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# Impact and cost-effectiveness of integrating cervical cancer screening and prevention into HIV-care in the Nyanza Province



Bixby Center  
for **Global**  
Reproductive  
Health

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*Integration for Impact*

September 13, 2012

# Background

- **HIV clinics represent high-impact sites for integration of cervical cancer screening and prevention (CCSP) services**
- **Designing CCSP programs requires identification of**
  - Resource-appropriate screening techniques
  - Optimal screening intervals
  - Effective treatment techniques
- **Scale-up and sustainability depend on costs, potential population impact and cost-effectiveness**

# Cost-Effectiveness Analysis

- **Societal perspective**
- **Define screening strategies and probabilities of diagnosis, treatment and recurrence**
- **Identify Quality Adjusted Life Years (QALYs) for various disease states**
- **Determine costs**
- **Outcomes:**
  - Cost/QALY
  - Incremental Cost-Effectiveness Ratio (ICER)



# Cost-effectiveness Threshold

- **WHO/World Bank Definition of Cost-effectiveness (cost/QALY) for resource-limited settings**
  - 3 \* GNI per capita=cost-effective
  - GNI per capita extremely cost-effective
- **Kenya GNI: \$737**
- **Examples:\***



- First-line HAART therapy: \$556/DALY
- HAART-Plus: \$2010/DALY
- VCT: \$82/DALY
- STI Prevention: \$32/DALY

\*[http://www.who.int/choice/results/hiv\\_afre/en/index.html](http://www.who.int/choice/results/hiv_afre/en/index.html)

