.165
Cost per resident for therapy	\$0.010	\$0.0049	\$0.007	\$0.0008	\$0.0003	\$0.0006	\$0.48	\$0.20	\$0.34
Cost per resident for HRT Rx	\$0.11	\$0.027	\$0.07	\$0.055	\$0.013	\$0.033	\$2.74	\$0.33	\$1.51
Cost per resident for HRT MD	\$0.06	\$0.031	\$0.05	\$0.026	\$0.011	\$0.018	\$0.72	\$0.29	\$0.50
Total cost per resident	\$0.23	\$0.12	\$0.17	\$0.13	\$0.05	\$0.09	\$4.05	\$1.06	\$2.52

Table 6: Total Annual THB Cost Ranges per Resident

6. Discussion

For the year 2001, a typical health care plan was estimated to cost about \$4,000 per year per insured. Thus, a total cost of 20¢ per insured would be .005% of the total health care costs. If we assume that cost per

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insured is similar to cost per resident (see below,) the upper bound of \$4/resident was about .1% of total cost, and the lower bound of 9¢ was about .0022%. By comparison, Domestic Partner Benefits (DPBs) for same-sex partners usually cost about \$40 (1%,) or up to \$80 (2%) if same and opposite-sex partners were covered. (Badgett, 2006) Transgender Health Benefits probably cost about 1/2 of 1% as much as DPBs and with the most pessimistic assumptions cost no more than 10% as much as DPBs.

Employers rarely cover 100% of health care costs. Employees are expected to contribute co-pays, premiums, and deductibles. THBs, if covered, are subject to these same rules. The Kaiser Family Foundation (Dispatch, 2003) found that, in 2002, single employees paid 15% of their health care costs, and families paid 26% of their costs, with employers paying the remainder. Each year, the employee share increases, as employers try to hold the line on the employer share. It seems likely that, of the 17¢ total cost, the employer would pay some of the cost, and the employee would pay the remainder. With significant portions of the expense being for drugs, which are often covered at lesser amounts than major medical benefits, the employee share will be substantial. Each employer should break out the expenses into the different types to arrive at the fraction that is their share. This analysis assumes the most pessimistic case, the single employee 15% average share.

Many employers already have health plans that offer partial coverage of THBs. An employer that currently offers partial coverage and is considering increasing the coverage level, or an employer considering partial coverage, would incur a smaller net increase.

Some benefits are probably already being covered, even with plans that intend to exclude all coverage. In particular, the drug cost (and supporting office visits) of maintenance for post-operative transsexuals, who are legally documented in their new gender, is usually covered because they are legally no different than any other hormone prescription. This maintenance amount, 9.4¢, represents over half (54%) of the total THB cost.

It is also common for patients diagnosed with Gender Identity Disorder to match other mental health diagnoses (such as stress) and for plans to cover the treatment under that diagnosis. Similarly, a prescription for hormones does not have an attached diagnosis, so some transsexuals are currently receiving coverage of their HRT Rx and HRT MD health care because the insurance administrator cannot tell the reason for the treatment, and because these same treatments are fully covered for other patients who are not transsexual. It therefore seems likely that an employer deciding to add HRT coverage may experience a cost increase even smaller than the 1.5¢ presented in Table 6. No data is currently available to evaluate this suggestion.

Insurance plans usually state costs in terms of cost per insured, which means the cost of benefits paid to the pool of people in their insurance plan, divided by the size of that pool. This study measures a similar but different fraction: the total cost of GID treatments for US residents, divided by the number of US residents. It is believed that these measures yield similar results.

