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U.S. President's Emergency Plan for AIDS Relief

## Voluntary Medical Male Circumcision *Summary of Devices Costing and Modeling Studies*

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# 6 studies published and unpublished so far

1. Obiero W, Young MR, Bailey RC. The PrePex Device Is Unlikely to Achieve Cost-Savings Compared to the Forceps-Guided Method in Male Circumcision Programs in Sub-Saharan Africa. *PloS one*. 2013;8(1):e53380.
2. Duffy K, Galukande M, Wooding N, Dea M, Coutinho A. Reach and Cost-Effectiveness of the PrePex Device for Safe Male Circumcision in Uganda. *PloS one*. 2013;8(5):e63134.
3. V Mutabazi et al. Prepex costing study in Rwanda
4. Schütte, C, 2012. *Cost-efficiency analysis in the context of the Zimbabwe PrePex male circumcision device study*. **Unpublished**, UNFPA and Ministry of Health and Child Welfare, Zimbabwe.
5. E Njeuhmeli, K.Kripke, K Hatzold, J Reed, D Edgil, J Jaramillo, D Castor, S Forsythe, S Xaba, O Mugurungi, *Cost Analysis of Integrating The PrePex™ Medical Device Into a Voluntary Medical Male Circumcision Program in Zimbabwe*. **Submitted for Peer Review Publication**.
6. Bratt JH, Zyambo Z. Comparing Direct Costs of Facility-Based Shang Ring Provision Versus a Standard Surgical Technique for Voluntary Medical Male Circumcision in Zambia. *JAIDS Journal of Acquired Immune Deficiency Syndromes*. 2013;63(3):e109-e112 110.1097/QAI.1090b1013e31828e39526.





Obiero W, Young MR, Bailey RC. The PrePex Device Is Unlikely to Achieve Cost-Savings Compared to the Forceps-Guided Method in Male Circumcision

PEPFAR Programs in Sub-Saharan Africa. PloS one. 2013;8(1):e53380.

- Did not include device cost, supply chain, waste disposal
- Concluded that the PrePex device is unlikely to result in significant cost-savings in comparison to the forceps-guided method and personnel is largest proportion of costs for both methods

	Forceps-guided	PrePex
<b>Device cost</b>	<b>\$0.00</b>	<b>\$0.00</b>
Consumables	\$9.35	\$5.32
Non-consumable supplies	\$6.71	\$5.45
Clinical personnel	\$10.72	\$8.03
Training	\$0.97	\$0.65
Capital	\$2.57	\$2.52
Maintenance and utilities	\$3.47	\$3.47
Support personnel	\$10.78	\$9.64
Management and supervision	\$10.72	\$10.72
<b>Total</b>	<b>\$55.29</b>	<b>\$45.79</b>





# Rwanda PrePex - Mutabazi

- Did not included supply chain costs
- Staff costs based on time per circumcision
- Concluded that PrePex offers cost savings

	Dorsal slit	PrePex
<b>Device</b>	<b>\$0.00</b>	<b>\$20.00</b>
Consumables	\$29.00	\$02.75
Staff	\$4.37	\$0.35
Room & equipment	\$2.80	\$0.80
Training	\$1.30	\$0.25
AEs	\$1.78	\$0.00
<b>Total</b>	<b>\$39.25</b>	<b>\$24.15</b>





Duffy K, Galukande M, Wooding N, Dea M, Coutinho A. Reach and Cost-Effectiveness of the PrePex Device for Safe Male Circumcision in Uganda. PloS one. 2013;8(5):e63134.

- Assumed full site utilization
- 15 surgical MC/day; 24 PrePex MC/day
- Concluded that PrePex has a higher unit cost than surgery
- Concluded that PrePex output (# MCs) 60% higher than surgery

	Sleeve resection	PrePex
<b>Devices</b>	\$0.00	\$20.00
Operator staff	\$7.93	\$4.95
Support staff	\$1.86	\$0.84
Consumables	\$9.15	\$3.06
Reusable sets	\$0.59	\$0.07
Sterilisation	\$1.09	\$0.27
Non staff costs	\$0.82	\$0.59
Overheads and shared costs	\$1.22	\$0.76
<b>Total</b>	<b>\$22.65</b>	<b>\$30.55</b>





Schütte, C, 2012. Cost-efficiency analysis in the context of the Zimbabwe PrePex male circumcision device study. Unpublished, UNFPA and Ministry of Health and Child Welfare, Zimbabwe.

