

Money, Masculinity, and Men's Health: Experimental Evidence on Demand for a Preventive Health Input

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Voluntary Medical Male Circumcision (VMMC)

HIV/AIDS leading cause of adult mortality in poorest region of world (WHO 2013)

VMMC reduces FtM HIV transmission by 51 to 76%

- RCTs in Kenya (Bailey et al 2007), Uganda (Gray et al 2007), and South Africa (Auvert et al 2005)

World Health Organization (WHO) aiding scale-up of mass VMMC campaigns for HIV prevention in 14 priority countries

Take-up of inexpensive life-saving health technology is very low

- As of 2014, fewer than 6 million VMMCs out of target of 21 million VMMCs



...and other signs, album:

Disclaimer

The previous image was not randomly selected.

Fundamental Puzzle

Fundamental puzzle about human behavior:

- Low level of household investment in preventive health inputs
- Worldwide: 0.33% of GDP (WHO 2013)
- In poor countries: 0.10% of GDP (WHO 2013)

Several hypotheses:

- Low income
- High prices
- Lack of information
- Behavioral biases

Overview

Field experiment in Soweto, Johannesburg, South Africa

Randomized distribution of postcards advertising VMMC to 6,000 households

Statement “Are you tough enough?” doubled take-up of VMMC procedure relative to control postcard

Cash transfer of US\$10 conditional on completing counseling session tripled take-up of VMMC procedure

Information on “2 out of 3” did not increase take-up

Findings highlight behavioral biases as a key explanation for low household investment in preventive health inputs

Outline

Conceptual framework

Experimental design

Results

Discussion

Conceptual Framework

Standard consumer theory suggests four possible reasons for low demand for preventive health inputs:

- Income too low
- Price too high
- Individuals uninformed about health production technology
- Strong taste for non-use

Behavioral economics suggests:

- Present-bias preferences (result in procrastination)
- Framing (i.e. presentation) affects demand

Application: VMMC

Price

- Sticker price already zero
- Opportunity costs (e.g. foregone employment) and transport
 - Westercamp and Bailey 2007, Westercamp et al 2010, Herman-Roloff et al 2011, Lissouba et al 2011
- Cash transfers for health
 - Fernald et al 2008, Barham and Maluccio 2009, Baird et al 2011, Berhman et al 2011, de Walque et al 2012, Akresh et al 2014, Evens et al 2015, Thirumurthy et al 2015, Wilson et al 2015
- Conditional cash transfer for VMMC procedure? (overly coercive!)
- Thus, test conditional cash transfer for VMMC counseling session
- May help overcome present-bias preferences and procrastination behavior
 - Dupas and Robinson 2013, Tarrozi et al 2013

Application: VMMC (cont.)

Information

- Individuals well-informed about prophylactic benefit of VMMC (~95% in our sample)
- Gender of decision-maker and partner involvement affects human capital investments
 - Thomas 1990, Thomas et al 1990, Duflo 2003, Ashraf 2009, Ashraf et al 2014
- Thus, test information statement, “Among partners of uncircumcised men, 2 out of 3 would prefer a circumcised partner” (S. Africa national survey)

Framing

- Framing affects demand for health inputs (Luoto et al 2011) and demand for other investments (Bertrand et al 2009)
- Identity affects economic behavior (Akerloff and Kranton 2000)
- Thus, test framing statement, “Are you tough enough?”

Income

- Elasticity of demand w.r.t income likely low => costly to increase demand via unconditional income transfer
- Thus, do not test in experiment


Experimental Design

Door-to-door marketing campaign randomly distributing 6,000 postcards to households in Soweto township (Johannesburg, South Africa)

- HIV prevalence ~ 15% (Gauteng Province)
- Circumcision prevalence ~ 30% (Gauteng Province, lowest in South Africa)

Six different postcard types (1,000 postcards each):

- Control=refreshments served
- Compensation=R100 (US\$10) + refresh
- Information="2 out of 3" + refresh
- Framing="Are you tough enough?" + refresh
- Compensation + Information
- Compensation + Framing



CHAPS clinics provide voluntary medical male circumcision (VMMC) as part of standard HIV prevention services.

