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A Cross-Sectional Study of Variations in Reimbursement for Breast Reconstruction: Is A Healthcare Disparity On the Horizon?

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Abstract

Background—Despite growing demand for breast reconstruction, financial disincentives to perform breast reconstruction in patients with government-sponsored insurance plans may lead to longer wait times and decreased access to care. We identify the variation in reimbursement for implant and autologous reconstruction as a step toward understanding these financial implications, to develop safeguards to minimize effects on access to care.

Methods—Billing data were collected over a 10 year period for patients undergoing implant-based (19357) or free flap (19364) breast reconstruction. Patients were placed into cohorts according to insurance type - Medicare, Medicaid, or Private insurance and these were directly compared.

Results—2691 women underwent breast reconstruction between 2003 and 2013. 71.2% had private insurance, 13.3% had Medicaid, and 14.49% had Medicare. For implant-based reconstructions, the average reimbursement of total charges was 16.3% for Medicaid, 28.3% for Medicare, and 67.2% for private insurance. For autologous reconstruction, average reimbursement was 12.37% for Medicaid, 22.9% for Medicare, and 35.35% for private insurance. Hourly reimbursement estimates for Medicaid patients undergoing autologous reconstruction was lowest. The highest hourly reimbursement estimate was for privately insured patients undergoing implant-based reconstruction. Over time, reimbursement for autologous reconstruction has declined significantly for all payor types, while implant-based reimbursement disparities are narrowing.

Conclusions—We found that wide variations in reimbursement for breast reconstruction procedures exist, and may preclude some surgeons from offering certain reconstructive options to a subset of patients. Understanding these discrepancies is a key first step in minimizing a potential care delivery disparity for this patient population.

Introduction

Mandated insurance coverage for reconstructive breast procedures was initiated in 1998 by the Women's Health and Cancer Rights Act.¹ As a result of this landmark legislation, along

with subsequent laws requiring referral to a plastic surgeon to discuss reconstruction, the demand for these procedures has increased significantly. With the advent of the Affordable Care Act, a greater number of insured patients have now entered the market,² and the expectation is that the number of women seeking breast reconstructive procedures will only continue to increase. What is less certain, however, is the variation between surgeon reimbursement for these procedures according to insurance carrier; and whether this discrepancy will result in care delivery disparities.³

Current trends in rising medical costs, decreases in physician reimbursements, and stringent preauthorization eligibility criteria have the potential to create significant discrepancies between patients with private insurance versus those with government-sponsored insurance plans, particularly with operations that are perceived to have low reimbursement per surgeon time and/or complexity. This has major implications in access to care and quality of care for a large subset of women recovering from breast cancer.

While the Affordable Care Act has reduced the number of uninsured patients significantly, it has also altered the national payor pool; as the total number of privately insured patients has decreased while the number of Medicaid/Medicare patients has increased.⁴ Government sponsored insurance programs now cover low-income individuals, as well as those at up to 138% of the national poverty level in 31 states and the District of Columbia.⁴ Many studies in other surgical disciplines have reported far lower reimbursement rates for government sponsored insurance plans.⁵ As a result, there are also reports of these diminishing reimbursements leading many physicians to limit their Medicaid/Medicare participation.⁶ In addition, of those with Medicaid who were seen, they waited longer for their initial consultations when compared to patients with private insurance. Another 2012 study reports that uninsured women and women insured through Medicaid are 20% less likely to receive breast reconstruction when compared to privately insured women.⁷ Recently published findings highlight that travel distance⁸ and insurance type^{9,10} significantly effects women's receipt of breast reconstruction and type of reconstruction. As local providers elect not to accept certain insurance plans, these disparities may worsen.

At present, the variation in physician reimbursement for breast reconstruction procedures has not been quantified for this purpose. We will attempt to identify the differences in physician reimbursement by payor type for implant-based and autologous reconstruction. The future of healthcare payment models is unclear, and highlighting discrepancies in the current model may help avoid them as healthcare payor organization changes. Quantifying and understanding this discrepancy will be a key first step in addressing a potential care disparity in this growing patient population.

