

# SCREENING OPTIONS FOR CERVICAL CANCER PREVENTION



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FIGO 2003

# **OBJECTIVE OF CERVICAL CANCER SCREENING**

Detecting and treating high-grade cervical cancer precursors to prevent invasive cervical cancer

# SCREENING OPTIONS

- ❑ Test and treatment in the same session
- ❑ Test, investigate and treat in the same session
- ❑ Test in primary care and refer women screened positive for treatment

# SCREENING TESTS FOR CERVICAL NEOPLASIA

- Cytology

- Non-cytology methods

  - Visual inspection with acetic acid (VIA)

  - VIA with low-level magnification (VIAM)

  - Visual inspection with Lugol's iodine (VILI)

  - HPV testing

# **Alliance for Cervical Cancer Prevention (ACCP)**

**Supported by the Bill & Melinda Gates Foundation**

## **Studies addressing screening options for less developed countries**

- Cross-sectional studies
- Randomized controlled intervention trials (RCTs)
- Demonstration projects

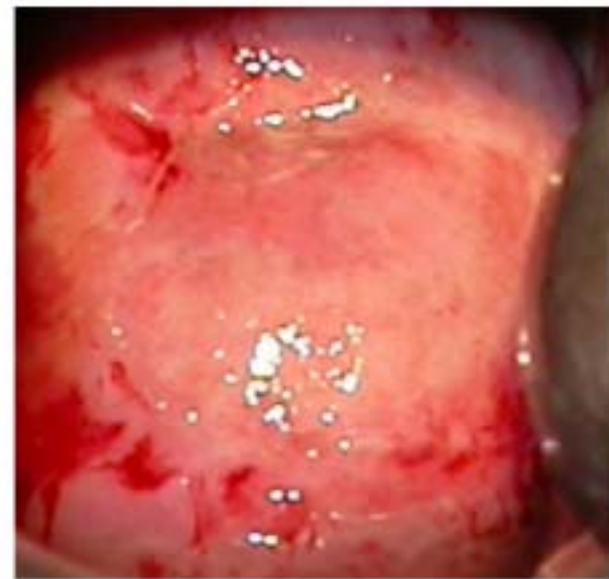
# CYTOLOGY

- Time tested method
- Moderately accurate
- Unable to achieve concurrently high sensitivity and specificity in many settings
- Resource intensive: laboratory, consumables, personnel, quality assurance
- Programmatic issues

# ACCURACY OF CONVENTIONAL CYTOLOGY TO DETECT HSIL

<b>Study Site</b>	<b>No.</b>	<b>Sensitivity (%)</b>	<b>Specificity (%)</b>	<b>PPV (%)</b>
<b>Fahey et al.</b>	<b>10 295</b>	<b>58.0</b>	<b>69.0</b>	<b>-</b>
<b>Nanda et al.</b>	<b>15 569</b>	<b>47.0</b>	<b>95.0</b>	<b>-</b>
<b>U. Harare/ JHPIEGO</b>	<b>2092</b>	<b>44.3</b>	<b>90.6</b>	<b>33.3</b>
<b>IARC-ACCP/ India</b>	<b>21 802</b>	<b>58.1</b>	<b>94.7</b>	<b>11.7</b>

## VISUAL INSPECTION WITH 3-5% ACETIC ACID (VIA)



# TEST CHARACTERISTICS OF VISUAL METHODS: VIA

BASED ON >65,000 WOMEN

SCREENED IN 8 COUNTRIES

- ❑ Average sensitivity: 77% (range 56-90%)
- ❑ Average specificity: 84% (range 64-93%)
- ❑ PPV: range 5-10%
- ❑ NPV: >99%

