Title
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IN SUB-SAHARAN AFRICA

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An Annotated Bibliography of the Cost Literature on ICDP Programme of Action Components in sub-Saharan Africa

Ashley Fraser
Russell Green
Megan Dunbar

January 25, 2002

Introduction: The 1994 International Conference on Population and Development (ICPD), held in Cairo, produced a Programme of Action accepted and signed by over 180 governments. The Programme of Action marked an important shift in the ideological framework of population programs. By stating such programs should ensure that “a full-range of reproductive health care services, including family planning, are accessible, affordable, acceptable and convenient to all users” (ICPD Programme of Action, 1994, 7.5.a), Cairo identified the crux of population programs to be the reproductive health of women, and expanded the notion of family planning accordingly.

This bibliography was initiated as part of an effort to revise the original UNFPA estimates of the cost of implementing the Cairo agenda. It is focused on sub-Saharan Africa for two reasons. First, sub-Saharan Africa, by almost any measure, is most in need of improved provision of health services. Second, accuracy and completeness was a high priority, requiring that the scope be narrowed. Every effort was made to include all relevant literature published in developing countries or unpublished sources. It is primarily focused on recent literature, as the objective is to facilitate estimation of current and future implementation costs. When little or no cost estimates in sub-Saharan Africa are available, such as for breast cancer screening and treatment, we include cost estimates from outside the region.

Within each topic references are organized in order (subjectively) of usefulness and quality. Each reference gives a description of points of the study relevant to the cost figures to the extent that the study presents itself. We briefly describe the methodology, including any information provided on which costs were included or not included. The costs presented are typically unit costs, where the units are most often per CYP, per capita, per illness and per affected individual. When additional calculations were necessary to produce unit costs, the additional figures used in the calculations are also presented. We provide the year-basis for the cost figures where possible and the exchange rate used where necessary. When the precise year-basis information was not available or was ambiguous in the source material we attempted provide the dates for the period of the intervention as available to offer some context for the cost data. We occasionally included dates in other references as well to offer addition context as necessary.
# Costs Studies for Reproductive Health

## Family Planning

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| (Janowitz, Measham, & West, 1999) | • Examined 9 cost studies on Kenyan FP Programs.  
• Used data from 5 recent studies with method-specific visit cost estimates to construct estimates of method-specific costs per CYP. | ☑ Costs converted to 1997 US$ in all cited documents  
☑ Converted costs listed under source publications below | ☑ Personnel cost ($/minute by worker type)  
☑ Non-client time (indirect cost)  
☑ Supply cost (cost obtained from purchasing dept; reflect analysis of cost per element)  
☑ Pharmaceutical unit cost  
☑ IUD check  
☑ Adolescent care includes iron supplements & extra examination & counseling time | ☑ No cost for follow up visits IUD, Norplant or tubal ligation in any of the studies examined | ☑ Comparison of cost based on ICPD Program of Action.  
☑ Disaggregated data allows managers to cost a variety of approaches to introducing or expanding a RH program.  
☑ IUD check includes labor costs for return client who already registered & w/history card.  
☑ Adolescent care includes iron supplements & extra examination & counseling time. |
| (Mitchell, Littlefield, & Gutter, 1999) | • Gathered disaggregated costs of providing some RH services from Zimbabwe National FP Council (ZNFPC) & MEXFAM.  
• Data was used to estimate & compare costs of various components of RH care per visit (or per diagnosis & treatment). | ☑ 1995 US$  
Costs at ZNFPC  
♀ Sterilization (FS) = $8.77/CYP*  
♂ Sterilization (MS) = $3.65/CYP*  
• Implant insertion/removal = $18.71/CYP*  
• IUD insertion & check = $2.10-$3.74/CYP*  
• Oral contraceptives (OC) = $2.54/CYP  
Injectables = $11.08/CYP*  
*Converted to CYP based on (Stover, Bertrand, Smith, Rutenberg, & Meyer-Ramirez, 1997) | ☑ Personnel cost ($/minute by worker type)  
☑ Non-client time (indirect cost)  
☑ Supply cost (cost obtained from purchasing dept; reflect analysis of cost per element)  
☑ Pharmaceutical unit cost  
☑ IUD check  
☑ Adolescent care includes iron supplements & extra examination & counseling time | ☑ No capital cost for equipment & buildings | ☑ Comparison of cost based on ICPD Program of Action.  
☑ Disaggregated data allows managers to cost a variety of approaches to introducing or expanding a RH program.  
☑ IUD check includes labor costs for return client who already registered & w/history card.  
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<td>(Kimunya, 1996)</td>
<td>Cost effectiveness analysis of 3 FPPS Family Planning (FP) clinics in Kenya concentrating on establishing costs per user by methods (cost of personnel, expendables &amp; identifiable overhead) of FP services at provider level. NOTE: this case study is a follow-up to Twahir, 1996.</td>
<td>$\leftarrow 1997 \text{ US}$&lt;sup&gt;\text{a}&lt;/sup&gt; From Janowitz '99</td>
<td>✓</td>
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<sup>a</sup> 1997 US$ estimates derived from purchase records. Indirect cost estimate based on computed overhead rate (e.g. indirect costs as % of direct costs).
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| (Twahir, Maggwa, & Askew, 1996) | • A case study of the MCS model used for integrating STI & HIV/AIDS services into existing MCH-FP services.  
• Study aimed to document the integration process & identify its strengths & weaknesses.  
• Divided MCH-FP unit into cost centers to determine the unit costs for providing various services.  
• NOTE: Kimunya, 1996 carried out a cost analysis to complement this case study | 1997 US$  
From Janowitz ‘99  
• OC = $10.28/CYP  
• Condoms = $37.09/CYP  
• IUD = $2.94/CYP  
• Injectables = $9.02/CYP  
• Norplant = $16.72/CYP  
• FS = $2.32/CYP  
*Converted to CYP based (Stover et al., 1997) | ✓ | ✓ | MCS - Mkomani Clinic Society, Mombasa, Kenya |
| (Musau, 1996) | • Original document unavailable^.* | 1997 US$  
^From Janowitz ‘99  
• Pills = $8.87/CYP  
• Condoms = $15.70/CYP*  
• IUD = $2.16/CYP  
• Injectables = $9.40/CYP  
• Norplant = $10.54/CYP  
• FS = $3.68/CYP*  
*Converted to CYP based on (Stover et al., 1997) | ✓ | ✓ | |