Methods

After approval from the Institutional Review Board, CPT codes for autologous (19364) and implant-based breast reconstruction (19357) were submitted to the billing office at our large tertiary care academic medical center. Retrospective data were collected over a 10-year period from 2005–2015, including medical record number, patient zip code, procedure date, charge, payment, and insurance type/category. Payment to the physician, reimbursement,

and adjustments made were stratified according to payor type – private, Medicare, Medicaid, self-pay, and other payor source where applicable. Other insurance types, such as special contracts with the hospital or student health were excluded from analysis due to their heterogeneity.

Unilateral and bilateral reconstructions were analyzed separately using the –50 modifier code. As the goal of this manuscript is to discuss differences in reimbursement as they may affect practice rather than discuss reimbursement itself, and to protect proprietary payor and hospital data, all reimbursements are reported as percentage of average private payor reimbursement or percentage of charge rather than dollar amounts.

All approximate operative times for reconstruction were derived from average operating times among surgeons at our institution, obtained from OR schedulers: unilateral implant based reconstruction 90 minutes, bilateral 120 minutes, unilateral free-flap reconstruction 360 minutes, and bilateral free-flap reconstruction 540 minutes. The three cohorts were analyzed using ANOVA testing with Bonferroni correction and an unpaired, two-sample two-sided Student's T-test with $p < 0.05$ indicating significance.

Results

There were 2,691 cases included in the analysis (Table 1). Of these, 1916 patients were privately insured, 390 were insured through Medicare, and 385 had Medicaid. Further breakdown by procedure type may be seen in Figure 1.

Reimbursement by Payor Type

For unilateral implant-based reconstruction, private payors, on average, reimbursed 74.3% of charge for the procedure. Medicare reimbursement was 31.9% of total charge, or 45.5% of private payor reimbursement ($p < 0.01$). Medicaid reimbursed 17.2% of submitted charges, or 23.3% of private payor rates ($p < 0.01$). Findings were similar for bilateral implant-based reconstruction, with private payor reimbursement 60.1% of charge. Medicare reimbursed 25.3%, and Medicaid 14.8% of total charges. Medicare reimbursement was 41.8% of average private payor reimbursement ($p < 0.01$), while Medicaid was 25.1% ($p < 0.01$).

Analysis of payments for unilateral free flap reconstruction revealed an average private payor reimbursement of 44.2%. Medicare reimbursement was 22% of total charge, and Medicaid reimbursement 12.7% of total charge. Medicare payments were 60% ($p < 0.01$) of private payor reimbursement, while Medicaid was 27.2% ($p < 0.01$). For bilateral free flap reconstruction, percentage of charge reimbursed was 31%, 25.4%, and 10.8% for private payors, Medicare, and Medicaid respectively. Similar to unilateral flap reconstruction values, Medicare reimbursed 66.9% of private payor reimbursements ($p < 0.01$), and Medicaid reimbursed 34.5%. ($p < 0.01$).

Average private payor reimbursement for all procedures was 52.4%, Medicare was 26.1%, and Medicaid was 13.9%.

Reimbursement per Hour by Reconstruction Type

For unilateral reconstruction, reimbursement was higher for implant-based techniques than autologous reconstruction per hour among all payor types (Figure 2). Average reimbursement per hour for bilateral autologous reconstruction was 36% of implant-based reconstruction. For unilateral reconstruction, reimbursement for autologous reconstruction is 55% of implant-based reconstruction per hour. For private payor groups, free flap reconstruction reimbursed 63.2% of implant-based reconstruction rates per hour, Medicare 40.2%, and Medicaid 30.2%.

Findings were similar for bilateral reconstruction. For free-flap reconstruction, private payors reimbursed 27.5% of implant-based reconstruction per hour. For Medicare patients, autologous reconstruction reimbursed 44.1% of implant-based reconstruction rates per hour, and for Medicaid 37.9%.