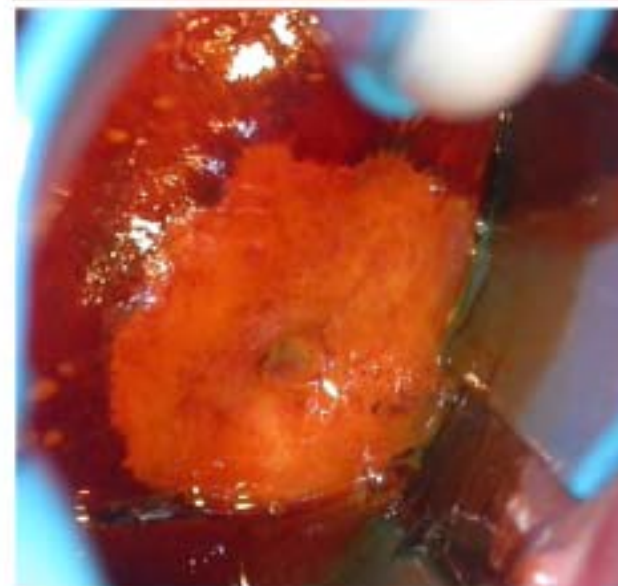
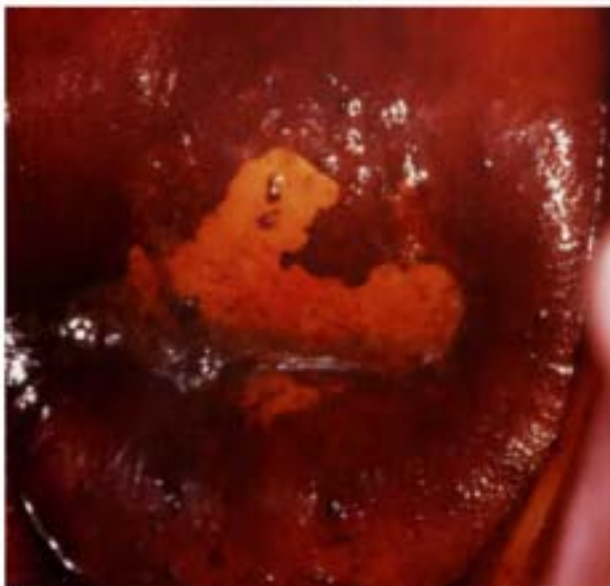
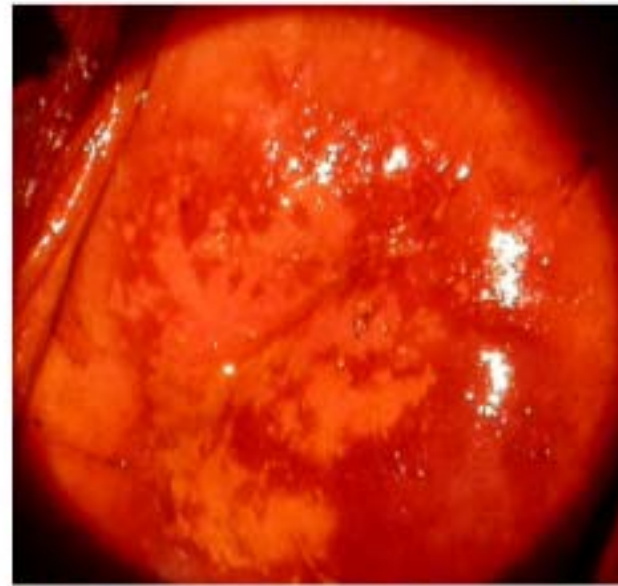
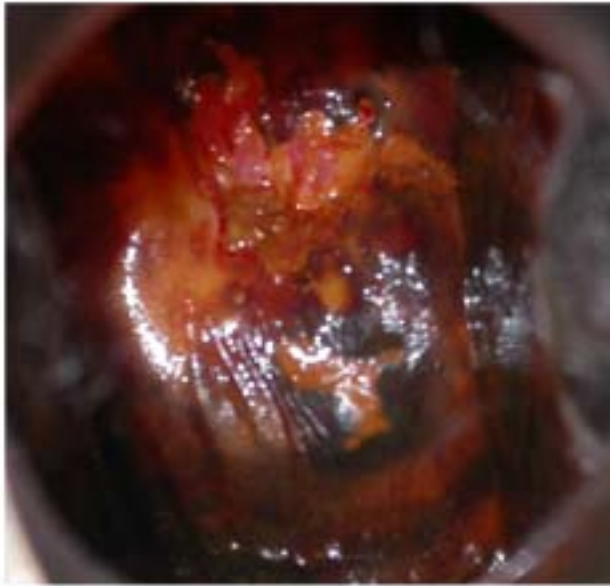
# TEST CHARACTERISTICS OF VISUAL METHODS: VIAM

BASED ON > 20,000 WOMEN

SCREENED IN 2 COUNTRIES

- ❑ Average sensitivity: 68% (range 61-74%)
- ❑ Average specificity: 84% (range 79-89%)
- ❑ PPV: range 5-10%
- ❑ NPV: >99.5%