^From Janowitz ‘99

- OC = $10.28/CYP
- Condoms = $37.09/CYP
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<td>(Stover &amp; Heaton, 1998)</td>
<td>- This study examines the actual costs of 29 qualifying USAID contraceptive social marketing (SOMARC) programs to access cost effectiveness.&lt;br&gt;- Cost effectiveness is defined as dollars spent per CYP provided.</td>
<td>1996 US$&lt;br&gt;Niger:&lt;br&gt;- Condoms = $107.26/CYP&lt;br&gt;Senegal:&lt;br&gt;- Condoms = $56.43/CYP&lt;br&gt;Togo:&lt;br&gt;- Condoms = $6.67/CYP&lt;br&gt;*NOTE: above CYPs include overhead cost&lt;br&gt;- Ave cost of 29 countries is $5.31 per CYP for all methods combined</td>
<td>✔ SOMAC costs = Futures Group salaries, other direct cost, indirect, overhead&lt;br&gt;✔ Commodity costs = project totals reflect cost of AID donated commodities&lt;br&gt;✔ In-country costs = advertising, mkt research, packaging, distributing, etc&lt;br&gt;✔ No private sector cost nor credit for any private sector revenues&lt;br&gt;✔ No commodities costs for logistics or transport&lt;br&gt;✔ No costs for population officers or AID/Wash staff time for design, implementation &amp; evaluation</td>
<td>✔ Qualifying programs means ≥ 2 yrs of sales by end of '96 &amp; majority of project costs through SOMARC.&lt;br&gt;✔ Used revised USAID CYP Conversion Factors (excluding wastage)</td>
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| (Chee, 1996)   | • Family Planning Association of Kenya (FPAK)  
                 • Original document unavailable^.*  
                 ^From Janowitz 1999  
                 • Clinic based delivery cost = $10.06/CYP  
                 • CBD cost = $16.30/CYP                   | $ 1987 US$       | ☑️              | ☑️             | ➢ Re-supply methods provided by CBD programs costs more per CYP than non-re-supply |

### STD Screening, Testing & Treatment

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| (Twahir et al., 1996) | • Case study of the MCS model used for integrating STI & HIV/AIDS services into existing MCH-FP services, which aimed to document the integration process & identify its strengths & weaknesses.  
• MCH-FP unit was divided into cost centers to determine the unit costs for providing various services  
• NOTE: Kimunya, 1996 carried out a cost analysis to complement this case study | • Recurrent direct costs (using payroll & balance sheets for FY 94 for labor, drugs & other supplies directly attributable to cost centers)  
• Indirect, variable & fixed costs  
• Unit cost for FP = average cost for one FP clinic visit per client  
• The cost analysis did not include capital costs (e.g., training, renovations, etc) that the MCS needed to integrate services. | ✓ | ✗ | ➤ Each cost center represents a specific service type or area: lab, FP, MCH, STI, Rx, Administration  
➤ Clients pay US$ 4-5 for STI service which costs the MCS $8.20 to provide. Even at reduce rate many clients cannot afford this reduced fee.  
➤ MCS- Mkomani Clinic Society, Mombasa, Kenya |

| | | 1994 US$ (55 Kshs ≅ US$1) | | | |
| | | • FP (new pill client) ≅ $4.20 | | | |
| | | FP & STI INTEGRATED APPROACH  
• Costs STI services for new FP client pill = $8.60  
• Staff time = $3.60 | | | |
| | | FP & STI TREATED SEPARATELY  
• Costs for STI & FP separately = $12.40  
• Staff time = $5.80  
• STI = $8.20 | | | |

Clients pay US$ 4-5 for STI service which costs the MCS $8.20 to provide. Even at reduce rate many clients cannot afford this reduced fee.
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| (Van der Veen & Fransen, 1998) | • Compiled national STD guidelines, purchasing mechanisms, drug acquisition costs from 15 developing countries to conduct cross-country comparison of acquisition cost of drugs for treatment of one standardized STD episode.  
• Focused on four major syndromes: urethral discharge (UD), vaginal discharge (VD), low abdominal pain (low ab), & genital ulcer disease (GUD)  
• Calculated the relative distribution of 4 major STDs to facilitate cost comparison. | 1998 US$ (1 ecu = US$1.10)  
PUBLIC SECTOR STD DRUGS  
Acquisition costs of drugs per standardized episode:  
• Tanzania = 59¢ per episode  
• Ghana = $3.51 per episode  
Drug costs within one country vary depending on STD:  
• Namibia  
  • UD = $2.04 per episode  
  • VD = $2.34-$3.10 per episode  
  • GU = $4.17 per episode  
Drug costs per episode for one STD vary depending on country:  
• Low ab (Swaziland) = $8.46  
• Low ab (Namibia) = $2.64  
• Low ab (Mauritania) = 83¢ | ☑ | | ➢ Acquisition cost per standardized episode = Sum of cost of drugs for each specific syndrome times the relative frequency of syndrome according to its standardized distribution.  
➢ All drug prices were converted in ecu using the rate applicable on the purchase date. |

| (Gilson et al., 1997) | • Established incremental cost of an intervention program in 12 rural communities in Mwanza, Tanzania.  
• Established quantities of goods actually employed & multiplied these figures by unit prices. | 1993 US$  
Cost for 1 year  
• 39¢ per capita  
• $10.15 per STD treated  
For training costs alone  
10¢ per capita | ☑  
STD Diagnostics & Treatment  
Cost for international suppliers: 20% added for transportation & overhead  
Added 18¢ to costs for needle for injected drugs as appropriate  
Bulk prices in public sector  
Retail prices in private sector  
Costs do not cover logistics from centralized delivery site, i.e., storage & transportation within country, purchasing overhead & stock management. | ☑  
Administrative costs  
Condom distribution & education  
Transportation  
Supplies  
Maintenance & Utilities  
No training costs  
No salaries of health care workers | ➢ Marginal costs |
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<td>(Daly, Franco, Chilongozi, &amp; Dallabetta, 1998)</td>
<td>- Data on drug prescription practices in STD patients were obtained on 144 patients. Observations limited to initial visits for 2 syndromes only: genital ulcers (GUD) (male &amp; female) &amp; urethral (UD) discharge (male only). Results &amp; discussion compare current national guidelines with syndromic approach costs.</td>
<td><strong>1995 US$</strong>&lt;br&gt;Cost of Syndromic Treatment:&lt;br&gt;• UD = $0.78&lt;br&gt;• GUD = $1.23&lt;br&gt;Cost per disease in each syndrome:&lt;br&gt;• Syphilis = 67¢ per dose &amp;&lt;br&gt;• Chancroid = 56¢ per course&lt;br&gt;• Gonorrhea = 55¢ per dose &amp;&lt;br&gt;• Non-gonococal urethritis = 23¢ per course&lt;br&gt;National guideline costs:&lt;br&gt;• UD = 80¢&lt;br&gt;• GUD = $1.26&lt;br&gt;Cost observed in study of 144 patients:&lt;br&gt;• Ave. $1.06 per patient vs. projected syndromic approach costs = $1.07</td>
<td>☑</td>
<td>☑ Syndromic Costs include needle &amp; syringe&lt;br&gt;☑ Costs of drugs only&lt;br&gt;☒ No treatment costs</td>
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<td>(Population Council/Frontiers, 1999)</td>
<td>- 1998 study by Zimbabwe Nation Family Planning Council (ZNFPC) on feasibility of adding RTI diagnosis &amp; treatment to FP. Compared Syndromic approach w/lab testing for ♀.</td>
<td><strong>Syndromic RTI:</strong> $2.48&lt;br&gt;<strong>Syndromic FP:</strong> $5.30&lt;br&gt;<strong>Syndromic w/lab w/RTI:</strong> $10.30&lt;br&gt;• Lab testing for all FP client: $25.77</td>
<td>☑ Cost per Clinic Client</td>
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| (Laruche, Lorougnon, & Digbeu, 1995) | • During April 1993, 207 STD patients at 10 peripheral health centers in Abidjan were followed up.  
• Study assessed the clinical efficacy & feasibility of WHO-recommended therapeutic algorithms for genital discharges (UD & VD) & ulcers (GUD), diagnosed without laboratory tests, for use at the primary health care level.  
• Drugs sold on a cost-recovery basis. | 1993 US$ | ✓ Theoretical cost = using algorithms  
✓ Direct cost = Drug cost only  
✓ Cost of disinfectants | | ✓ Adherence to algorithms excellent for UD & GUD but poor for VD.  
✓ Includes table with STD drug prices.  
✓ Stresses that effective & affordable treatments for STDs are necessary for their realistic case management in Africa. |