Trends over Time

From 2005 until 2015, private payor reimbursement for implant-based reconstruction increased overall (Figure 3). For unilateral implant-based reconstruction, the highest reimbursement was in 2014, at 139% of 2005 payment. Medicaid and Medicare reached the highest reimbursement levels in 2012 and 2013 at 216% and 114% of 2005 payment, respectively. In 2015, all payor groups had a slight decline in payments reimbursed. Bilateral implant-based reconstruction had a similar trend.

Flap-based reconstruction followed a different trend. Unilateral flap reimbursement from Medicaid and private payors peaked in 2010 and 2011. Medicare peaked in 2014. In 2015, Medicaid reimbursed 74% of 2009 payments, Medicare 108%, and private insurance 69%. Finally, Medicaid payments for bilateral flap-based reconstruction peaked in 2010 at 133% of 2009 values, and in 2015 are 116% of that value. Medicare followed a similar trend, but peaked in 2011 at 119% of 2009 reimbursements, and in 2015 was 90.8%. 2015 private payments are 71% of 2009 values, which was the time of the highest reimbursement.

Discussion

Our study assesses the discrepancies between reimbursements for breast reconstruction by payor type and reconstruction technique and assesses reimbursement trends. While the results in themselves may not be surprising, the current degree of disparity in reimbursement between insurance types according to reconstructive procedure is substantial and has not been described in plastic surgery. There are three major issues that are revealed in these findings: 1) the discrepancy between reimbursement by payor types, and 2) the large differences in reimbursement for a surgeon's time between implant-based and autologous reconstruction, and as a result 3) the decreased incentive over time to perform flap reconstruction as compared to implant reconstruction, while the gap in reimbursement between payor types in implant-based reconstruction has narrowed, with a decrease in private payment over the past 3 years. We do note that charges may differ by hospital or region, since this value is based on ChargeMaster data,¹¹ rather than actual cost, so percentage of charge reimbursed will vary by location.

Overall, our payor mix is similar to that published by Alderman et al in 2006 looking at a series of 97 patients, and net collections for our study were comparable at an average of 30.8%.¹² In 2011, a follow-up study at the same institution looking at 152 patients, reported similar reimbursement rates, however, nearly 90% of the patients in that study were privately insured, and only 3.2% had Medicaid.¹³ With similar charges for a given procedure at an institution, private payors reimbursed an average of 26% more than Medicare and 39% more than Medicaid for all types of reconstructive procedures. As we enter the era of the Affordable Care Act, there are likely to be further shifts in payor type and thereby reimbursement patterns for physicians, having major financial implications for practitioners and hospitals, and access to care implications for patients.

In addition to surveying the current insurance landscape, we also compare per-hour surgeon reimbursement by procedure. For bilateral reconstructions, free flaps are reimbursed at only 36% of implant-based techniques per hour. For unilateral reconstructions this figure is 55%. Alderman, et al¹² reported per hour reimbursement for a much smaller cohort of patients and generated similar findings in 2009. These significant variations in payments between reconstructive techniques may pose strong forces on whether a surgeon offers a particular procedure, or not. In 2013, only one out of four plastic surgeons performed autologous breast reconstruction, citing financial challenges and time restraints as a major deterrent.¹³ Soon, more surgeons may be forced to limit not only the number of autologous reconstructive procedures they offer, but to which patients they offer any breast reconstruction based on insurance type.

A recent article by Deleyiannis, et al¹⁴ demonstrated that microsurgical head and neck procedures are profitable for the hospital system, yet surgeon reimbursement is relatively low. A recent article published by Sando et al¹⁵ demonstrated that despite lower professional reimbursement for the first stage of reconstruction, long-term, autologous reconstruction was in fact more profitable for a physician than implant-based reconstruction. However, these findings do not take into account the difference in complexity and time necessary for each procedure. Strategies which may offer financial stability in offering autologous reconstruction include hospital-based incentives/support for treating this population, a relative-value unit (RVU) based compensation plan which is essentially “payor-blind”, and/or an individually negotiated rate with the insurance carrier for the specific procedure (“carve-out”). Hospital-based incentives are not a far-fetched proposal as microsurgical cases generate significant revenue for hospitals regardless of insurance carrier.

