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Understanding consumer preferences for care of adolescents with pelvic inflammatory disease*

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Abstract

Objective.—The objective of this study is to estimate consumers' maximum willingness-to-pay (WTP) for follow-up PID services by physicians and community health nurses (CHNs), differences by consumer type (adolescents versus parents), and the differences in health-provider predicted WTP consumer estimates and actual consumer WTP estimates.

Methods.—In this IRB-approved study, a contingent valuation method was used to collect WTP data regarding co-payments to physicians or nurses for clinical service delivery from the consumers of adolescent PID services (parents and adolescents) and health providers using a national convenience sample. Consumers were recruited from an academic pediatric and adolescent medicine clinic and five health department school-based health clinics in a large urban community with high (sexually transmitted infection) STI prevalence. Participants completed a web-based survey. Data were analyzed using linear regression analyses.

Results.—Adolescents were willing to pay $36 more (95 % Cl : $27.9–44.3) for community health nursing care and parents were willing to pay $48 more dollars (95 % Cl : $40.3-$57.4) than physician's predicted. There were no significant differences in adolescent and parents WTP for physician or nursing services Consumers (adolescents & parents) WTP for physician PID services were on average $18.50 higher than CHN PID services (p = 0.01). Using physician estimates for WTP as the reference group, adolescents were willing to pay $56 more (95 % Cl : $48.6-$63.4) for physician care and parents were willing to pay $66 more (95 % Cl : $59.0-$72.8) than physician's predicted.

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Conclusion.—Adolescents and parents are willing to pay more for physician follow-up for PID, but they are open to CHN follow-up visits based on the mean WTP for CHN visits. Since WTP also reflects the value that individuals place on a service, our data demonstrate that providers consistently underestimate the value consumers place on clinical services for x adolescents with PID.

Keywords

pelvic inflammatory disease (pid); adolescents; consumer preferences

Pelvic inflammatory disease (PID) is a common reproductive health disorder that disproportionately affects adolescent and young adult women [1] and puts the affected patient at risk for ectopic pregnancy, chronic pelvic pain, and infertility [2–4], While the rates of PID have declined over the last 15 years due to asymptomatic screening and early treatment of sexually transmitted infections (STIs) [5], treatment of the adolescent with PID has shifted from inpatient to outpatient settings in an effort to further contain the costs of PID care. This shift was supported by studies demonstrating the effectiveness of oral antibiotic regimens [6, 7] and subsequent findings from the PID Evaluation and Clinical Health (PEACH) trial, a large multi-center trial comparing the efficacy of inpatient and outpatient treatment in the United States. Given the low cost of oral medications, low clinical utilization after initial treatment [8], and the historic unmet need for fertility services in the United States [9]; it is not surprising that the cost-effectiveness analysis comparing inpatient and outpatient management strategies surmised that it would never be cost-effective to treat a woman with mild-moderate disease in the inpatient setting [10].

Even though the Centers for Disease Control and Prevention recommends non-judgmental, developmentally appropriate approaches to STI treatment in adolescents, [11] the current recommendations are silent on how to effectively translate the available findings to the care of the young adolescent girl with PID. More specifically, the guidelines fail to consider the limitations on generalizability of the PEACH trial as an efficacy study with high refusal rates and differential participation by adolescents or the fact that women in both arms of the trial had unacceptably poor outcomes. Multiple studies have also demonstrated that the development of PID is associated with increased risk-taking behaviors, that youth have poor adherence to the CDC outpatient recommendations for self-care, and that adolescents who have recurrent PID are at increased risk for adverse sequelae [12–14]. While adherence to the CDC guidelines by clinicians is another major problem in the United States [14–16], the recommendations have become less directive due to the absence of more cost-effective alternatives [17,18]. The lack of direction with regard to management of adolescents who are by definition at-risk because of barriers to self-care and follow-up care leaves clinicians struggling for consensus on management of adolescent patients [19].