#### 1993 US$ THEORETICAL COSTS:  
- UD = $4.90  
- GU = $4.50  
- VD = $1.80-$7.80  
AVERAGE DIRECT COST PER CURE:  
$5.60  
Range: $0 to $10.70  
AVERAGE DIRECT & INDIRECT COST PER CURE: $6.20  
Range: $0 to $16.80 |

| (dos Santos, Pereria Folgosa, & Fransen, 1992) | • Calculated costs of a 1987 national program for AIDS control in Mozambique that integrated an STD control program.  
• Costs were compiled for 1-year period (1988-89) in 20 health centers, a reference clinic, & laboratory. | 1989 US$ | ✓ Administrative costs & Taxes  
✓ STD Diagnostics & Treatment  
✓ Condom distribution & education  
✓ Transportation  
✓ Supplies  
✓ Maintenance & Utilities  
✓ No training costs  
✓ No salaries of health care workers | | ✓ Offers marginal costs of integration. |

#### Cost for 1 year  
- Population = 1 million  
- 43¢/per capita  
- $10.80/per STD treated
## Costs Studies for Reproductive Health

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| (Piot & Rowley, 1992) | • Paper examines economic impact of RTIs & resource availability for the control of RTIs.  
• Used a model to estimate costs per screening & treatment of syphilis, chlamydia & gonorrhea at the clinic, with cultures & using mass treatment.  
• Model assumes clinic & lab costs of $1/hr. | Cost by approach for 1,000 ♀ assuming 10% prevalence of each STD  
Syphilis: screen/treat = $1.73 & mass treat = $1.05  
Chlamydia clinic: screen/treat = .54¢; culture = $12.12; antigen = $5.14 & mass treat = 50¢  
Gonorrhea clinic: screen/treat = .38¢; culture = $5.19 & mass treat = $1.20 | ✓ | ✓ | Screening, treating, & mass treating at different prevalence levels.  
No program costs |
| (Leiva et al., 2001) | • Study describes quality & costs of STD case management in urban pharmacies in The Gambia & explores pharmacy workers’ (PWs) willingness to improve STD care.  
• Interviewed PWs about their knowledge & practices regarding management of STDs.  
• A ‘simulated client’ (SC) visited each pharmacy to check the management of urethral discharge syndrome (UDS) cases.  
• Appropriate syndromic management for UDS mentioned by 11% of PWs but actually given to 4.4% of the SC visits. None of the PID or GUS cases would have been treated correctly. | Reported costs for treatment of  
UDS = $5.30 (range $1.30-12.40)  
PID = $6 (range $2.50-12.90)  
GUS = $6.20 (range $3-$15)  
Cost of UDS treatment actually purchased by the SC averaged = $3.50 (range $1.50-$9.60) | ✓ | ✓ | Taking history, counseling & education messages give to client if any  
Syndrome diagnosis & drugs |

- Prevalence rates vary w/in SSA countries, & among different STDs. However, based on the literature overall rates of 8% for Gonorrhea, 9% Chlamydia & 9% for syphilis seem reasonable. Therefore we used 10% prevalence rates to estimate the cost of screening & treatment for each STD.
- Excluding the pharmacy sector from interventions will limit the impact of STD control measures. Recommends regular training in syndromic management & rational drug use, with a concise manual for reference.
- Most PWs interested in improving skills & improving quality.
- Need for strategies to lower the cost of drugs.
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| (Parker et al., 1999) | • 28 Month study analyze patient & cost data from hospital outpatient department in two Central African Republic towns.  
• Paramedical workers trained in clinical management of STD using WHO algorithms, patient education & counseling & record-keeping & data management. Recorded history diagnosis, treatment & partner referral. Distribution condoms. | 1994 US$ | ✓ | ☐ | Cost of drugs only  
No treatment costs |
| Oct 1993-early1996 | | | | | |
| (Harrison et al., 2000) | • A randomized controlled trial of five matched pairs of clinics compared the syndrome packet & health worker training improvement intervention w/ routine syndromic management using simulated patients. | 1997 US$ (R4.6 = US$1) | | | Includes cost of improving quality of service.  
Conversion to US$ using exchange rate from Reserve Bank of South Africa. |
| | | | | | |
| (Mayaud et al., 1998) | • Systemic sample of 660 pregnant ♀ reporting for routine antenatal care at an urban clinic.  
• Socio-demographic & behavior interview, exam & sampling for cervical infections.  
• Theoretical cost per true case treated we estimated for the diagnosis of gonorrhea & chlamydia for the WHO & other risk scores. | 1994 US$ | | | Risk assessment for screening & management during routine antenatal visits feasible & acceptable but limited population because of its low sensitivity.  
The optimal risk score may vary considerably from one place to another.  
The quest for simple, cheap, & reliable tests to diagnose gonorrhea & chlamydia must continue. |
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• Theoretical cost per true case treated we estimated for the diagnosis of gonorrhea & chlamydia for the WHO & other risk scores. | 1994 US$ | | | |
| | | | | | |

### Source Methods or Study/Project Description & Results

- **Included Costs**
  - Gonorrhea = $1.80
  - Chlamydia = $1.18
  - Candidiasis = 65¢ [1995 US$]
  - Syphilis $1.00

Prices calculated by syndrome. Higher prices for Pregnant ♀ & for patients with allergies, for ex:
- Vaginal discharge: $4.22 per treatment
- Vaginal discharge pregnant ♀: $8.23
- Average cost/treated STD syndrome: $3.90