Medical trials indicate that VMMC reduces HIV transmission by 51% to 76%.

Place sticker
here



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CHAPS clinics in Soweto where you may bring the postcard to include:

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VMMC Cascade

VMMC cascade is series of steps required to receive VMMC

Our study measures:

- Call/text to clinic for more information (“hotline”)
- Take-up of VMMC counseling session
- Take-up of VMMC procedure
- Previous risky behavior and other characteristics of men taking up VMMC counseling session

No baseline survey

- Clinic-base survey: 29 yrs old, 2/3 single, 1/2 used condom at last sex, 1/2 multiple partners in past year, 1/10 multiple partners in past month

Figure 2: Counseling Session Take-Up (%) by Postcard Type

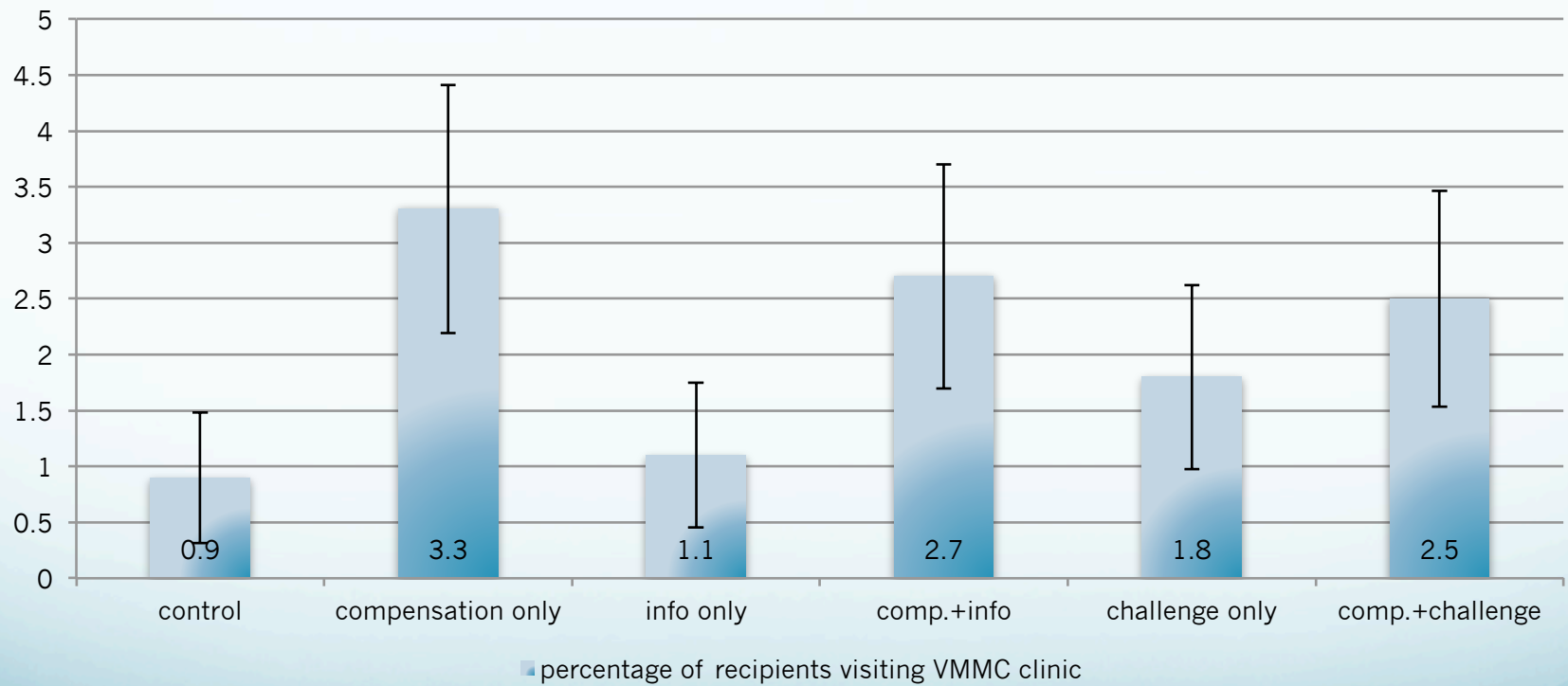
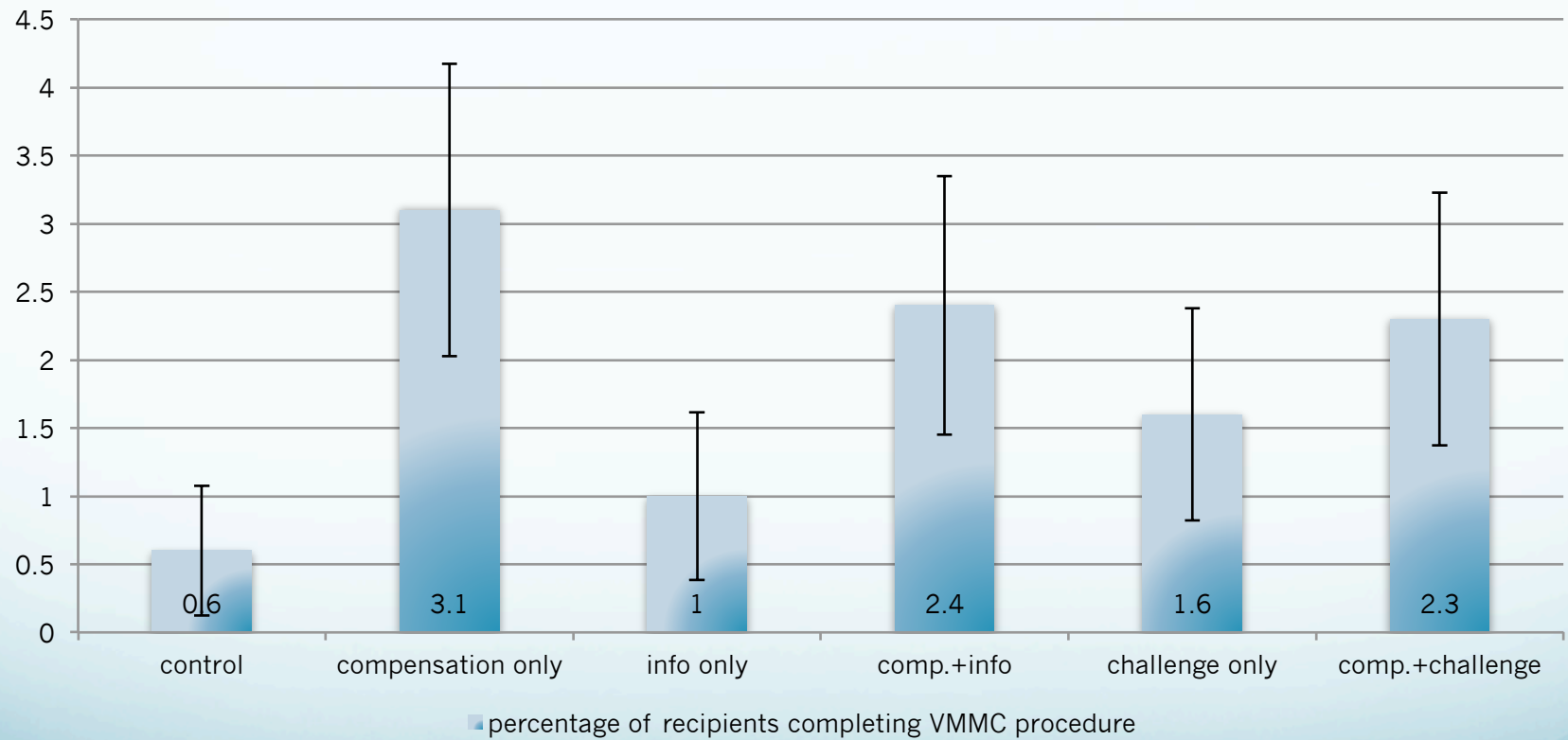