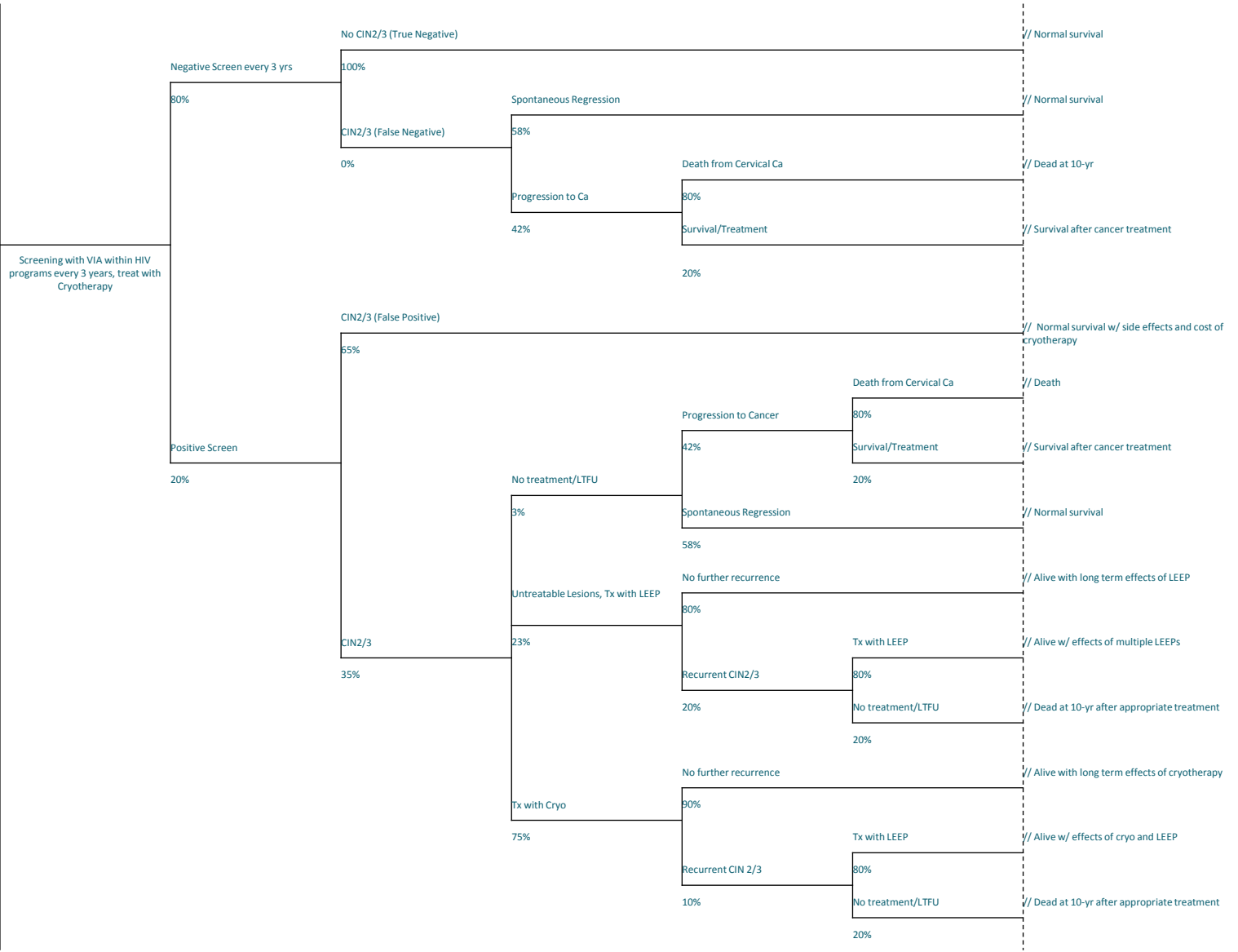
# Decision-Analysis Tree

- **Compares baseline policy of no cervical cancer screening with three strategies**
  1. Single Lifetime “See & Treat” with VIA and Cryotherapy
  2. “See & Treat” every three years
  3. Screen with VIA every three years with treatment for biopsy-confirmed precancer by LEEP





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# Model Inputs

- **Epidemiologic and clinical parameters from:**
  - Kenya DHS, 2009
  - Kenya Census Data, 2009
  - CCSP program in Kisumu
  - Published data from HIV-programs in Kenya and Uganda
- **Health Utilities estimated from studies in resource-limited settings in Asia and Africa**
- **Cost-data**
  - CCSP program costs
  - Estimates of MoH facility expenses and salaries
  - WHO-CHOICE unit cost for developing countries

