

Cervical Cancer Prevention Program in Zambia

CIDRZ/UAB

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Disclosures

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No Relevant Financial Relationships with Commercial Interests

Center for Infectious Disease Research in Zambia

- **Zambian NGO: MOH/UAB**
- **Health service delivery and support**
- **Research**
- **Programmatic focus**
 - HIV prevention, care, and treatment
 - TB prevention and treatment
 - Reproductive health and family planning
 - Prevention of maternal and neonatal mortality
 - Cervical cancer prevention

Cervical cancer in Zambia

- **Age adjusted incidence and mortality rates**
 - 6th highest in the world, 2nd highest in Africa
- **Most common cancer in Zambia (30%)**
- **Most common cancer in women (30%)**
- **Most common cause of cancer-related death in women (30%)**
- **Cervical cancer screening coverage <5%**

Globocan, 2002, IARC

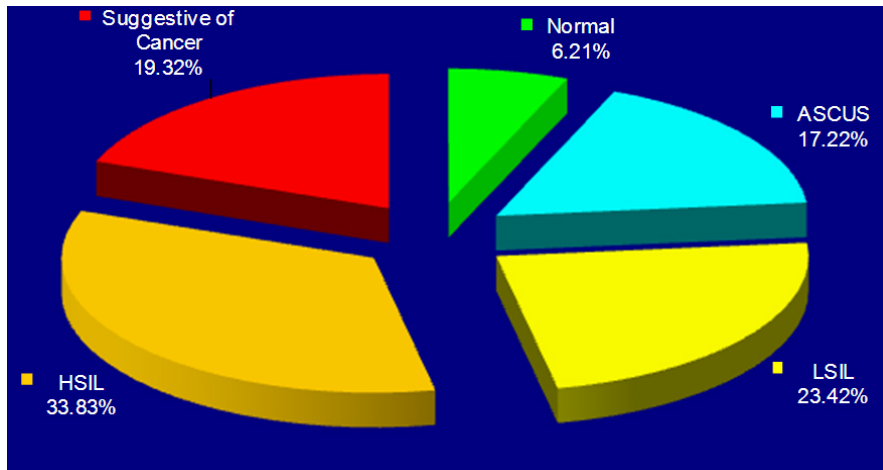
HIV in Zambia

- HIV infection prevalence (age 15-49)
 - 16% nationally, 23% Lusaka
- 60% HIV infected are women WHO, 2006

Cervical cancer precursors in HIV infected women

- Prevalence – higher
- Spontaneous regression rates -lower
- Recurrence rates following treatment -higher

Cytological screening of HIV-infected women in Lusaka (n = 150)



Parham GP et al *Gynecol Oncol* 2006

2006 conclusion

- Cervical cancer screening, especially of HIV-infected women, was urgent
- Roll out of the HPV vaccine was paramount

Selection of prevention modality

Asset mapping

- No certified cytologist
- One pathologist with experience in reading cervical histology at the University
- Shortage of gynecologists -9 in Lusaka, 15 in the nation
- Target population low income, undereducated, informal settlements

Choice of prevention modality

Single visit VIA and cryotherapy

- Nurse-led
- Affordable and cost effective
- Documented acceptability
- Documented efficacy: Reduces incidence and prevalence of CIN and cervical cancer mortality rates
- Endorsed by Zambian MOH

Selection of prevention modality

Digital photography for primary screening

- Enhanced visual examination (magnification)
- Distance-consultation for expert medical opinion
- Monitoring and evaluation of nurses
- Patient education
- Medical records documentation
- Easy to learn
- Mobile
- Battery operated

Infrastructure and resources

- Integrated services into government-operated public health clinics
- Linked services to HIV care and treatment program and university hospital
- Resources (PEPFAR, MOH, UTH, UAB, private donors)

Operationalization

- Targeted HIV-infected women
- To avoid stigmatization, we did not turn away HIV negatives or unknown status
- Created community outreach unit to raise awareness