Figure 3: Procedure Take-Up (%) by Postcard Type



Regression Analysis

	No Message	Information	Framing
No Compensation	N=1,000 [CONTROL]	N=1,000	N=1,000
Compensation	N=1,000	N=1,000	N=1,000

Method #1: Pairwise comparison (as in figure)

- e.g.: Compensation-only vs. control

Method #2: Pooled comparison (assumes interaction effects are zero)

- e.g.: All compensation vs. all no-compensation
- e.g.: All information vs. all no-message

Estimate linear probability model (LPM) using OLS

- LPM/OLS is standard in applied microeconomics
- Wilson et al (2015) presents logit results

Table 3: OLS Regression Estimates of Effect of Advertising on Counseling Session Take-up

	<i>Dependent variable: Counseling session take-up</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Compensation	.024*** (.006)			.016*** (.004)		
Partner preference		.002 (.004)			-.002 (.004)	
Challenge			.009* (.005)			.001 (.005)
Observations	2,000	2,000	2,000	6,000	4,000	4,000

Notes: Heteroskedasticity-robust standard errors in parentheses.

Columns (1)-(3) present pairwise comparison with control group.

Columns (4)-(6) present pooled comparison.

*** Significant at 1% level, ** Significant at 5% level * Significant at 10% level

Table 4: OLS Regression Estimates of Effect of Advertising on Procedure Take-up

	<i>Dependent variable: Procedure take-up</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Compensation	.025*** (.006)			.015*** (.003)		
Partner preference		.004 (.004)			-.002 (.004)	
Challenge			.010** (.005)			.001 (.004)
Observations	2,000	2,000	2,000	6,000	4,000	4,000

Notes: Heteroskedasticity-robust standard errors in parentheses.

Columns (1)-(3) present pairwise comparison with control group.

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Table 5: OLS Regression Estimates of Interaction Effects of Advertising

	<i>Dependent variable</i>					
	Hotline (1)	Counseling (2)	Circumcision (3)	Hotline (4)	Counseling (5)	Procedure (6)
Compensation	.004 (.007)	.024*** (.006)	.025*** (.006)	.004 (.007)	.024*** (.006)	.025*** (.006)
Partner preference	-.007 (.006)	.002 (.004)	.004 (.004)	-.007 (.006)	.004 (.004)	.006 (.004)
Challenge	-.009 (.006)	.009* (.005)	.010** (.005)	-.009 (.006)	.007 (.005)	.008* (.005)
Compensation*Partner preference	.004 (.009)	-.008 (.009)	-.011 (.008)			
Compensation*Challenge	.003 (.009)	-.017* (.009)	-.018** (.009)			
Compensation*(Message)				.004 (.008)	-.013 (.008)	-.015** (.007)
F-stat of difference (p-value)	.01 (.91)	1.02 (.31)	.68 (.41)			
Observations	6,000	6,000	6,000	6,000	6,000	6,000

Notes: Heteroskedasticity-robust standard errors in parentheses.

Columns (1)-(3) present unrestricted specification w.r.t. partner preference and challenge interactions.

Columns (4)-(6) present restricted specification w.r.t. partner preference and challenge interactions.

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Discussion

Stylized Fact #1:

- Demand for VMMC procedure highly responsive to factors outside of standard consumer theory
 - “Are you tough enough?”
 - US\$10 conditional on counseling session

Stylized Fact #2:

- Very high (i.e. 90 percent) “conversion rate” from counseling session to procedure

Explanation consistent with #1 **and** #2:

- Postcard caused procrastinating men to act on latent demand

Rule out credit constraints and income effect as mechanisms

CCT for counseling session reduced price of complement to procedure?