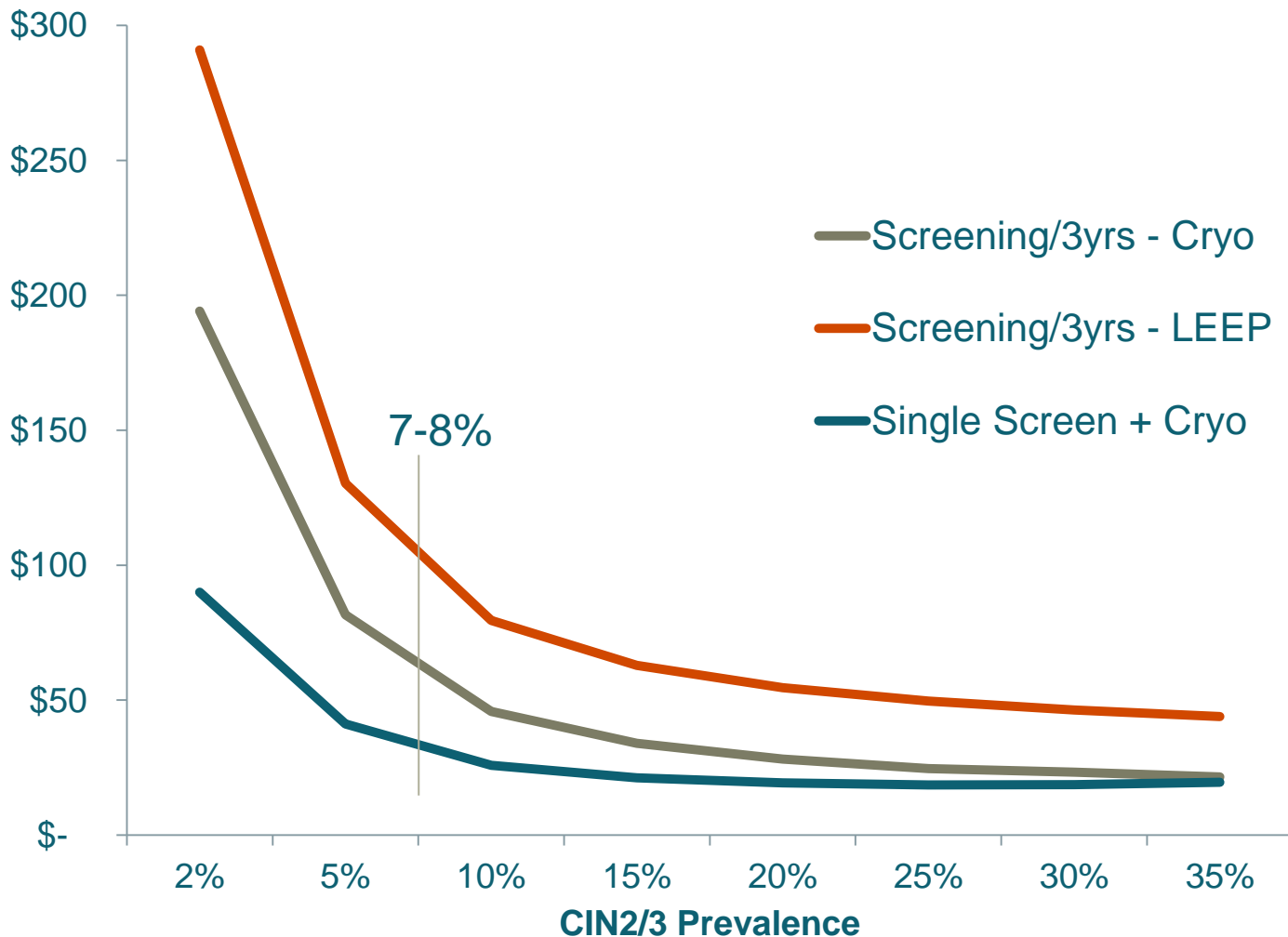


# Results

- **Gain in QALYs in all three strategies similar**
- **All three strategies extremely cost-effective**
- **Screening with a single-lifetime “see & treat” visit with VIA and cryotherapy most cost-effective compared to no treatment**
  - Single lifetime “see & treat”: **\$32.30/QALY**
  - Every three year “see & treat”: **\$61.03/QALY**
  - Every three year VIA/biopsy/LEEP: **\$101.12/QALY**
- **Costs per cancer prevented:**
  - \$3400 - \$4757
- **Costs per cancer-related death averted**
  - \$4273 - \$6111