The quandary posed by the observed treatment and reproductive health outcomes for adolescents with PID can only be addressed by additional research that is both adolescent-focused and designed to develop an alternative cost-effective strategy (figure 1). Further, designing alternative approaches that are acceptable to providers and consumers of STI/PID-related services may allow us to increase patient adherence to reduce adverse outcomes. Use

of community health nurses (CHN) for clinical follow-up has been shown to be an effective strategy to improve clinical outcomes in adolescents at risk for other adverse reproductive health (e.g. pregnancy) outcomes [20] and may meet the needs of this vulnerable population affected by PID. The objective of this study is to determine consumers′willingness-to-pay (WTP) for follow-up PID services by physicians versus CHNs, to examine the differences in WTP by consumer type, and to examine differences in health-provider predicted consumer WTP values and actual consumer WTP values as a first step in identifying an acceptable that could potentially fill this void in adolescent health care.

Methods

The methods for this Johns Hopkins Medicine Institutional Review Board approved study have previously been described elsewhere, but will be briefly reviewed in this section [21].

Three groups of English-speaking participants were recruited. Croup 1 consisted of adolescent girls ages 15- years of age, group 2 consisted of adults (≥18 years) who have raised an adolescent and/or are currently parenting an adolescent (>12 years), and the final group consisted of clinicians (physicians, nurse practitioners, and physician assistants) who a) care for adolescents in clinical practice and b) are in a position to make decisions regarding patient disposition after a diagnosis of PID. The term parent includes biological parents and surrogate parents (foster parents, adoptive parents, and those parenting otherwise through kinship ties (e.g. aunts/uncles, older siblings). Male adolescents, non-clinician adults who had not experienced adolescent parenting, clinicians who did not routinely make decisions about patient disposition, individuals who were unable to communicate with staff due to cognitive or other mental impairment were excluded from the study.

Consumers of adolescent health services (adolescents and parents) were recruited from an academic multi-specialty practice (which included an adolescent medicine group) and five local school-based health clinics in a large urban community on the East Coast of the United States. The community is situated in a wealthy and progressive state with a vibrant history and significant academic resources; however, the city is also characterized by significant income inequality and high STI incidence among its citizens [22,23]. Given the national shortage of adolescent health care providers [24] adolescent-serving clinicians were recruited both locally and from the listserves of national organizations serving professionals engaged in adolescent health service delivery to improve sample size.

Using a general population approach, all participants completed a web-based survey programmed for data collection after providing online consent for human sub- jects ′research. Survey questions were grounded in the contingent valuations method (CVM), which uses direct questions to estimate monetary values for services. As such individuals were asked to provide demographic information and their maximum WTP for services in response to a specific hypothetical outpatient PID scenario. In this instance, we inquired regarding the co-payments for physicians or community health nurse for delivery of post-PID clinical services using the following scenario:

> “Imagine a 15-year old girl with pelvic inflammatory disease (PID) that does not require a hospital stay for antibiotic treatment. The patient will need to take

> antibiotic pills for 14 days to treat it. She will also need to notify her sexual partner, return to the clinic within 72 hours for care, and abstain from sexual intercourse during treatment. She will have pain for about 7 days, with the pain mainly in the lower abdomen. It will interfere with daily activity, work, sleep, and family relations. Having sex is usually painful, and fever, nausea, and vaginal discharge are often a part of the illness. She will be able to eat and drink pretty much as usual. She has a very small chance of developing complications that could require a hospital stay and possibly an operation. Long-term problems with pain, difficulty getting pregnant, or with tubal pregnancy could occur, even if she is treated. However, she will probably return to her usual health once the illness goes away, but will have some chance of getting PID again in the future. Patients need to be checked by a health provider within 72 hours of starting treatment. There are two ways that this follow-up can be done : 1) Home visitation by a community health nurse; 2) Patient comes to clinic to see their clinical provider. Although health insurance will pay for most of the costs of follow-up, the patient may still have to make a co-payment for service."

Participants were then asked about their willingness to pay a co-payment for physician and community health nursing services. In each question a low-high ping-pong method [25] was used to elicit the maximum WTP. Consumers (adolescents and parents) were asked to provide the maximum WTP for themselves and clinicians were asked to estimate the maximum WTP for consumers.