Acetowhite lesion





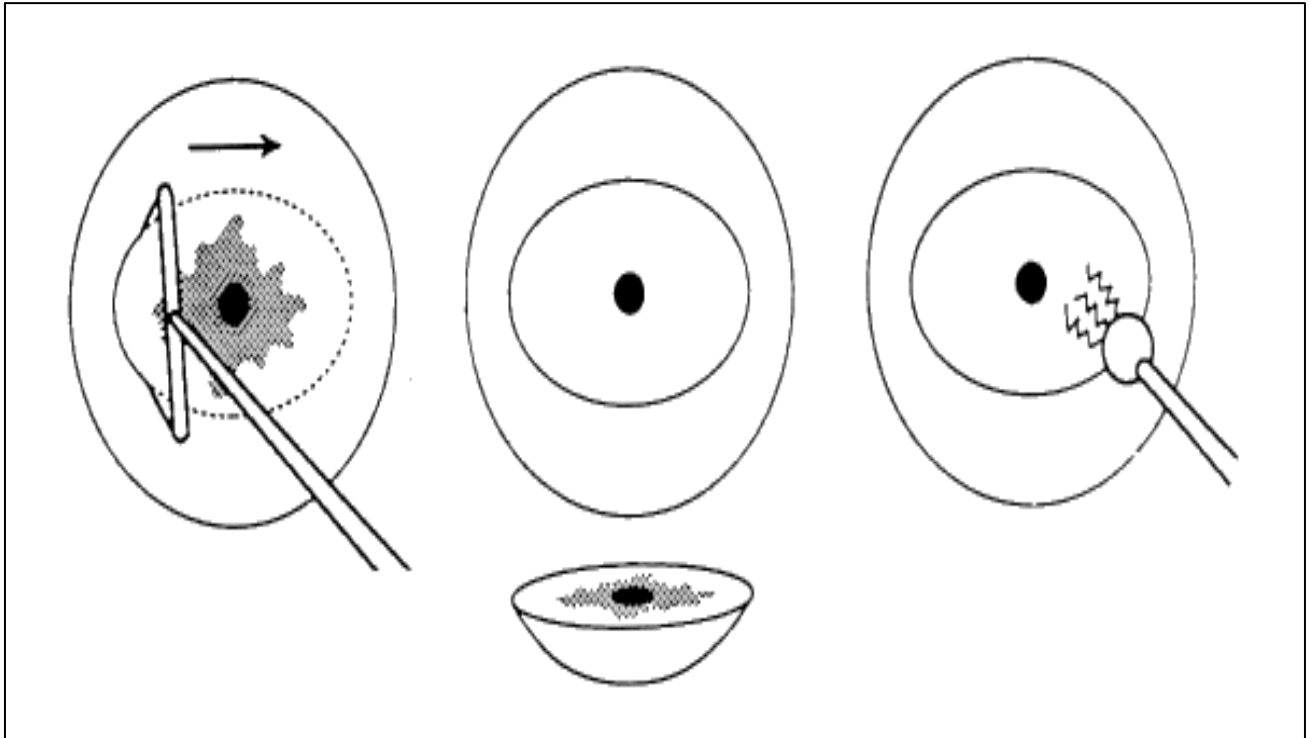
Cryotherapy equipment



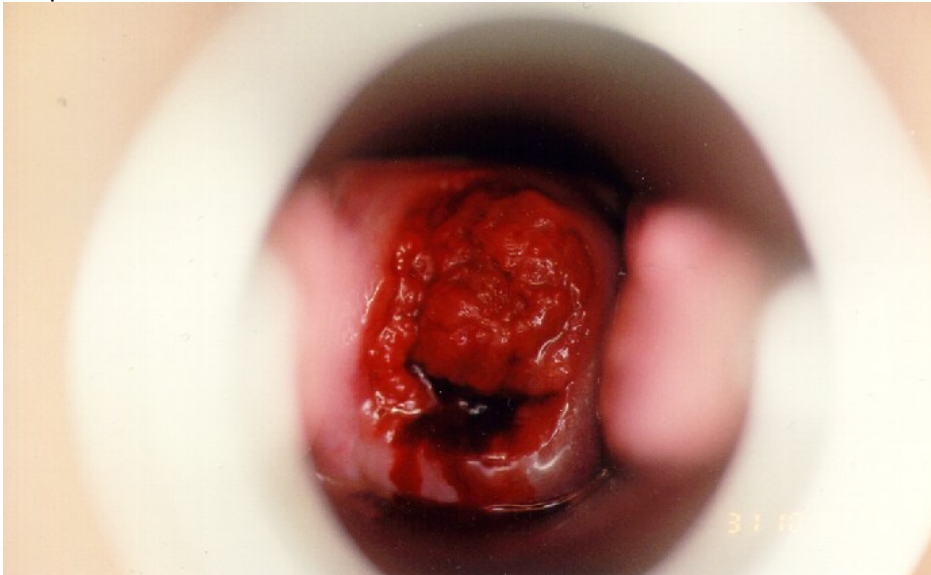
Cryoprobes

Source: Reprinted from Sellors and Sankaranarayanan, with permission.

Excisional biopsy



Suspicious for cancer



CIDRZ Cervical Cancer Prevention Program

Overall Outcomes (Jan 2006 –April 2010)

- 21 nurses, 4 physicians (Zambia)
- 18 clinic sites
- >41,000 screened (1/3 HIV infected)
- Services integrated into public health clinics
- Trained 51 health professionals from 8 countries:
 - Peoples Republic of China,
 - Botswana,
 - SA,
 - Tanzania,
 - Uganda,
 - Kenya,
 - Zimbabwe,
 - Cameroon,
 - India,
 - Nigeria,
 - Ghana