## VISUAL INSPECTION WITH LUGOL'S IODINE (VILI)



# TEST CHARACTERISTICS OF VISUAL METHODS: VILI

BASED ON > 50,000 WOMEN

SCREENED IN 6 COUNTRIES

- ❑ Average sensitivity: 92% (range 76-97%)
- ❑ Average specificity: 85% (range 73-91%)
- ❑ PPV: range 6-11%
- ❑ NPV: >99.5%

# Accuracy of VIA and VILI combination

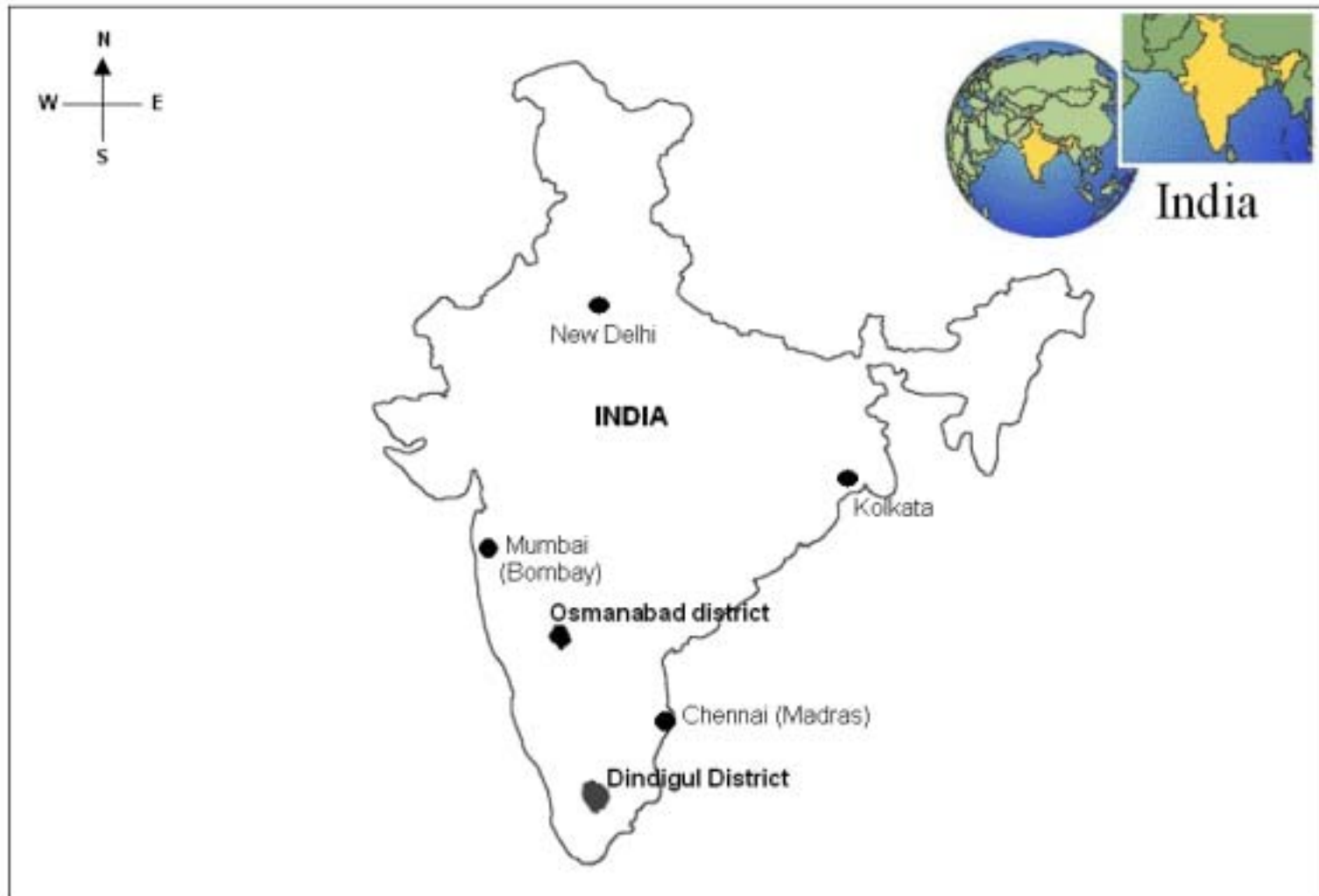
Based on 49,096 participants, 938 confirmed HSIL