All data from the web survey were uploaded into an online database for analysis. Data from participants who did not complete the survey was not saved per the consent process and study procedures. We report the maximum WTPs as « WTP. » This analysis of data focused on continuous WTP variables in dollars for physician versus community health nurse (CHN) services. Mean and median WTP for each clinical scenario and WTP variance by perspective (parent, patient, and provider) was computed. Differences in WTP were analyzed using linear regression analyses. Statistical analyses were performed in SPSS.

Results

Participants comprised 121 parents, 134 adolescents, and 102 clinicians who serve adolescents. Eighty-nine percent of the parents were mothers, 76 % were employed outside of the home, and 25 % of parents had a prior history of STIs. The mean income for parents was $39,700 (SD $21,400). Twenty-three percent of the adolescents were employed and 20 % had a prior history of STIs. Clinicians were mostly women, devoted 70 % of their practice to the care of adolescents, 62 % of their practices served low income patients based on insurance status, and 21 % of the patients care was related to STI treatment.

The mean WTP for physician services was $16 (SD $16.9) according to clinicians, $81.9 ($34.0) for parents, and $ 72 (SD $ 39.1) for adolescents. The mean WTP for CHN services was $13.6 (SD $17.4) as predicted by clinicians, $62.4 (SD $44.1) for parents, and $49.7 (SD $44) for adolescents. Adolescents were willing to pay $36 more (95 % Cl : $27.9–44.3) for community health nursing care and parents were willing to pay $48 more dollars (95 %

Cl: $40.3-$57.4) than physician's predicted. There were no significant differences in adolescent and parents WTP for physician or nursing services Consumers (adolescents & parents) WTP for physician PID services were on average $18.50 higher than CHN PID services (p = 0.01). Using physician estimates for WTP as the reference group, adolescents were willing to pay $56 more (95 % Cl : $48.6-$63.4) for physician care and parents were willing to pay $66 more (95 % Cl : $59.0-$72.8) than physician′s predicted.

Conclusion

This study demonstrates that while adolescents and parents clearly prefer physician follow-up for PID, they are open to CHN follow-up visits based on the mean WTP for CHN visits. Since WTP also reflects the value that individuals place on a service, our data demonstrate that clinicians consistently underestimate the value the consumers place on clinical service for PID. Given poor adherence to physician follow-up, additional research evaluating alternate models of care including the effectiveness of CHN visits for PID follow-up care is warranted.

Home nurse visitation interventions have been effective in improving several maternal and child outcomes, particularly when targeting parenting skills education and family planning. The impact of home nurse visiting interventions have been reported to prevent child abuse and neglect, children's mental health problems and infant mortality [26, 27], reduce repeat pregnancy rates [28] and improve utilization of resources including prenatal care and WIC for pregnant and parenting adolescents [20]. One specific adolescent pregnancy home nurse intervention, Teen Parenting Partnership (TPP) Program, demonstrated that adherence to appointments for prenatal care were significantly higher in the home nurse group as compared to the comparison group suggesting that interventions that increase an adolescent's access to resources will enhance their appropriate health care utilization and promote risk- reducing behavior [29].

To our knowledge, this study is the first to begin to fill a void of available data on consumer preferences and provider perception of consumer preferences related to adolescent STI-care and to offer a viable alternative towards improving outcomes [30]. There is sufficient precedent in the literature to suggest such differences paired with additional cost-effectiveness outcomes may lead to policy shifts related to care management by initiating discussion across the key stakeholder groups [31–33], Integration of the parental perspective is particularly important because adolescents with PID are experiencing transition in autonomy and often seek services without the assistance of an involved adult and by law are able to make decisions about their care regardless of developmental status. The benefit of this approach is that we acknowledge the importance of the adolescent perspective while demonstrating and integrating the value parents place on PID care as key stakeholders.

Our findings must be considered in light of several general study limitations. These data were collected from adolescents and parents in pediatric and adolescent clinical settings in a single urban community in the United States, thus findings may not be generalizable to other dissimilar communities. However, these findings are important given the significant health disparities faced by urban adolescents. The estimates can also be used to provide better

ranges for adolescent-related economic analyses. Although the study recruited a few girls with a history of PID, data are reflective of the perspective of the general community of medical care users. This view is preferred compared with use of valuations from only those affected by a disorder in economic analyses. Clinicians′ valuations may have been biased by the current realities of co-payments thus lowering the predicted values for parents. CVM values from WTP are also controversial because it is survey data and not observed behavioral outcomes and it is hard for policymakers to spend dollars using CVM data. CVM however, is the mostly widely accepted method for estimating total economic value for non-use and can also be used to estimate the ultimate value for goods and services.