- **Missing Costs**

- **Comments**
  - Includes cost of improving quality of service.
  - Conversion to US$ using exchange rate from Reserve Bank of South Africa.
  - Risk assessment for screening & management during routine antenatal visits feasible & acceptable but limited population because of its low sensitivity.
  - The optimal risk score may vary considerably from one place to another.
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| (Bulut, 1999)               | • Cost Benefit Analysis of limited studies on cost of primary prevention w/some data on STDs.  
• Mozambique study: 39,000 STD patients & partners + 50,000 pregnant women w/syphilis.                                                                                                                                                                                                                                                                                                           | ✔ 1993 US$  
Range of total cost to treat STD syndromes:  
• $0.77-$14.28 excluding herpes & AIDS  
• Mozambique study: STDs & syphilis: $4.80 per person  
• Zambia study: STDs $7 per patient | ☑ Included Costs  
☑ Missing Costs | ☑ Treatment costs  
☑ Zambia includes staff time lab diagnosis treatment & condoms.                                                                                                                                                                                                                                                                                                                                 |
| (Bosu & Mabey, 1998)        | • Owners or head pharmacists of 17 drug dispensing outlets in 5 Districts in the Central Region of Ghana were interviewing about the availability & price of antibiotics for PID.  
• Dispensing Outlets included regular hospital, quasi-government/ university hospital, government district hospital, mission district hospital, private pharmacies & chemical shops.                                                                                                                                                                                                                     | • Severe PID: US$ 21.63 on average per course for meds vs. $261.81  
• Moderate PID: $10.55 per course vs. $79.52                                                                                     | ☑ Included Costs  
☑ Missing Costs | ☑ Cost of drugs for consumers  
☑ Lowest prices (if multiple prices were given)  
☑ No treatment costs | ☑ Includes detailed table of prices of antibiotics.                                                                                                                                                                                                                                                                                                                                |
| (Lux & Nguyen, 1997)        | • Review of challenges of & strategies for providing STD services in low resource settings.  
• Offers cost data from a number of studies (1993-1997) & prevalence levels by region.                                                                                                                                                                                                                                                                                                         | Costs (to either program or client) depending on syndrome ranged from:  
• 75¢ to US$ 14.00 per complete course                                                                                           | ☑ Included Costs  
☑ Missing Costs | ☑ No communications costs from programs | ☑ Includes table of STDs, related syndromes & appropriate treatment regimes with costs per regime.  
☑ Warns that selecting treatment based on drug cost alone may contribute to drug resistance.                                                                                                                                                                                                                       |
## Costs Studies for Reproductive Health

### STD Screening, Testing & Treatment

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<th>Comments</th>
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</table>
| (World Bank, 2001) | • “At a-glance” fact sheets series by the World Bank’s Health, Nutrition & Population (HNP) anchor & their report “Investing in the Best Buys” ([Claeson, Mawji, & Walker, 2000]).  
• Introduces & summarizes RH issues & key interventions that the available evidence suggests are most likely to be affordable, feasible to implement, & cost-effective, context.  
• Fact sheet covers the ‘best buys’ for improving RH health with specific reference to STDs.  
• Relies on a lifecycle approach that considers the cumulative affects of health status as well as discrete health concerns to identify the ‘best buys’. | 20¢US per capita for STD | | ➢ Estimates for all developing countries.  
➢ At-a-glance offers additional figures for HIV/prevention & maternal health. |

## Costs Studies for Reproductive Health

### Safe Motherhood
<table>
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<tr>
<td>(Tinker &amp; Koblinsky, 1993)</td>
<td>• This model illustrates selected economic, health and demographic characteristics, &amp; related safe motherhood program costs for three settings (low, medium &amp; high infrastructure). &lt;br&gt;• Program includes: FP; management of abortions, improvements in delivery &amp; community education; prenatal, postnatal &amp; postpartum care; referral for labor complications; safe birth kits; iron &amp; folate tablets.</td>
<td><img src="image" alt="1993 US$" /></td>
<td>checklist</td>
<td>checklist</td>
<td>✓ Analysis shows that costs vary from one setting to another. &lt;br&gt;✓ Sub Saharan Africa best fits in setting A. &lt;br&gt;✓ Concentrates on marginal costs.</td>
</tr>
<tr>
<td>(Cowley &amp; Bobadilla, 1994)</td>
<td>• This model uses indicators to categorize hypothetical countries into low, middle &amp; middle II income ranges. &lt;br&gt;• Providing social marketing, FP, delivery care, management of labor/obstetrics &amp; obstetric complications &amp; abortion, neonatal care, postnatal care</td>
<td><img src="image" alt="1994 US$" /></td>
<td>checklist</td>
<td>checklist</td>
<td>✓ Presents average costs</td>
</tr>
<tr>
<td>(Weissman et al., 1999)</td>
<td>• A cost study conducted by the World Health Organization (WHO) in Uganda on the costs of implementing a comprehensive safe motherhood program including the WHO Mother-Baby Package.</td>
<td><img src="image" alt="Per capita costs" /></td>
<td>checklist</td>
<td>checklist</td>
<td>✓ The WHO Mother-Baby Package</td>
</tr>
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## Costs Studies for Reproductive Health