Although the institution may see the financial benefit to providing these procedures, physicians have very little financial incentive to continue offering this complex, time-intensive option to patients, particularly those with government-sponsored insurance. This dichotomous incentive could create increasing difficulty for these patients to find a surgeon despite the Women’s Health and Cancer Rights Act. Even if they find a participating provider, the disincentives could result in a significant delay in patient’s receiving their reconstructions.

With decreasing reimbursement over time for free-flap reconstruction, it is important to recognize that financial disincentive is not the only reason physicians may choose whether to

provide autologous reconstruction, or participate in government-sponsored insurance programs or to accept patients without insurance coverage. To add complexity to this, with the currently proposed American Healthcare Act, over 23 million patients may lose their insurance coverage or be left with copays and premiums that they cannot afford by 2026. In the plastic surgery literature, the worry-over-work-to-reimbursement ratio has also been found to be a major stressor for plastic surgeons.¹⁶ The impact of this stressor on time spent with patients and quality of care is unknown. However, increased workload to compensate for lower reimbursements has a detrimental effect on care for each individual patient. As of 2011, over 1/3 of physicians would not accept new Medicaid patients, citing this stressor among other reasons.^{6,17} Having millions of additional patients on Medicaid or without any insurance coverage will likely worsen this problem significantly.

Furthermore, it has been shown that Medicaid and Medicare patients are sicker, poorer, and with fewer resources for support than those with private insurance.^{18,19} This leads to increased complexity in surgical preparation, pre and postoperative care recommendations and compliance, and discharge planning regardless of the type of surgery performed. These necessities are amplified when patients are undergoing more complex and physiologically demanding surgeries such as free-flap breast reconstruction; the adage, “complex surgeries cause complex complications,” has never rang truer.

As a result of reimbursement variation, providers who accept patients with government-sponsored plans must accept more of these patients to meet financial demands. This is in distinct contradiction to the need for more time and compensation to adequately care for patients with complicated medical needs to provide optimal care and has led to more physicians eliminating these patients from their practice. A recent study in hand surgery revealed that only 20% of surveyed surgeons scheduled an appointment for carpal tunnel release with Medicaid patients, compared to 89% for Medicare and 97% for those with private insurance.²⁰

The decline provider reimbursement and the impact on the availability of care has been highlighted in plastic surgery and in other surgical specialties and few solutions have been offered.^{12,15,21} One alternative strategy may be the development of a limited number of centers for excellence for these procedures, which would lead to improved negotiating power with payors and greater operating efficiency. However, for many patients, travel to these institutions would prove to be a limiting factor in receiving care, and the disparity of access would continue or worsen.^{8,9}

Lastly, one must consider the true differences in these reconstructive types with regards to patient satisfaction and wellbeing. Based on a cost-effectiveness study performed by Matros, et al, additional cost for obtaining 1 year of perfect breast-related health for a DIEP flap vs implant reconstruction was \$11,941 for unilateral, and \$28,017 for bilateral cases.²² Improved long-term satisfaction with autologous reconstruction when compared to implant-based reconstruction has been echoed elsewhere.^{23,24} So while free flap reconstruction does come at an increased cost,²⁵ for some patients and providers, this may be acceptable and accessibility to it should be protected. However, to the overall health system implant-based reconstruction is an overall less costly option.