Discussion (continued)

Why does it matter if people are procrastinating?

Could procrastinate forever

- O'Donoghue and Rabin (1999) model, consistent with empirical findings (e.g. Banerjee et al 2010)

Men who responded to advertising were at age of peak HIV incidence

- Average age in our sample = 29 years
- Incidence rates in Kwa-Zulu Natal (Barnighausen et al 2008)
 - 25-29: 8.7
 - 30-34: 7.6
 - 35-39: 1.9

Conclusion

Framing statement (i.e. “Are you tough enough?”) roughly doubled take-up

Cash transfer conditional on counseling session roughly tripled take-up of procedure

Likely mechanism: postcard caused procrastinating men to act on latent demand

Some evidence of differential selection across postcard types

As a whole, suggests adjusting presentation of information and CCTs for clinic visits may have large effects on health input take-up

CCTs for clinic visits consistent with US global health policy ethical guidelines

Thank you!

Thank you!

Table 1: Summary Statistics of Demographic Characteristics of Respondents

	All Respondents	Initially Uncircumcised
Age	29.03 (9.29)	29.07 (9.36)
Single	0.64 (0.48)	0.64 (0.48)
Has Any Children	0.47 (0.50)	0.49 (0.50)
Worked in the last 7 days	0.46 (0.50)	0.45 (0.50)
Has ever taken HIV test	0.77 (0.42)	0.75 (0.44)
Has family member with HIV	0.29 (0.45)	0.29 (0.46)
Had an STI in last 12 months	0.06 (0.23)	0.05 (0.23)
Has ever had STI	0.11 (0.31)	0.11 (0.31)
Has ever had sex	0.93 (0.26)	0.92 (0.27)
Age at which first had sex	16.45 (2.96)	16.62 (2.94)
Used a condom at last sex	0.57 (0.50)	0.59 (0.49)
Had more than 1 partner last month	0.10 (0.30)	0.10 (0.30)
Had more than 1 partner last year	0.52 (0.50)	0.53 (0.50)
Attended any secondary	0.93 (0.26)	0.92 (0.27)
Believes >50% of Soweto HIV+	0.65 (0.48)	0.66 (0.48)

Note: Standard deviations in parentheses. The sample sizes in the first column range from 107-123, and in the second column, the range is 95-111.