### Safe Motherhood

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<tr>
<td>(Walsh &amp; Measham, 1994)</td>
<td>• This cost analysis uses indicators to create models for high &amp; low mortality countries</td>
<td>1993 US$</td>
<td>☑ Included Costs</td>
<td>☑ Missing Costs</td>
<td>➤ Marginal costs</td>
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<tr>
<td></td>
<td>Population = 1 million at given contraceptive prevalence (CP) levels</td>
<td>Per capita Costs</td>
<td></td>
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<tr>
<td></td>
<td>• High Mortality Country =</td>
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<tr>
<td></td>
<td>• 50¢ (20% CP)</td>
<td>☗</td>
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<td></td>
<td>• $1.50 (40% CP)</td>
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<td></td>
<td>• $4.50 (60% CP)</td>
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<td></td>
<td>Limited effort includes PNC, birth attendants; upgrade of centers &amp; establishment 4 new centers; investment in emergency transport system.</td>
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<tr>
<td></td>
<td>Moderate effort includes community outreach, PNC, nutrition &amp; pregnancy risk screening; increase health posts to 1/10,000; increase health centers; train staff; emergency transportation</td>
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<tr>
<td></td>
<td>☑ Postnatal care</td>
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<tr>
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</tbody>
</table>
| (Goodburn, Hussein, Lema, Damisoni, & Graham, 2001)\(^1\) (1999) | • Set up semi-national monitoring system based on UNICEF/WHO/UNFPA 1997 alternative to maternal mortality measures  
• Project aimed to improve availability, accessibility & quality of obstetric care; increase awareness of the need for obstetric care; improve referral & monitoring systems.  
• Improved recording tools to minimize under-reporting of emergencies, mis-reporting of maternal deaths & double counting of referrals. | • Project Costs = $100,000  
\(\text{\textbullet} \) Population \(\approx\) 5 million (Half the total pop of Malawi)  
\(\text{\textbullet} \) Cost per capita \(\approx\) 2¢ | ✓ Included Costs  
✗ Missing Costs | ✓ Conducted operations research (10K) & training trainers (15K); developed tools (10K); & provided TA (25K) & district training & materials (40K).  
✓ Staff training | ✓ Costs of set up phase only  
✓ Guidelines for alternative approach require considerable adaptation for setting |
| (Olukoya et al., 1997)  
PMM Network (January 1992-October 1995) | • Improving care for pregnant \(\frac{\text{♀}}{\text{♀}}\) w/complications (Ogun, Nigeria).  
• Medical officers & midwives given refresher courses in emergency obstetric skills.  
• Set up surgical theater, labor ward & laboratory w/ supplies & equipment. Set up reliable electrical supply.  
• The annual # of women with complication seen increased from 55 in 1994 to 91 in 1995; likewise cesareans increased from 15 to 33. | • Total cost of state hospital improvements \(\approx\) US $46,000  
\(\text{\textbullet} \) Population \(\approx\) 194,717  
\(\text{\textbullet} \) Costs per capita < 24¢ | ✓ Training (47% of total costs)  
✓ Staff per diem (Dr & Ob)  
✓ Equipment  
✓ Infrastructure  
✓ Materials/consumables  
✓ Other: file cabinets/repairs | ✓ See comments  
\(\text{\textbullet} \) The facility improvements were completed in mid-1995.  
\(\text{\textbullet} \) 2% of cost paid by government  
\(\text{\textbullet} \) Rapid devaluation: used rate prevailing at time of expenditure.  
\(\text{\textbullet} \) Case fatality rate (CFR) due to major direct obstetric complications did not change appreciably. | |

\(^1\) Note: the indexing of articles. In many cases, the keywords would not lead to selection in database searches for quality of care & costs.
## Costs Studies for Reproductive Health

### Improving the Quality of Care

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| (Chiwuzie et al., 1997)* PMM Network (February 1995-April 1996) | • Set up loan funds for ♀ w/ complications to increase access to emergency obstetric care in Ekpoma, Nigeria.  
• Loans primarily for transportation but were also used to cover drugs, blood & hospital fees as well.  
• Funds managed entirely by the clans, w/ ongoing monitoring & supervision by project staff. 2% simple interest was charged.  
• Loans ranged from $7 - $15. (83% of applicants were granted loans).  
• In the 1st year of the operation, $354 in (93%) loans was repaid in full. | • The cost of establishing the loan fund was US $1360, including initial donations to the loan funds. | ✓ Included Costs  
✗ Missing Costs | ✓ Most of the funds spent on transport & labor  
✗ No costs for monitoring by PMM team.  
✗ Clear target population | ✓ Project complemented other interventions to improve emergency obstetric care.  
✓ The PMM project paid 55% of the total.  
✓ Sustaining the funds over the long term requires continuing effort & involvement with the communities. |
## Costs Studies for Reproductive Health

### Improving the Quality of Care

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| (Leigh et al., 1997) | • Posted a physician with obstetric skills; a second physician was trained. • Courses in life-saving obstetric skills were held for nurses & midwives. An unused operating theater was made functional with simple modifications. • A generator & blood bank were installed. Drugs & supplies were made available through a revolving fund. • The # of women seeking treatment for major obstetric complications tripled over 5 years, while the case fatality rate (CFR) dropped more than 25%. • Cesarean sections increased from two in 1990 to 38 in 1995. • 444 abortion-related procedures performed - almost all of them for unwanted pregnancy - compared with only 22 | • Project Costs = US$39,000

| Population = 428,000

| Cost per capita = 9¢ | • Stocks of drugs, supplies & donated equipment

| Other material improvements, training & per diem

| Cash incentives for Drs, Midwives & nurses

| Cost of overhead lamp in OR; no other physical renovations were done

| Customs duties which were waived

| Most blood bank costs | Improvements also included some of the peripheral hospital units which referred patients to the tertiary hospital targeted by the project


| PMM Network² (1990-1995) | ²The Prevention of Maternal Mortality (PMM) Network, established in 1988 & funded by the Carnegie Corporation, consists of 11 teams in West Africa & one team at the Center for Population & Family at Columbia University in NY. The two teams in Ghana & the seven teams in Nigeria are based at universities while the two teams in Sierra Leone are situated within the Ministry of Health (MOH) with technical assistance from Columbia team. The core of the teams is comprised of a community physician, an ob/gyn, a midwife & a social scientist. Each team concentrated on one of the major causes of maternal mortality. |
## Costs Studies for Reproductive Health

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| (Thuray, Samai, Fofana, & Sengh, 1997)* | • Paper describes a drug cost recovery system, introduced to reduce maternal deaths in Sierra Leone by improving the availability of critical drugs & supplies.  
• Procured obstetric drugs & supplies through a commercial source outside normal government channels.  
• Obstetric emergency drug packs created for 24-h availability.  
• Obstetric drug prices ranged from 46% to 68% of the prices charged by the government hospital & private pharmacies. | • Improvements cost ≈ $17500, (83% for initial drug supply)  
בחירה ב: פיקוח על קצבים כולל כוון והובלה | ✓ | ✓ | ✓ | ✓ | Prices calculated to cover full costs (including handling & transportation) plus an 85% mark-up  
• No shortages of obstetric drugs occurred after interventions.  
• The total amount billed during 1993 = US $2537, of which $1451 was recovered.  
• Careful pricing critical for cost recovery.  
• For sustainability, mark-up must cover defaulters & (currency) inflation/deflation. |
| PMM Network (Feb/March 1990 & 1992-1995) | | | | | |
| (Chukudebelu et al., 1997) | • Collaboration w/private sector institutions in an operations research project to improve the skills of staff in emergency obstetric care in Anambra State, Nigeria.  
• Aides were trained to recognize & manage obstetric complications.  
• The % of trainees obtaining a passing grade increased from 33% (pre-training) to 61% (post-classroom) to 77% (post-practicum) 36 aides (15 private sector/ 21 public) & 28 midwives (all public sector) trained.  
• 1 wk classroom instruction & 2 wks practical training in missionary hospitals. | • Project Costs = US $18,100  
• No catchment population given  
-choice in: data from (Nwagbo et al., 1997) in same Local Government Area (LGA)  
 dönüş | ✓ | ✓ | ✓ | ✓ | Development, training & monitoring.  
• Trainees’ salaries, which were all covered by employers.  
• Involve private sector institutions which provide a substantial proportion of emergency obstetric services.  
• Must sustain efforts to maintain results. |

*We use data from (Nwagbo et al., 1997) in same Local Government Area (LGA)
## Costs Studies for Reproductive Health