Our study is limited by data from only one institution, however, reimbursement rates and payor mix correspond with those published elsewhere. We also realize that, as reported by Sando, et al,²⁶ accounting subsequent procedures after initial reconstruction may decrease these financial discrepancies. Other limitations include potential confounding variations between delayed and immediate reconstruction. Although we did not include hospital or facility based fees in our study, our aim was to focus on the physician-reimbursement component, which is the financial stressor most impactful on the provider, and which might have the greatest influence on operative decision-making.

Conclusions

Our study identifies and quantifies wide variations in reimbursement for breast reconstruction procedures. Per-hourly reimbursement rate discrepancies are significant and may preclude some surgeons from offering certain reconstructive options to a subset of patients, particularly with the unknown future of the current payor model. Understanding and quantifying these discrepancies is a key first step in minimizing a potential care delivery disparity for this patient population, and will enable us to identify innovative strategies to meet this disparity head-on, and continue providing all patients with the care they want, need, and deserve.

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References

1. Aherrera AS, Pandya SN. A Cohort Analysis of Postbariatric Panniculectomy-Current Trends in Surgeon Reimbursement. *Ann Plast Surg*. 2016 Jan; 76(1):99–101. [PubMed: 26670134]
2. [Accessed August 19, 2016] The Affordable Care Act is Working. Available at: <http://www.hhs.gov/healthcare/facts-and-features/fact-sheets/aca-is-working/index.html>
3. Jones CD, Scott SJ, Anoff DL, Pierce RG, Glasheen JJ. Changes in Payer Mix and Physician Reimbursement After the Affordable Care Act and Medicaid Expansion. *Inquiry*. 2015:52.
4. Paradise, J. [Accessed April 11, 2016] Medicaid Moving Forward. Available at: <http://kff.org/medicaid/fact-sheet/the-medicaid-program-at-a-glance-update/>. A
5. Robinson J. Hospitals respond to Medicare payment shortfalls by both shifting costs and cutting them, based on market concentration. *Health Aff (Millwood)*. 2011 Jul; 30(7):1265–71. [PubMed: 21734199]
6. Perloff JD, Kletke P, Fossett JW. Which physicians limit their Medicaid participation, and why. *Health Serv Res*. 1995 Apr; 30(1):7–26. [PubMed: 7721586]
7. Bradley CJ, Dahman B, Shickle LM, Lee W. Surgery wait times and specialty services for insured and uninsured breast cancer patients: does hospital safety net status matter? *Health Serv Res*. 2012 Apr; 47(2):677–97. [PubMed: 22092155]
8. Albornoz CR, Cohen WA, Razdan SN, et al. The Impact of Travel Distance on Breast Reconstruction in the United States. *Plastic and reconstructive surgery*. 2016; 137(1):12–8. [PubMed: 26710002]
9. Roughton MC, DiEgidio P, Zhou L, Stitzenberg K, Meyer AM. Distance to a Plastic Surgeon and Type of Insurance Plan Are Independently Predictive of Postmastectomy Breast Reconstruction. *Plast Reconstr Surg*. 2016 Aug; 138(2):203e–11e.