Implications

PID is a prevalent and costly reproductive health problem amongst adolescents in the United States. Adolescents with PID continue to experience adverse reproductive health outcomes regardless of inpatient or outpatient treatment, suggesting that the value of follow-up is not associated with the location or type of treatment setting, but rather who delivers treatment. Adolescents and parents are willing to pay higher than average co-payments to ensure that necessary follow-up care is received for PID, but adolescent and parent WTP for both CHN and physician services is significantly higher than the consumer WTP predicted by clinicians. Despite potential inflation of WTP payments using CVM, the WTP values from the study suggest that consumers think that follow-up care for PID is important and they are willing to have STI follow-up in their homes. Additional research exploring the effectiveness of community health nursing and other evidence-based interventions to improve PID care in the United States is warranted.

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References

1. Sutton MY, Sternberg M, Zaidi A, St Louis ME, Markowitz LE. Trends in pelvic inflammatory disease hospital discharges and ambulatory visits, United States, 1985–2001. Sex Transm Dis 2005; 32: 778–84. [PubMed: 16314776]
2. Trent M, Haggerty CL, Jennings JM, Lee S, Ness RB. Adverse Reproductive Health Outcomes After Pelvic Inflammatory Disease. J Adolesc Health 2009; 44: S4.
3. Ness RB, Trautmann G, Richter HE, et al. Effectiveness of treatment strategies of some women with pelvic inflammatory disease : a randomized trial. Obstet Gynecol 2005; 106:573–80. [PubMed: 16135590]
4. Westrom LV. Chlamydia and its effect on reproduction. J Br Fer Soc 1996; 1: 23–30. [PubMed: 12346973]
5. Moss NJ, Ahrens K, Kent CK, Klausner JD. The decline in clinical sequelae of genital Chlamydia trachomatis infection supports current control strategies. J Infect Dis 2006; 193: 1336-B, author reply 1338–9.
6. Centers for Disease Control and Prevention, Workowski KA, Berman SM. Sexually transmitted diseases treatment guidelines, 2006. MMWR Recomm Rep 2006; 55: 1–94.
7. Haggerty CL, Ness RB. Newest approaches to treatment of pelvic inflammatory disease : a review of recent randomized clinical trials. Clin Infect Dis 2007; 44:953–60. [PubMed: 17342647]