### Improving the Quality of Care

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<td>(Nwagbo et al., 1997)*</td>
<td>• Established/Upgraded blood bank including refrigerator, backup generator, reagents &amp; supplies at General Hospital in Anambra State, Nigeria. • Refresher training for laboratory technologist. • A public education campaign to encourage blood donation &amp; dispel fears of transfusion. • Voluntary blood donations (primarily from relatives) increased from 0 units – 15 units. • Transfusions from 3 to 17 (w/ 8 obstetric).</td>
<td>▌ See comments ▌ Cost of upgrading the blood bank = US $8800 (51% material costs &amp; 42% training) ▌ Government covered 5% of total costs ▌ Population ≈ 450,000 ▌ Cost Per capita = 2¢</td>
<td>▌ Supplies, lab equipment, transport, training venue &amp; staff allowances (not including salaries) &amp; training. ▌ No costs for paying non-voluntary/non-relative donors. ▌ No costs for public education campaign organized in tandem.</td>
<td>▌ Community education may increase blood donation. ▌ Ministry of Health (MOH) involvement needed for successful interventions in government hospitals. ▌ Used official Naira exchange rate of Central Bank of Nigeria from Dec 1995, US$1 = N 22, but w/ sharp devaluation, practical rate closer to US$1 = N80-85.</td>
<td></td>
</tr>
<tr>
<td>PMM Network (~ March 1994-December 1995)</td>
<td>• Upgrading of obstetric care at a health center in Ghana through a series of technical, administrative &amp; material interventions. • Concentrated on hemorrhage as both a major cause of MM &amp; as especially sensitive to delayed treatment. • Established a surgical theater; lobbied to improve blood supply; arranged new water supply; procured surgical equipment. • Training for midwives &amp; admin staff; successfully lobbied for posting medical officer; initial $ for a revolving fund for drugs. • 21 midwives from the rest of the district were trained.</td>
<td>▌ Cost of upgrading health center = US $30,316 ▌ Population ≈ 223,632 (projected in 1998) ▌ Crude Birth Rate in 1990 estimated at 40 per 1000 pop ▌ TFR = 6.4 ▌ Cost Per capita = 13¢</td>
<td>▌ Surgical equipment &amp; supplies ▌ Initial drugs ($170) ▌ Staff training ▌ New Dr’s salary ($4700/yr) paid by MOH</td>
<td>▌ Equipment &amp; supplies were majority of costs. ▌ Staff training was a key element of the intervention.</td>
<td></td>
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<tr>
<td>(Djan et al., 1997)</td>
<td>PMM Network (January 1993-December 1994)</td>
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### Improving the Quality of Care

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| (Ifenne et al., 1997) | • Project at Hospital in Zaria, Nigeria to reduce delays in (emergency) obstetric treatment  
  • Restored surgical theater, renovated maternity ward, obstetric training for resident Dr., set up an emergency drug pack system.  
  • Blood donation from families of ♀ attending antenatal clinics.  
  • Mean admission-to-treatment interval reduced by 57%.  
  • CFR for ♀ w/major obstetric complications fell from 14% in 11%.  
  • Annual # of ♀ w/ obstetric complications declined from 326 to 65. | • Cost of material improvements ≈ US$135,000  
  ♠ Population ≈ 700,000  
  ♠ ♀ of reproductive age (15-49): 154,000  
  ♠ Costs per capita ≈ 19¢  
  ♠ Costs per ♀ of reproductive age ≈ 88¢ | ☑ Included Costs  
  ☑ Missing Costs | Establishing on site Pharmacy  
  Costs reflect management decision to provide even more than the strictly necessary upgrades; scaling back to basic upgrades costs less money | Deteriorating economic conditions may diminish utilization of services despite improvements  
  65% of costs covered by the government  
  Government also paid an additional $8000/yr in new staff salaries |
  • Revised registers to collect information on complications & time of treatment. Trained Drs, nurses, midwives & clerks to record, compile & analyze data.  
  • Set up monitoring & supervisory mechanisms.  
  • Better record keeping; regular & timely data collection & analysis. | • Cost of improving record-keeping at 10 healthcare facilities = US $2543  
  • 85% from PMM  
  • Cost per facility $254  
  • Training costs alone = $1667 with 160 staff trained. | ☑ MOH staff from 10 facilities  
  ☑ Kumfo Anokye Teaching Hospital staff training  
  ☑ Requires staff training & monitoring visits | 2 other non-project districts adopted reporting system & rest of the region may follow suit. |
  • Revised registers to collect information on complications & time of treatment. Trained Drs, nurses, midwives & clerks to record, compile & analyze data.  
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| (Oyesola, Shehu, Ikeh, & Maru, 1997) | • Improving obstetric services at a referral hospital in Maiyama LGA in Kebbi State, Nigeria; focused on obstructed labor.  
  • Specialist obstetricians provided training to general physicians & midwives & care to patients.  
  • Introduced obstetric first-aid box w/ essential drugs & supplies.  
  • Trained midwives to recognize & manage obstetric complications.  
  • Number of cesarean sections increased from 101 in 1990 to 131 in 1995.  
  • CFR for ♀ w/complications went from 22% to 5% in same period.  
  • Number of ♀ w/complications seeking hospital treatment increased from 200 in 1990 to 227 in 1994, & then declined to 152 in 1995. | • Cost of improvements ≈ US $12,300  
  • Government sources covered 10%  
  ☑ Maiyama Local Government Area (LGA) Population = 110,000  
  ☑ Per capita ≤ 11¢ total project  
  ☑ Per cap = 5¢ for intervention at a single hospital | ☑ 10 midwives (6 from the referral hospital; remainder from other area facilities)  
  ☑ 10 obstetric care boxes 52% of total costs (1 at referral hospital; remainder distributed to other area facilities). | ☑ Declining hospital utilization may continue due to worsening economic conditions.  
  ☑ Subsequent interventions focused improving access & reducing delay in seeking care  
  ☑ 45% of the cost of improvements were upgrading the referral hospital |
| PMM Network (1992-1993) | • Improving obstetric services at a referral hospital in Maiyama LGA in Kebbi State, Nigeria; focused on obstructed labor.  
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| (Sabitu et al., 1997) PMM Network (1994-early 1995) | • Improving quality of care at secondary hospital in Zaria, Nigeria & improving referral of women with complications to the tertiary hospital.  
• Renovated maternity facilities, introduced revolving drug fund.  
• Trained midwives & restored ambulance to service.  
• Unsuccessfully recruited Dr. with obstetric emergencies skills.  
• Substantial increases occurred in antenatal attendance (2517 to 5565 per year) & deliveries (325 to 1952 per year).  
• Number of women with complications fell from 85 in 1990 to 28 in 1995.  
• Referrals to higher-level facilities rose from 4 to 17 in same period. | • Project Costs = US $31,827  
• Population ≈ 211,246 (1991 census)  
• Cost per capita ≈ 15¢ | ✓ | ✓ | ✓ | ✔ Facility upgrade (included repairs, equipment & water supply cost) ≈ 10K  
✓ Use of ambulance  
✓ Other community interventions focused on improving utilization by women with complications  
✔ Obstetric services at the referral hospital were improved before intervention at secondary facility  
✔ Government covered 98% of costs |
| (Samai & Sengeh, 1997) PMM Network (1990 & July 1992-Dec 1993) | • Paper describes transportation & referral system improvements to reduce delay in reaching the main referral hospital in Sierra Leone  
• Designed an emergency transportation & communication system for women with obstetric complications to main hospital  
• Purchased 4 WD Vehicle to transport women  
• Case fatality rate fell from 20% to 10% during the study period | • Project Costs = US$ 75,000  
• Capital costs = $69,350  
• Operations & Maintenance costs = $5,486  
• Population ≈ 53,000 (1985 census data)  
• Cost per capita ≈ $1.41 | ✓ | ✓ | ✓ | ✔ 4WD Vehicle; Motorbikes (8); Radios (10); Bicycles (2) & Solar Panel  
✓ New transport cost included of the transport woman’s body back if she dies.  
✔ Pre intervention travel time: 3hr - 24hr+  
✔ Post intervention travel time: 1.5 - 6.6 hr  
✔ Solar power for radios better than vehicle batteries |
## Costs Studies for Reproductive Health