10. Christian CK, Niland J, Edge SB, et al. A multi-institutional analysis of the socioeconomic determinants of breast reconstruction: a study of the National Comprehensive Cancer Network. *Ann Surg*. 2006 Feb; 243(2):241–9. [PubMed: 16432358]
11. [Accessed October 28, 2016] Medicare Provider Utilization and Payment Data. Available at: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/index.html>
12. Alderman AK, Storey AF, Nair NS, Chung KC. Financial Impact of Breast Reconstruction on Academic Surgical Practice. *Plastic and reconstructive surgery*. 2009; 123(5):1408–13. [PubMed: 19407610]
13. Kulkarni AR, Sears ED, Atisha DM, Alderman AK. Use of autologous and microsurgical breast reconstruction by U.S. plastic surgeons. *Plast Reconstr Surg*. 2013 Sep; 132(3):534–41. [PubMed: 23985629]
14. Deleyiannis FW, Porter AC. Economic factors affecting head and neck reconstructive microsurgery: the surgeons' and hospital's perspective. *Plast Reconstr Surg*. 2007 Jul; 120(1):157–65. [PubMed: 17572558]
15. Sando IC, Malay S, Kozlow JH, Chung KC, Momoh AO. Comprehensive Breast Reconstruction in an Academic Surgical Practice—An Evaluation of the Financial Impact. *Plastic and reconstructive surgery*. 2014; 134(6):1131–9. [PubMed: 25415083]
16. Nguyen PD, Herrera FA, Roostaeian J, Da Lio AL, Crisera CA, Festekjian JH. Career satisfaction and burnout in the reconstructive microsurgeon in the United States. *Microsurgery*. 2015 Jan; 35(1):1–5. [PubMed: 24809735]
17. Goodson JD. Patient Protection and Affordable Care Act: promise and peril for primary care. *Ann Intern Med*. 2010 Jun 1; 152(11):742–4. [PubMed: 20404263]
18. Foundation THJKE. Setting the Record Straight on the Evidence. 2013. What is Medicaid's Impact on Access to Care, Health Outcomes, and Quality of Care?.
19. Association AH. Sicker, More Complex Patients are Driving up Intensity of ED Care. 2013.
20. Kim CY, Wiznia DH, Wang Y, et al. The Effect of Insurance Type on Patient Access to Carpal Tunnel Release Under the Affordable Care Act. *J Hand Surg Am*. 2016 Feb 20.
21. Zuckerman JD, Koli EN, Inneh I, Iorio R. Can a hip and knee adult reconstruction orthopaedic surgeon sustain a practice comprised entirely of Medicare patients? *J Arthroplasty*. 2014 Sep; 29(9 Suppl):132–4.
22. Matros E, Albornoz CR, Razdan SN, et al. Cost-effectiveness analysis of implants versus autologous perforator flaps using the BREAST-Q. *Plast Reconstr Surg*. 2015 Apr; 135(4):937–46. [PubMed: 25517411]
23. Eltahir Y, Werners LL, Dreise MM, Zeijlmans van Emmichoven IA, Werker PM, de Bock GH. Which breast is the best? Successful autologous or alloplastic breast reconstruction: patient-reported quality-of-life outcomes. *Plast Reconstr Surg*. 2015 Jan; 135(1):43–50. [PubMed: 25539295]
24. Weichman KE, Broer PN, Thanik VD, et al. Patient-Reported Satisfaction and Quality of Life following Breast Reconstruction in Thin Patients: A Comparison between Microsurgical and Prosthetic Implant Recipients. *Plast Reconstr Surg*. 2015 Aug; 136(2):213–20. [PubMed: 25909301]
25. Albornoz CR, Cordeiro PG, Mehrara BJ, et al. Economic implications of recent trends in U.S immediate autologous breast reconstruction. *Plast Reconstr Surg*. 2014 Mar; 133(3):463–70. [PubMed: 24572839]
26. Sando IC, Momoh AO, Chung KC, Kozlow JH. The Early Years of Practice: An Assessment of Operative Efficiency and Cost of Free Flap and Implant Breast Reconstruction at an Academic Institution. *J Reconstr Microsurg*. 2016 Jul; 32(6):445–54. [PubMed: 26872025]

Figure 1.
Payor type overall and by procedure. Percentages are based on total patients in each category.

Figure 2. Reimbursement per hour. The highest reimbursing procedure per hour, bilateral implant based reconstruction is used as a reference.

Figure 3. Reimbursement trends as a function of percentage reimbursement from the initial study time point.

Table 1

CPT codes, procedures, and overall number of patients

Queried CPT Codes		
CPT code	n	Procedure
19364	241	Breast reconstruction with free flap
19364-50	104	Breast reconstruction with free flap, bilateral
19357	1270	Breast reconstruction, immediate or delayed, with tissue expander, including subsequent expansion
19357-50	1076	Breast reconstruction, immediate or delayed, with tissue expander, including subsequent expansion, bilateral