8. Trent M, Judy SL, Ellen JM, Walker A. Use of an institutional intervention to improve quality of care for adolescents treated in pediatric ambulatory settings for pelvic inflammatory disease. J Adolesc Health 2006;39:50–6. [PubMed: 16781961]
9. Henshaw SK, Orr MT. The need and unmet need for infertility services in the United States. Fam Plann Perspect 1987; 19: 180–3, 186. [PubMed: 3678484]
10. Smith KJ, Ness RB, Roberts MS. Hospitalization for pelvic inflammatory disease : a cost-effectiveness analysis. Sex Transm Dis 2007;34:108–12. [PubMed: 16794559]
11. Workowski KA, Berman S. Centers for Disease Control and Prevention (CDC). Sexually transmitted diseases treatment guidelines, 2010. MMWR Recomm Rep 2010; 59:1–110.
12. Ness RB, Soper DE, Holley RL, et al. Effectiveness of inpatient and outpatient treatment strategies for women with pelvic inflammatory disease: results from the Pelvic Inflammatory Disease Evaluation and Clinical Health (PEACH) Randomized Trial. Am J Obstet Gynecol 2002;186:929–37. [PubMed: 12015517]
13. Trent M, Haggerty CM, Jennings JJ, Lee S, Bass DC, Ness R. Adverse Adolescent Reproductive Health Outcomes After Pelvic Inflammatory Disease. Arch Ped Adol Med 2011; 165: 49–54.
14. Trent M, Bass D, Ness RB, Haggerty C. Recurrent PID, subsequent STI, and reproductive health outcomes : findings from the PID evaluation and clinical health (PEACH) study. Sex *Transm Dis* 2011; 38: 879–81. [PubMed: 21844746]
15. Trent M, Chung SE, Burke M, Walker A, Ellen JM. Results of a Randomized Controlled Trial of a Brief Behavioral Intervention for Pelvic Inflammatory Disease in Adolescents. J Pediatr Adolesc Gynecol 2010; 23:96–101. [PubMed: 19733100]
16. Chandra A, Martinez GM, Mosher WD, Abma JC, Jones J. Fertility, family planning, and reproductive health of U.S. women : data from the 2002 National Survey of Family Growth. Vital Health Stat 23 2005;25:1–160.
17. Shih TY, Gaydos CA, Rothman RE, Hsieh YH. Poor provider adherence to the Centers for Disease Control and Prevention treatment guidelines in US emergency department visits with a diagnosis of pelvic inflammatory disease. Sex *Transm Dis* 2011; 38: 299–305. [PubMed: 21317690]
18. Goyal M, Hersh A, Luan X, Localio R, Trent M, Zaoutis T. Are Emergency Departments Appropriately Treating Adolescent Pelvic Inflammatory Disease ? JAMA Pediatr 2013:1–2.
19. Trent M, Lehmann HP, Butz A, Qian Q, Ellen JE. Clinician Perspectives on Management of Adolescents with Pelvic Inflammatory Disease Using Standardized Patient Scenarios. Sex Transm Dis 2013;40:496–8. [PubMed: 23680907]
20. Kitzman H, Olds DL, Henderson CR Jr, et al. Effect of prenatal and infancy home visitation by nurses on pregnancy outcomes, childhood injuries, and repeated childbearing. A randomized controlled trial. JAMA 1997,278:644652.
21. Trent M, Lehmann HP, Qian Q, Thompson CB, Ellen JM, Frick KD. Adolescent and parental utilities for the health states associated with pelvic inflammatory disease. Sex *Transm Infect* 2011; 87: 583–7. [PubMed: 22001169]
22. Office of Epidemiology and Planning. Baltimore City Health Department. Baltimore City Health Status Report, 2008 Available at : www.baltimorehealth.org/dataresearch.html. Accessed 05/07, 2009.
23. Maryland Department of Health and Mental Hygiene. Baltimore City Vital Statistics, 2005. Available at: http://www.baltimorehealth.org/info/BaltimoreVitalStats2005.pdf. Accessed 09/30, 2009.
24. Committee on Adolescent Health Care Services and Models of Care for Treatment, Prevention, and Healthy Development, National Research Council. Adolescent Health Services : Missing Opportunities. National Academies Press; 2009.
25. Lenert LA, Cher DJ, Goldstein MK, Bergen MR, Garber A. The effect of search procedures on utility elicitations. Med Decis Making 1998;18:76–83. [PubMed: 9456212]
26. Chaffin M Is it time to rethink Healthy Start/Healthy Families ? Child Abuse Negl 2004; 28:589–95. [PubMed: 15193850]
27. New Freedom Commission on Mental Health. Achieving the Promise: Transforming Mental Health Care in America : Final Report. Rockville, MD: Department of Health and Human Services, 2003, DHHS publication SMA-03–3832.

28. Koniak-Griffin D, Verzemnieks IL, Anderson NL, et al. Nurse visitation for adolescent mothers: two-year infant health and maternal outcomes. Nurs Res 2003; 52: 127–36. [PubMed: 12657988]

29. Tonelli M Home Visiting for the Pregnant and Parenting Teen. Journal of Pediatric and Adolescent Gynecology 2006/2; 19:57–8. [PubMed: 16472732]

30. Sheeder J, Stevens-Simon C, Lezotte D, Glazner J, Scott S. Cervicitis : to treat or not to treat ? The role of patient preferences and decision analysis. J Adolesc Health 2006; 39:887–92. [PubMed: 17116520]