Figure 1: Hotline Take-Up (%) by Postcard Type

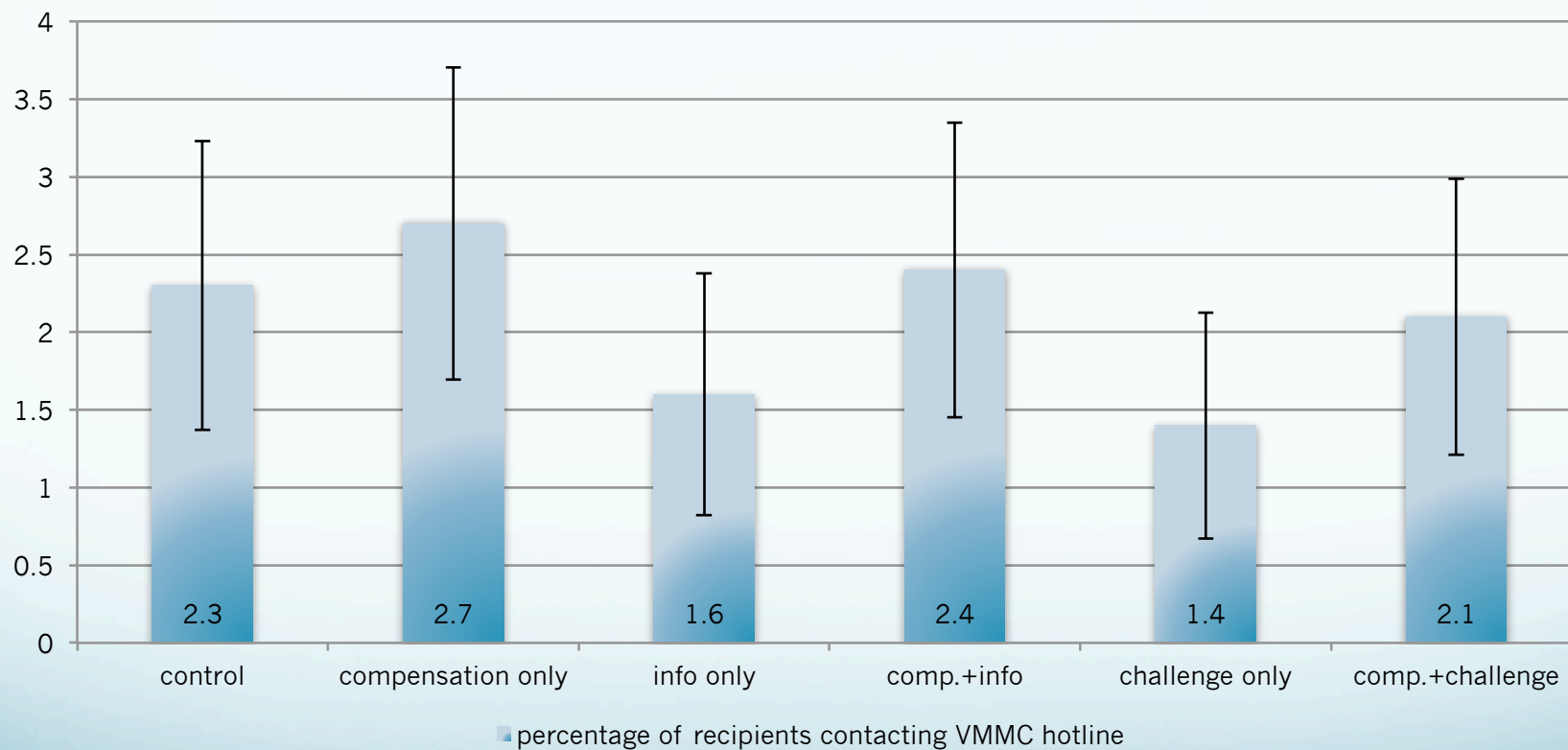


Table 2: OLS Regression Estimates of Effect of Advertising on Hotline Take-up

	<i>Dependent variable: Hotline take-up</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Compensation	.004 (.007)			.006 (.004)		
Partner preference		-.007 (.006)			-.005 (.005)	
Challenge			-.008 (.006)			-.009 (.005)
Observations	2,000	2,000	2,000	6,000	4,000	4,000

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Table 6: Demographic Differences by Advertising Device

	<i>Dependent variable</i>					
	Age	Has children	Asset index	Family member HIV+	More than one partner last year	Risk index
	(1)	(2)	(3)	(4)	(5)	(6)
Compensation	1.91 (1.85)	.20 (.21)	-.17 (.23)	.05 (.10)	-.02 (.05)	-.00 (.10)
Partner preference	-2.88 (2.08)	-.15 (.23)	.21 (.24)	-.18 (.11)	.01 (.06)	-.03 (.11)
Challenge	-1.25 (2.04)	-.02 (.23)	-.36 (.24)	-.05 (.11)	.05 (.06)	.01 (.11)
Sample mean and (SD) of dependent variable	29.03 (9.29)	.47 (.50)	0.00 (1.00)	.29 (.45)	.52 (.50)	.00 (1.00)
Observations	123	119	105	123	123	121

Notes: Heteroskedasticity-robust standard errors in parentheses.

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Cost-Effectiveness

Consider most effective postcard: compensation-only


Postcard costs

- Distribution~US\$2 per postcard
- Cash transfer~US\$10 per VMMC counseling session

Postcard benefit

- Expected effect on take-up~2.5 percentage point increase
- In high HIV prevalence setting, one VMMC generates approx. 1/5 to 1/15 HIA

Approximately \$450-\$1350 per HIA (excluding clinical costs)



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