### Improving the Quality of Care

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• Costs analysis in 3 local government areas &:  
  - Determined baseline  
  - Interviewed staff regarding for management & financial practices  
  - Conducted focus groups  
  - Collected budget data  
  - Measured the incremental costs to improve facility standards  
• Defined quality of care by measuring performance in terms of comparisons between actual practice & expected locally appropriate standards.  
• Poor current level of care in areas studies. | 1994 US$ (N22 = US$1)  
• Achieving an appropriate standard care at the current level of utilization would require an additional 19% - 38% of 1993 health budget depending on region.  
△ Cost per capita ≈ 19¢-38¢  
• If current low level of utilization increased by 25%, variable costs would rise to 22% to 41% while fixed costs would add 8% to 27%.  
△ Variable cost per capita ≈ 22¢-41¢  
△ Total cost per capita ≈ 30¢-68¢ | ✓ Included Costs  
★ Missing Costs | ✓ Increasing community participation  
✓ Upgrade facilities, better outreach & expansion of services  
✓ Provision of drugs  
✓ Enhanced management, supervision & monitoring  
✓ Staff training  
✓ Capital costs  
★ Personnel  
★ Total costs of running Maternal Health Services | ✓ Base line estimate of spending on health care ≈ $1 per capita. (Range 50¢ - $2 per capita depending on region).  
★ 60% to 70% of recommended cost increases considered critical costs.  
★ Poor revenue generation from health services appeared to be more related to inadequate supply of essential drugs & consumables than to high fees.  
★ Quality improvements are required for any user fee system aimed at cost recovery to avoid even lower utilization & to generate new revenues. |
<table>
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</table>
| (Vaughan, 2001) (1993-1995) | • Personal correspondence (9/2001) explains cost associated with introduction of a radio soap opera (full project described in a paper in (Rogers et al., 1999)).  
• Letter explains accompanying unpublished cost benefit analysis worksheet prepared by author (dated 10/1996)  
• Author conducted benefit analysis on FP adoption only on 1st two years of intervention & used 2 different methods to estimate impact:  
  • Method (1): Population based on census data and extrapolated growth rate. Treatment area consisted of reception of medium wave frequencies of Radio Tanzania (not perfect match with regional boundaries). Percentage of listener/adopters determined based on responses in target population (15+ years old) to post intervention survey. 50% of treatment area in target population. 52.6% of survey respondents listened & of those 23% self-reported adoption of family planning.  
  • Method (2): Same population estimates but relied on increases in those respondents using FP from ’93-5 instead of self-reports of FP adoption. Percentages taken from married ♀ 15-59 yrs (14%) & sexually ♂ 15-59 yrs (18%) within target population. Used “always users” of FP (7%) for FP adoption instead of combining “always” & “sometimes” (10%) as in paper. | • Total cost (Jul ’93-Jul 95) = $346,333  
☑ Estimated population in treatment area = 16.2 million  
• Per capita costs = 2¢  
☑ Estimated target population = 8.1 million  
**Cost Per Adopter**  
• Method 1 = 36¢ per adopter  
• Method 2 = 95¢ per adopter | ☑ Costs of formative research to design program.  
☑ Some cost of monitoring program by radio station staff.  
☑ Financial & “in-kind” contributions from NGOs & government.  
➢ Separate funding covered the research costs to evaluate the program. |
### Costs studies for Reproductive Health

#### Information, Education & Communication (IEC)

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<td>(Piotrow et al., 1992)</td>
<td>Male Motivation Campaign that included a 52-episode radio drama series to promote family planning for ♂ in Zimbabwe using Enter-Educate Model. Educational talks for ♂ &amp; pamphlets Behavioral changes measured using a subset of data from a follow up study (late 89) &amp; data from the baseline study (mid 88) &amp; comparing to the ♂ exposed to the drama w/♂ not exposed. Use of contraceptives rose 4% during campaign; condom use increased 5% Current condom use 62% for ♂ exposed vs. 51% for ♂ not exposed.</td>
<td><strong>TOTAL FIGURES</strong> - Total cost of radio drama = $92,948 Total cost of pamphlets = $50,000 Total 1992 Population ≈ 9,855,000 ♂ Target scale of 38% = 3,744,900 ♂ Costs per capita = 4¢</td>
<td>☑ Included Costs</td>
<td>☒ Missing Costs</td>
<td>Ø Possible sampling variation between the pre- &amp; post-intervention surveys.</td>
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<td>(Feb-Jun '89)</td>
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## Costs Studies for Reproductive Health

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<tr>
<td><strong>Source</strong></td>
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<tr>
<td><strong>Cervical Cancer</strong></td>
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<td>(Herdman &amp; Sherris, 2000)</td>
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| (Mitchell et al., 1999) | Costs of RH services based on 1995 research conducted in Zimbabwe.  
Study designed to help RH program managers estimate costs of adding new interventions to existing FP or MCH programs.  
Costs were disaggregated into individual components of service to reveal the marginal costs of adding services to existing programs. | Pap smear = $2.27 per visit  
We add 10% for treatment costs  
Our Pap smear & treatment estimate = $2.50  
We calculate the costs of Pap & treatment per capita = 5¢ (for screening every ♀ once every 10 yrs)  
Inspection & cryotherapy = $11.82  
Inspection & LEEP = $19.58  
Pap smear, cone biopsy & hysterectomy = $91.70 | ✓ | ✗ | ✓ Costs includes cost of labor per minute & costs of each supply involved & costs of equipment  
✗ No costs for capital equipment & buildings  
✗ Patient registration  
✓ We assume that costs of treatment for those with pre-cancer or cancer amounts to approximately 10% of screening costs. |
Projected costs of screening & treatment from detailed cost studies of 12 government hospitals & 60+ clinics.  
Incidence based on national cancer registry, hospital data & WHO estimates.  
Screening every five years from age 25 to 64 with Pap smear with 65% coverage, repeat for dysplastic biopsy after two dysplastic smears.  
Colposcopy, exconisation &/or hysterectomy depending on results. | 194 US$  
EGYPTIAN COSTS  
Screening every ♀ every 5 yrs = $13,987,999  
Screening every ♀ every 10 yrs = $12,499,000  
Cost per capita = 24¢ or 21¢ for screening every 5 yrs & every 10 yrs respectively | 194 US$ | ✓ | ✓ Health education |
## Costs Studies for Reproductive Health