# Cost-Effectiveness of CCSP at varying CIN2/3 Prevalence Rates

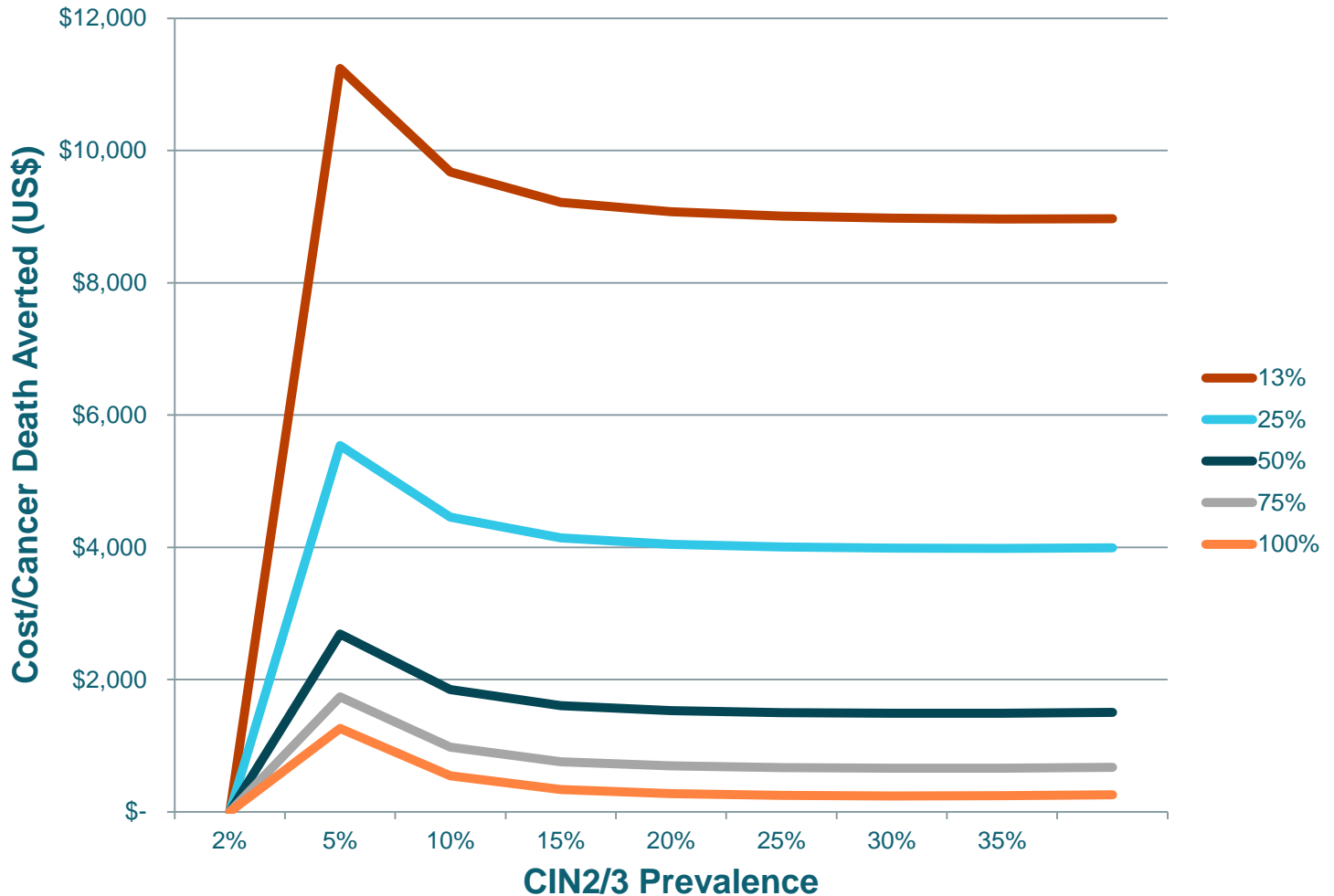


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# Cost per Cancer Death Averted by CIN2/3 Prevalence and % HIV-Infected Women Enrolled in Care



# Next Steps

- **Multi-variable analysis of cost-effectiveness**
  - Various populations
  - Clinical characteristics
    - VIA + and CIN2/3 prevalence vary by CD4+ status and HAART status
    - Vary characteristics by population proportion in care and duration of HIV disease/care
- **Test model robustness in other populations**
- **Disseminate to program planners**



# Conclusions

- **Cervical cancer screening within HIV clinics is extremely cost-effective, regardless of the strategy**
- **A single-lifetime VIA coupled with cryotherapy is the most cost-effective**
- **Cost-effectiveness increases with**
  - Increasing prevalence of CIN2/3
  - Increasing proportion of HIV-infected women enrolling into care
- **This data may help district-level and national health care planning**





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# Acknowledgements

- Jessica Vernon
- Jim Kahn (UCSF)
- Maria Rodriguez (WHO)
- Craig Cohen and Elizabeth Bukusi
- FACES and CCSP Staff

- Funding: NIH/NCRR/OD KL2  
RR024130 and Center For AIDS  
Research P30-AI027763



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