Programmatic Outcomes

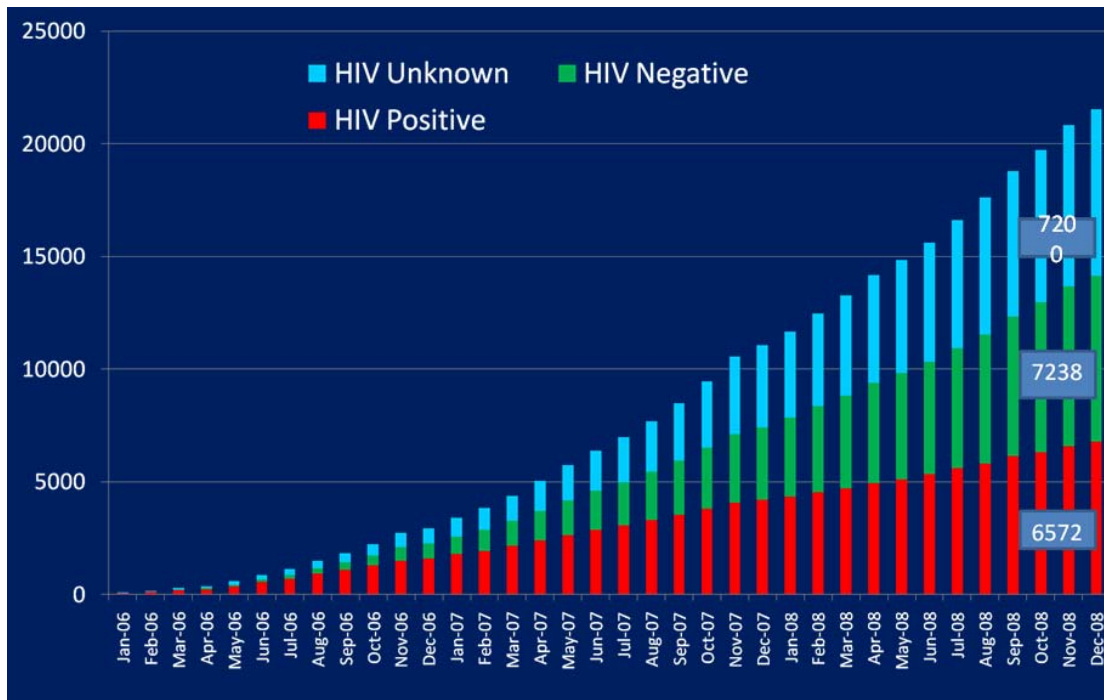
Cohort

- HIV-infected women
- Analyzed data from women enrolled Jan 2006 –Dec 2008

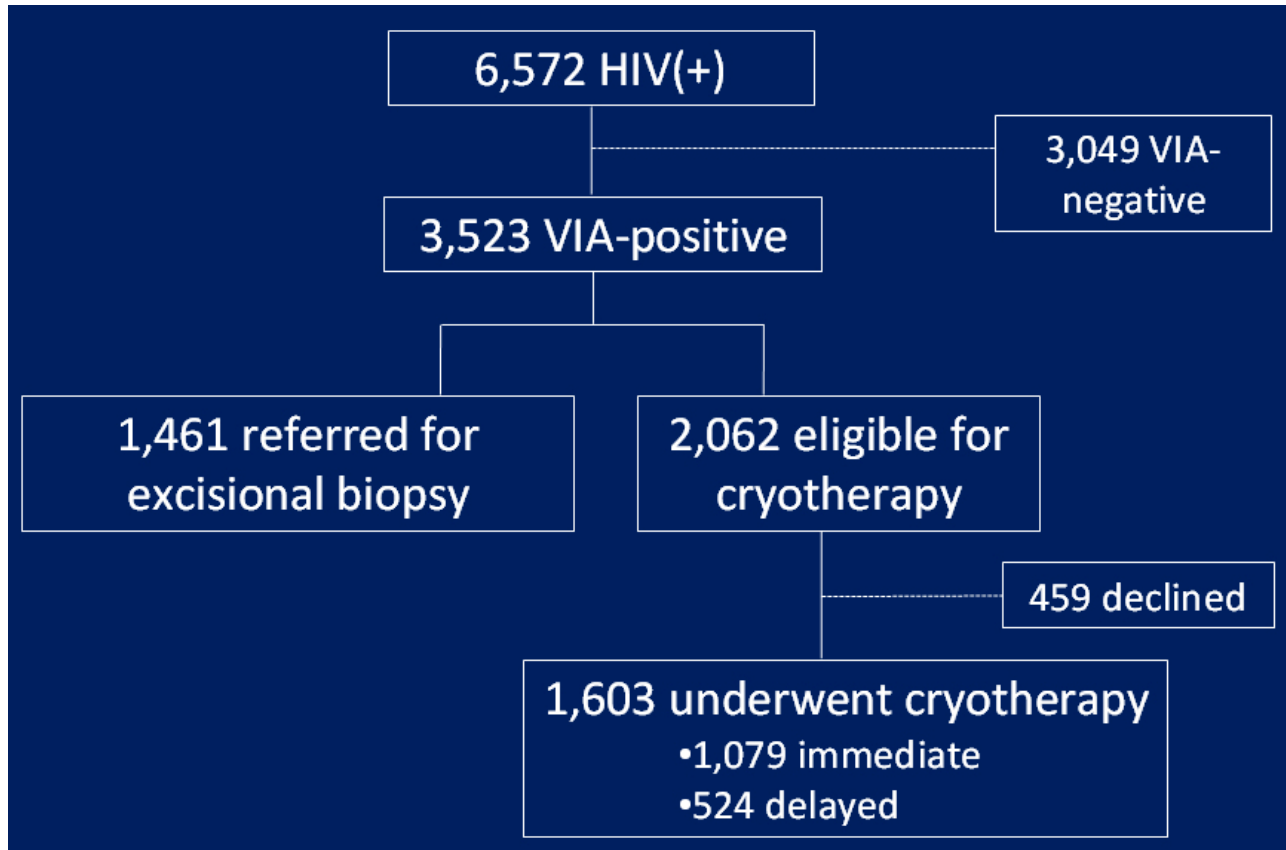
Outcome measures

- Description of major programmatic outcomes

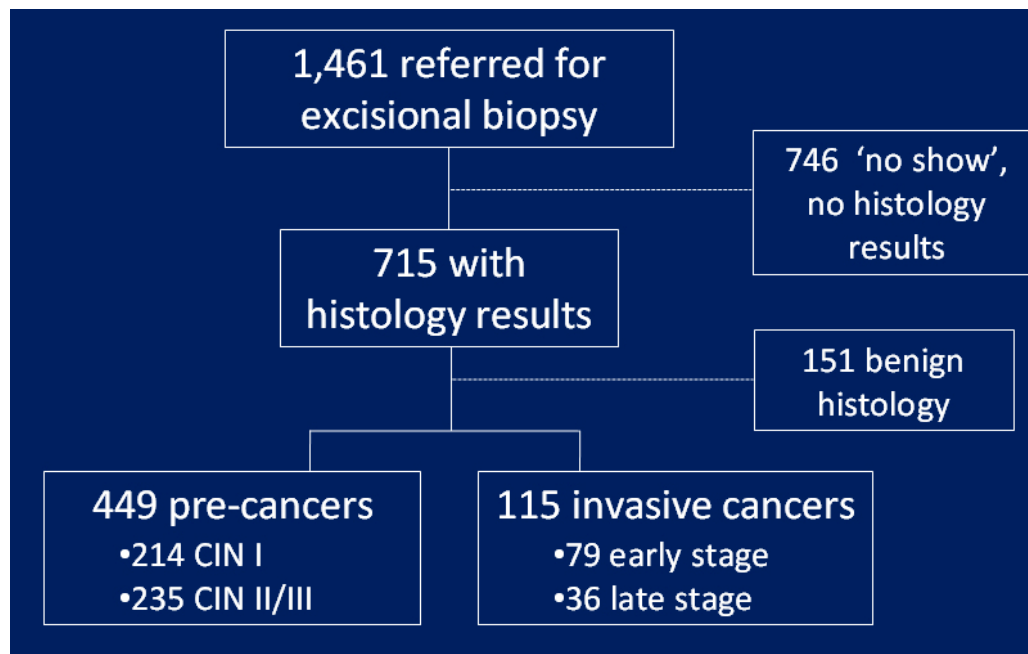
Patient enrollment (Jan 2006 –Dec 2008)
n=21,0107200



Programmatic outcomes



Major programmatic outcomes



Measuring program effectiveness

Conditional probability model

- Progression and cure rates
 - from published literature
- Observed counts
 - from programmatic data
- Modelled estimation of cancer deaths prevented

Indicators of program effectiveness

	Pathology result	Progression rates	Treatment modality	Cure rates
VIA positive		0.06	Cryotherapy	0.7
Pre-cancer	CIN I	0.06	Local excision	0.7
	CIN II/III	0.3	Local excision	0.9
Early stage	Stage Ia	1	Surgery/XRT	0.9
	Stage Ib	1	Surgery/XRT	0.7