Some insurers may consider the eligible pool to be those over 15 years of age, which would increase the cost per insured by about 14%, but exclude youth under 15 from the size of the pool, with no net change to the total cost. A specific insurance pool may have a higher or lower percentage of transsexuals than the general population, and both arguments can be made. Some would say that many transsexuals are unemployed or underemployed, due to their transsexualism, and therefore employer insurance pools would have a smaller fraction of transsexuals, and hence a lower cost per insured. Others would argue that those actually having surgery (as measured in this study) have largely self-funded their medical costs, and are more likely to be employed with good jobs (providing insurance benefits) than the larger population; this would lead to a higher cost per insured. Without data to support either view, this paper makes the assumption that the percentage of transsexuals covered by a typical insurance plan is about the same as the percentage of transsexuals in the general population. Both possibilities for variation are accounted for in the limit analysis.

Some patients choose to self-fund parts of their health care even when covered by insurance. For example, many therapists are off-network and will not work with insurance companies, instead requiring the patient

to do the paperwork. Some patients choose to pay their therapist directly rather than deal with the insurance bureaucracy. (Stories of insurance administrators repeatedly losing the paperwork or incorrectly rejecting a claim are widespread.) Of three transsexual employees at Lucent who had their surgery during the covered period from 2000 to 2003, one chose to pay directly rather than submit the claim to insurance. In a field where lack of insurance coverage is so commonplace, some patients find the bureaucracy so foreboding that they will not face it.

The "magnet effect" is a concern that, if a small number of employers offer a THB benefit, transsexual workers may find such employers so attractive that they change jobs, thereby increasing total cost by locating a disproportionate number of workers in the one employer. In theory, this should be mostly a concern when there are only a few such employers, and would tend to even out as THB coverage becomes more widespread. With (Human Rights Campaign, 2008) reporting that 78% of employers offer at least one of the benefits described here, and 27% stating they cover SRS, we appear to be past this point.) Employee resource groups suggest that good benefit packages, including benefits such as Domestic Partner Benefits, are often used as recruiting tools to attract qualified employees from different minority populations, and that THBs would be no different. An employee still has to be qualified for the job if they are to be hired. The experience of employers such as Lucent and San Francisco has not found any increase in claims due to disproportionate hiring of transsexuals.

It has been suggested that persons suffering from untreated GID may exhibit symptoms of other conditions (such as stress, depression, or substance abuse) which may incur covered medical costs. Early treatment of GID may lessen overall costs due to these other conditions. No data is currently available to evaluate this suggestion.

Another concern is that, as insurance coverage becomes more widespread, the total amount of affordable transgender health care may increase, and the total amount spent may increase. This may indeed be a long term result of universal health coverage of THBs. There are many transsexuals who use hormones, but do not make regular use of therapy, and cannot afford electrolysis or surgery. If only 1/3 of transsexuals actually have surgery, and if the remainder were all to want, be eligible for, and obtain surgery, the surgical costs could grow by as much as a factor of 3. However, most therapists and surgeons have full calendars, and the waiting lists for surgery dates are quite long. The system cannot quickly absorb a threefold increase in demand, as an entire generation of new specialists would need to train and enter the field. Such an increase in capacity could increase competition and bring down prices. (For example, surgery in Thailand has become competitive, and Thai prices were much less than North American prices in 2001.)

Some American health benefit plans require the health care to be administered in the US. Since only 60% of the surgeons were in the US (33% of MTF surgeons and 66% of FTM surgeons) this restriction changes the expected cost. Since Thailand is eliminated, the MTF cost is increased if only US surgeons are considered. This would raise the MTF surgical cost per insured from 5.5¢ to 7.9¢, lower the FTM surgical cost from 5.4¢ to 4.7¢, and raise the total surgical cost from 5.3¢ to 6.3¢. Since this restriction would not affect therapy, HRT Rx, or HRT MD, the total cost per insured would increase from 17.3¢ to 18.3¢.

The result presented here is based on a survey of surgeries performed in 2001. The effects of inflation will have increased the real costs for any later year. Surgeons raise their prices, new surgeons enter the field and others retire. Drug, lab, and mental health costs are also affected by time, with drug prices potentially going down and other prices going up. When projecting future costs, it is appropriate to apply an industry standard inflation rate to the costs presented here.