Test + Criteria	Positivity	HSIL Missed (% of HSIL)	Sensitivity	Specificity
VIA +	16.5%	182 (19%)	80.6%	85.1%
VILI +	16.8%	71 (8%)	92.4%	85.1%
<b>VIA + <u>or</u> VILI +</b>	<b>20.9%</b>	<b>57 (6%)</b>	<b>93.9%</b>	<b>80.9%</b>
VIA + <b><u>and</u></b> VILI +	12.4%	196 (21%)	79.1%	89.3%

# HPV TESTING

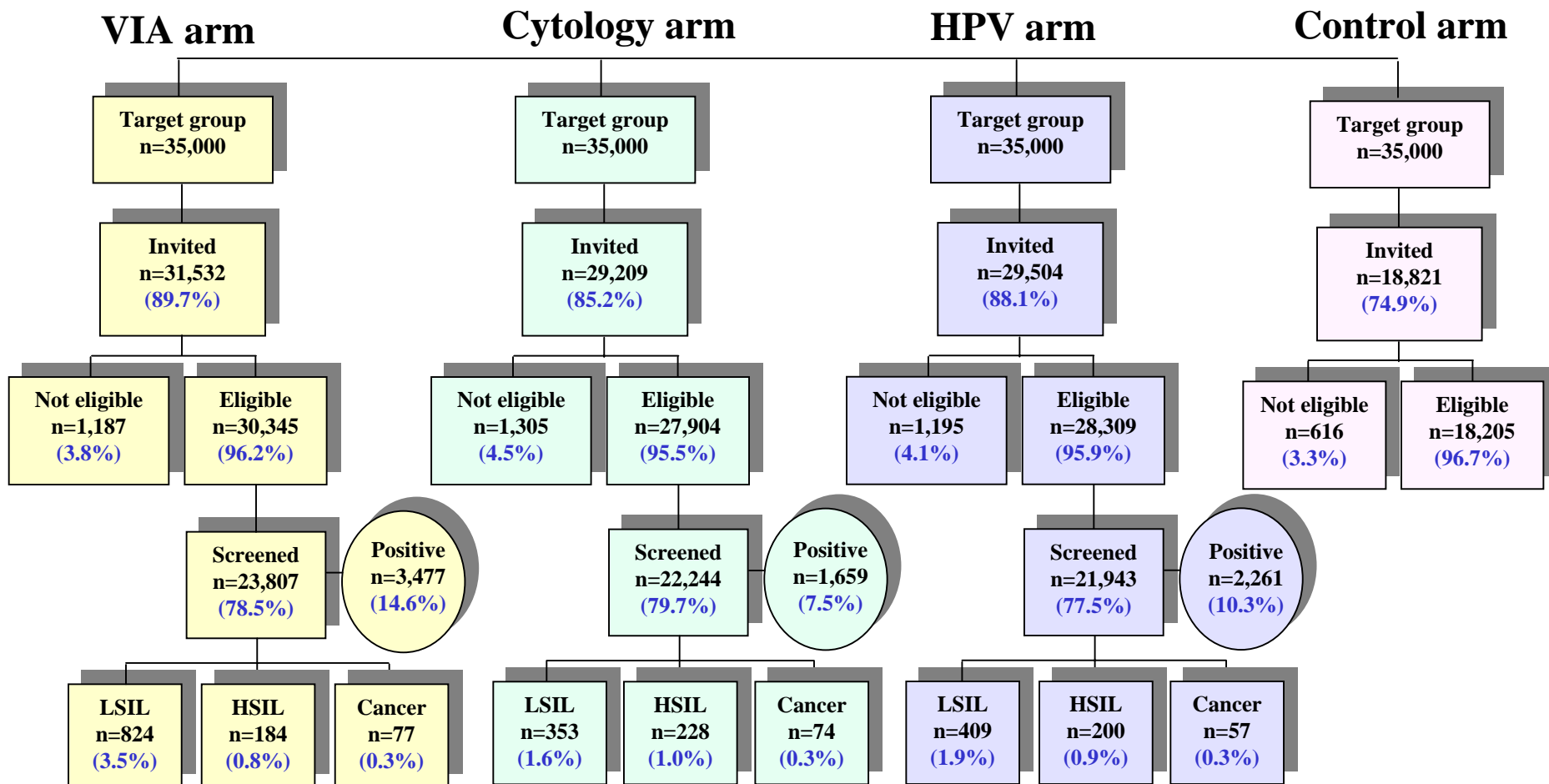
- ❑ Testing expensive currently
- ❑ Sophisticated testing infrastructure
- ❑ Higher sensitivity, but lower specificity than cytology
- ❑ Range in sensitivity: 80-100%
- ❑ Range in specificity: 61-95%
- ❑ 61.2% sensitivity and 93.8% specificity in Indian studies
- ❑ Currently being evaluated in cross-sectional studies and RCTs