### Gynecological Cancer (of Cervix & Breast)

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<tr>
<td><strong>Breast Cancer</strong></td>
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<td>(Walsh et al., 1998)</td>
<td>• Analysis extrapolates for current breast cancer costs in Egypt based on current coverage to derive cost of national or full coverage.</td>
<td>1994 US$</td>
<td>EGYPTIAN FULL COVERAGE COSTS</td>
<td>Cost per capita = 23¢</td>
<td>Screening every 2 years</td>
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<td>(Forbes, 1997)</td>
<td>• Analysis &amp; projections of the global burden of breast cancer.</td>
<td>1990 US$</td>
<td>Derives projection for developing regions costs from estimated costs (for the 2000) in developed regions = $7.48 billion</td>
<td>Projects total direct breast cancer costs of treating new breast cancers in 2000 in developing regions at 5% of costs in developed regions = $.37 billion</td>
<td>Estimates developed based on the relationship between US GNP, overall health &amp; cancer costs &amp; breast cancer cost between the US &amp; other regions. These variables were projected for year 2000.</td>
</tr>
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<td>(Fracheboud et al., 2001)</td>
<td>• Annual Evaluation report of a nationwide breast cancer screening program implemented (from 1990 to 97) in the Netherlands, providing mammography for all women aged 50-69 years every 2 yrs.</td>
<td>DUTCH COSTS IN 1997</td>
<td>$16.4 million or $26 per screening exam</td>
<td>Costs per capita = $1.07</td>
<td>Screening only; Recruitment costs No cost for follow up for positives or treatment</td>
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<td>• Of 4 million women invited, 78.5% attended for screening.</td>
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<td>• Screening performed in 47 mobile screen units.</td>
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| (Bodai et al., 2001) | • Compare total facility costs for 2 breast biopsy methods: vacuum-assisted biopsy (VAB) & needle-wire-localized open surgical biopsy (OSB) in US  
• Costs imputed from published literature to price resources.  
• Total facility VAB procedure costs lower than OSB procedure costs  
• The overall cost advantage for using VAB ranges from $314 to $843 per procedure depending on the facility type. Variable cost comparison indicated little difference between the 2 procedures. Largest fixed cost difference = $763. | US COSTS COMPARISON  
• Hospital biopsy total procedure costs: VAB - $854.73 vs. OSB $1260.30 | ✓ Total (fixed & variable) costs  
✓ Costs at Imaging Center, Ambulatory Surgery Center, Hospital  
✓ Capital cost depreciated & amortized | ✓ New technology (VAB) comparable to gold standard (OSB)  
✓ High cost initial equipment costs could discourage adoption of VAB, but analysis of total facility costs find VAB less costly |
| (Nzarubara, 1999) | • Qualitative study determined the efficacy of mass screening in the control of primary breast cancer among a selected group of ♂ using health education & instruction in self-breast examination (SBE).  
• Incidence: 16.4 per 100,000. | | | ✓ Mass screening using health workers in various clinics (eg MCH) for health education at grass root level is feasible.  
✓ Mass screening should be included in primary health care programs |
Costs Studies for Reproductive Health

Gynecological Cancer (of Cervix & Breast)

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| (Bah, Parkin, Hall, Jack, & Whittle, 2001) | • Study includes tables on incidence of cancer in The Gambia over a 10- year period using data collected through the Gambian National Cancer Registry.  
• The most frequent cancers in females were cervix uteri 34.0%, liver 19.4%, breast 9.2% & ovary 3.2%*.  
• Registry established as part of the Gambia Hepatitis Intervention Study (GHIS) with the aim of evaluating the effect of hepatitis B vaccination in infancy on later risk of primary liver cancer.  
• * Age standardized incidence rates. | | ☑ Included Costs | ☑ Missing Costs | ➢ Major problems w/ cancer registration in developing world discussed  
➢ Data show a lower overall rate of cancer incidence than in more developed parts of the world |
| (Parkin, 1998) | • Includes 1990 estimates of the # of new cancer cases, & annual incidence rates, of 25 different cancers for 23 different regions around the world by cancer site, gender & region.  
• Breast cancer-by far the most important cancer of women world-wide (21% of the total).  
• Female Breast Cancer incidence in sub-Saharan African: 28,500 new cases per year in 1990. | | ☑ Included Costs | ☑ Missing Costs | ➢ Importance of the different cancers varies widely by region.  
➢ Some environmental & genetic factors elucidate geographic distribution. |
## Costs Studies for Reproductive Health

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| (Hoffman et al., 2000) | • Describes overall & age-specific incidence rates for breast cancer & determinants of breast cancer stage at diagnosis in the Western Cape, South Africa.  
• Data from a 4-year case-control (Jan 1994 to Dec 1997).  
• N = 485 cases from study population (colored & black women under the age of 55 years), who presented w/1st occurrence of invasive breast cancer at 2 tertiary hospitals.  
• 249 interviewees from 1st 2 years of the study are used as numerator for incidence rate estimates. | | | ✓ | Early stage at diagnosis significantly associated w/ higher educational level, membership of a medical aid, urban residence & positive family history.  
✓ Overall incidence rate = 23.1 per 100,000 ♀/ year  
✓ Incidence rate for colored = 25.6 per 100,000 ♀/ year  
✓ Incidence rate black ♀ = 14.7 per 100,000 ♀/ year  
✓ Incidence rate urban areas = 26.6 per 100,000 ♀/ year  
✓ Incidence rate rural areas = 16.3 per 100,000 ♀/ year  
✓ Stages 1 & 2 = 57.8% of cases |
<table>
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<tr>
<th>Cost included</th>
<th>RTI</th>
<th>Reproductive Tract Infections</th>
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<tbody>
<tr>
<td>Cost not included</td>
<td>STD</td>
<td>Sexually Transmitted Diseases</td>
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<tr>
<td>Female (Women)</td>
<td>STI</td>
<td>Sexually Transmitted Infections</td>
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<tr>
<td>Male (Men)</td>
<td>CYP</td>
<td>Couple Year Protection</td>
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References