	Stage IIa	1	Surgery/XRT	0.7
Late stage	Stage IIb	1	XRT	0.6
	Stage IIIa	1	XRT	0.4
	Stage IIIb	1	XRT	0.3
	Stage IVa	1	XRT	0.1
	Unknown	1	XRT	0.3

Indicators of program effectiveness

	Pathology result	N	Estimated # of cancers	Cancer deaths prevented
VIA positive		1,603	96	67
Pre-cancer	CIN I	214	13	9
	CIN II/III	235	71	64
Early stage	Stage Ia	62	62	56
	Stage Ib	17	17	12
	Stage IIa	4	4	3
Late stage	Stage IIb	6	6	4
	Stage IIIa	2	2	1
	Stage IIIb	3	3	1
	Stage IVa	0	0	0
	Unknown	21	21	6

Sensitivity analysis	Estimated # of cancers	Cancer deaths prevented
Std progression/Std cure*	295	223
Low progression/Low cure	264	183
Low progression/High cure	264	224
High progression/Low cure	351	250
High progression/High cure	351	302
Std progression/Low cure	295	209
Std progression/High cure	295	253
Low progression/Std cure	264	196
High progression/Std cure	351	268

Cancer deaths prevented 183-302 out of 6,572 HIV (+) screened

- For every 22 -35 women screened we prevent 1 cancer death

233 cancer deaths prevented out of 6,572 HIV (+) screened

- For every 29 women screened we prevent 1 cancer death

Limitations

Limitations due to programmatic factors

- Healthcare infrastructure under-capacitated
- Substantial loss to follow-up

Limitations in data analyses

- Differential missing data
- Projections regarding cancers prevented were developed assuming optimal conditions
- Cost data not analyzed yet

Conclusions

- VIA + cryotherapy based 'screen and treat' program in a low-income African nation can prevent deaths from cervical cancer in HIV (+)women
- Adherence to follow-up visits is a challenge and requires significant investment

The future

- HPV vaccination
- HPV DNA-based screening

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“Every woman has the right to live life free from cervical cancer”