31. Saigal S, Feeny D, Rosenbaum P, Furlong W, Burrows E, Stoskopf B. Self-perceived health status and health-related quality of life of extremely low-birth-weight infants at adolescence. JAMA 1996;276:453–9. [PubMed: 8691552]

32. Saigal S, Rosenbaum PL, Feeny D, et al. Parental perspectives of the health status and health-related quality of life of teen-aged children who were extremely low birth weight and term controls. Pediatrics 2000; 105: 569–74. [PubMed: 10699111]

33. Saigal S, Stoskopf BL, Feeny D, et al. Differences in preferences for neonatal outcomes among health care professionals, parents, and adolescents. JAMA 1999; 281: 1991–7. [PubMed: 10359387]

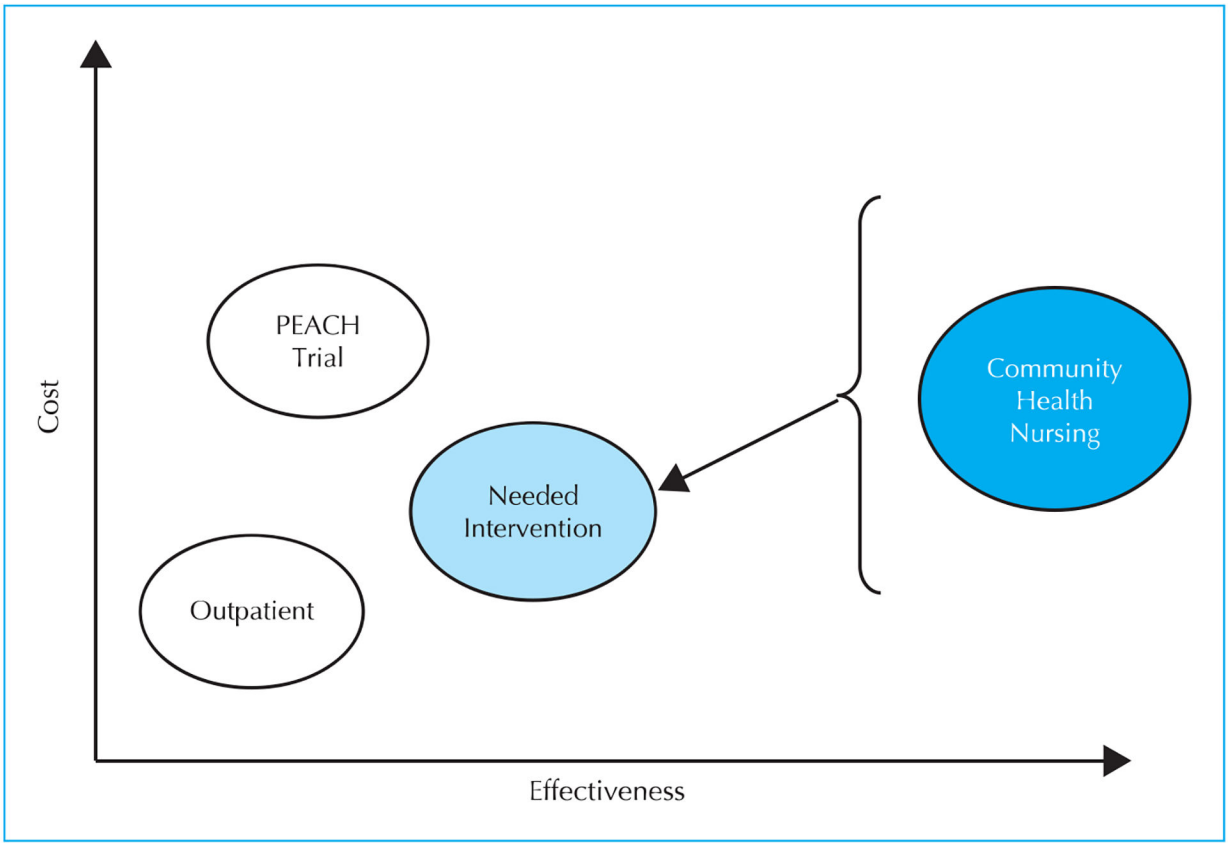

Figure 1.
Strategic Approach to PID Management Considering Cost-effectiveness.