- Staff costs based on time per circumcision
- Concluded that in a static location and similar operational environment the unit cost of PrePex circumcisions is estimated to be lower than forceps-guided circumcisions
- Consumables and staff >90% of unit cost
- Should surgical circumcisions be carried out without disposable kits, the difference in unit costs would reduce significantly

Phase II	Forceps guided	PrePex
<b>Device</b>	<b>\$0.00</b>	<b>\$15.00</b>
Consumable	\$29.66	\$12.92
Non-consumable	\$0.37	\$0.41
Personnel costs	\$22.69	\$16.38
Support personnel	\$0.80	\$.80
Training costs	\$0.27	\$0.18
Capital costs	\$0.48	\$0.30
<b>Total component cost</b>	<b>\$54.26</b>	<b>\$45.99</b>

Phase III	Average
<b>Device</b>	<b>\$15.00</b>
Consumable supplies costs	\$12.11
Non-consumable supplies costs	\$1.01
Personnel costs	\$17.26
Training costs	\$0.11
Indirect costs	
Capital costs	\$0.27
Maintenance and utility costs	\$6.24
Support personnel costs	\$3.41
Management and supervision costs	\$2.19
<b>TOTAL</b>	<b>\$57.60</b>





E Njeuhmeli, K.Kripke, et al., Cost Analysis of Integrating The PrePex™ Medical Device Into a Voluntary Medical Male Circumcision Program in Zimbabwe. Submitted for Peer Review Publication.

- Costs for site rather than allocated to PrePex or surgery
- Staff costs based on actual (not theoretical) circumcisions per day
- Concluded that VMMC costs for routine surgery and mixed study sites were similar
- Consumables and staff contributed 80% to the unit cost
- Low service utilization was projected to result in the greatest increases in unit cost

<b>Cost category</b>	<b>Routine Surgery Only Site</b>	<b>Surgery &amp; PrePex Research Site</b>
Staff	\$14.90	\$17.83
Training	\$0.30	\$0.58
Consumables	\$30.36	\$27.62
<b>Device</b>	<b>\$0.00</b>	<b>\$3.25</b>
Durable equipment	\$0.55	\$1.42
Supply chain management	\$9.53	\$9.69
Waste management	\$0.19	\$0.19
<b>Total unit cost/circumcision</b>	<b>\$55.83</b>	<b>\$60.58</b>





Bratt JH, Zyambo Z. Comparing Direct Costs of Facility-Based Shang Ring Provision Versus a Standard Surgical Technique for Voluntary Medical Male Circumcision in Zambia. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2013;63(3):e109-e112 110.1097/QAI.1090b1013e31828e39526.

- Variable costs only
- Used salary of 2 clinical officers/MC procedure based on average recorded time for each type of procedure
- Concluded that costs similar for 2 types of procedures
- Cost of clinician time higher for dorsal slit; cost for disposable supplies higher for Shang Ring

	Dorsal slit	Shang Ring
Clinician time (2 clinicians)	\$4.30	\$2.37
Device	\$0.00	\$9.00
Disposable medical supplies	\$12.36	\$5.93
Reusable instruments	\$1.01	\$0.91
<b>Total Direct Cost</b>	<b>\$17.67</b>	<b>\$18.21</b>







# Research questions

- Incremental cost of introducing new device into existing program
  - *No study has looked into this question*
  - *Being address as part of the Prepex Pilot Introductory Studies in Lesotho, Tanzania, South Africa and Swaziland*
- Comparison of device vs. existing conventional methods
  - *Costing of Phase II study in Zimbabwe (Schutte et al.)*
  - *Shang Ring study in Zambia (Bratt et al.)*
- Cost of VMMC Program before and after introduction of device
  - *Prepex modeling in Zimbabwe (Njeuhmeli et al.)*
  - *Prepex Pilot Introductory Studies are looking into this question in Lesotho, Tanzania, South Africa and Swaziland*
- Whether introduction of device will change demand creation (upward or downward)
  - *Prepex modeling in Zimbabwe (Njeuhmeli et al.) did a sensitivity analysis to see if the unit cost was sensitive to site utilization*



# Generalizations/Limitations

- Not possible to generalize any unit costs because:
  - In 5/6 studies, costs only collected in large facilities in urban centers; fixed sites
  - Unit cost significantly underestimated and cannot be used for budget purposes
  - No study included demand creation costs except Obiero et al, in Kenya
  - Commodities cost likely to change with volume
  - Staffs and commodities costs are varies by countries
  - Costs of overhead, program management, capital items, and training are based on # of circumcisions and could change with scale





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# Conclusions

- In 4/6 studies, MC using devices did not result in lower unit costs
- In all studies, staff cost is less with device
- In 5/6 studies, consumables (including device) costs higher with device (if use same device price for all studies)
- Cost is only one component of programmatic decision-making
- **MC Unit cost is sensitive to the device price**
- **The MC Unit cost is highly sensitive to site utilization -- maximize utilization of resources**
- **Cost analyses can help identify opportunities for cost savings**
  - Logistics including both commodities and supply chain
  - Demand creation





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# Thank You!