6.1 Employer Cost Model

Combining these concerns, a model can be constructed to estimate costs for a specific employer. The figures in the table below should be adjusted to reflect each specific situation.

The figures given in the E column below represent the 15% share of a single employee. The CP column includes maintenance costs of post-operative transsexuals, who are likely to be currently covered by typical health plans. Based on the experience of employers like Lucent and San Francisco, it is reasonable to

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estimate zero for adjustments to cost (AC) in the table below. The employer can estimate the other figures based on its own data and experience.

Type of Cost	Total Cost /year /resident	Employee Share (15%)	Employer Share	Employer Currently Paying	Adjustments (magnet, untreated & long term)	Increased cost to Employer
Symbol for Cost	C	E	Er = C - E	CP	AC	I = Er - CP + AC
Therapy	\$0.007	\$0.0011	\$0.006	varies	0	≤ \$0.006
HRT Rx	\$0.066	\$0.0099	\$0.056	\$0.045	0	\$0.011
HRT MD	\$0.046	\$0.0069	\$0.039	\$0.035	0	\$0.004
Surgery	\$0.053	\$0.0080	\$0.045	varies	0	≤ 0.045
Total	\$0.173	\$0.0259	\$0.147	≥ \$0.08	0	≤ \$0.066

Table 7: Employer Cost Model

7. Conclusion

The survey found that the average cost for MTF SRS in 2001 was about \$10,400 and for FTM primary surgery (top surgery) was about \$8,500. FTM bottom surgical costs averaged about \$9,500/patient. Total surgical cost, compared to the number of US residents in the 2000 US Census, is 5.3¢ per resident per year.

Adding typical THB nonsurgical costs for mental health (.7¢,) HRT Rx (6.6¢,) and HRT MD (4.6¢,) the total estimated annual cost per resident would be 17.3¢. The total cost per resident might be as low as 9¢ or as high as \$4.01. These costs represent the total cost, including employer and employee shares, and include any costs already being covered by the employer. Increased costs to employers would be less, probably no more than 6.6¢.

7.1 Future Work

This survey measures prevalence and cost information for primary surgeries for US residents. Many additional studies could expand on this work.

Additional studies could more accurately measure the run rate and cost of FTM bottom surgeries. Better measurement of Therapy, HRT Rx, and HRT MD costs are also possible. Information about the age of patients at surgery would improve the precision of the results.

Ongoing studies to chart data in different years would make it possible to measure trends in the run rate and prices being charged. For example, additional practitioners entering the field could potentially result in a higher run rate and a lower price.

It has been argued that untreated GID may lead to increased medical costs for other conditions, including stress and depression. A study to measure this cost of not treating GID might determine an even lower net cost of insurance coverage.

The effects of the magnet effect, or of decreased costs for other treatments necessitated by untreated GID, could be measured by long term studies.

A study could determine the share of cost currently being paid by insurers, and the share being paid by employees. This would permit the 15% employee share used here to be replaced with a more accurate figure.

Costs in this study are from 2001 (surgery) and 2002 (nonsurgical procedures.) All medical prices have risen in recent years, and the major surgeons have raised their prices. An updated study, or an annual

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survey, would permit the cost per resident to be kept up to date. Alternatively, insurance data for covered pools may permit a more accurate measurement of actual claims.

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ⁱ A typical policy reads “**Transsexual Surgery.** Expenses related or leading to surgery to change an individual’s gender are not covered.”

ⁱⁱ The theoretically least expensive FTM surgery is the least expensive chest surgery at \$4,000. The theoretically most expensive FTM surgery would be a combination of the most expensive chest surgery at \$7,500, a total abdominal hysterectomy at about \$17,000, and the most expensive phalloplasty at about \$35,000, totaling \$59,500.

ⁱⁱⁱ These prices are from one US insurance company in 2004 for an employer health plan, using mail order delivery of a 90 day supply. Prices will vary.