# Study sites of RCTs of cervical cancer screening in India

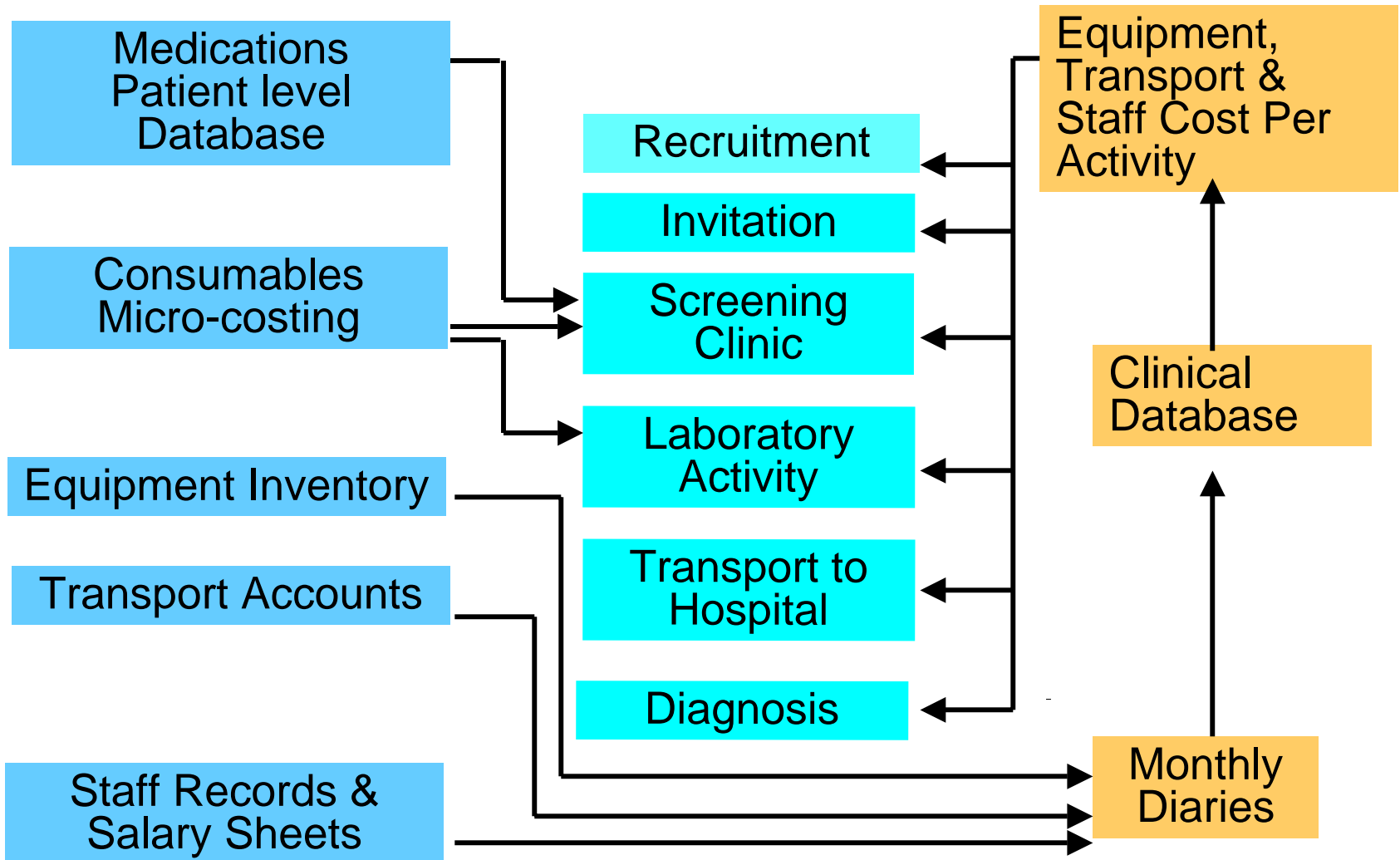


# Osmanabad district RCT, India: Evaluation of the comparative efficacy of VIA, cytology and HPV testing

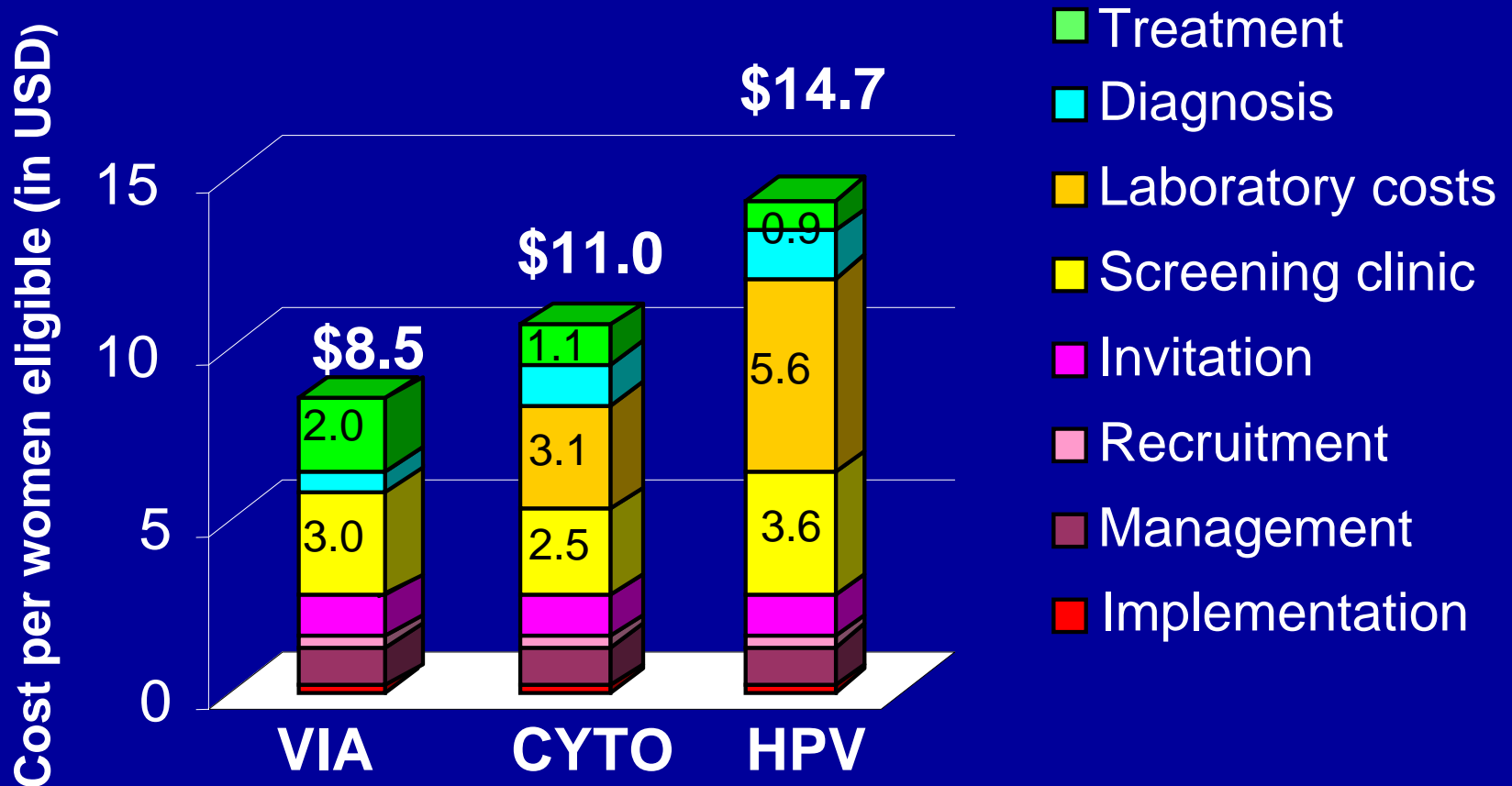
## Preliminary results



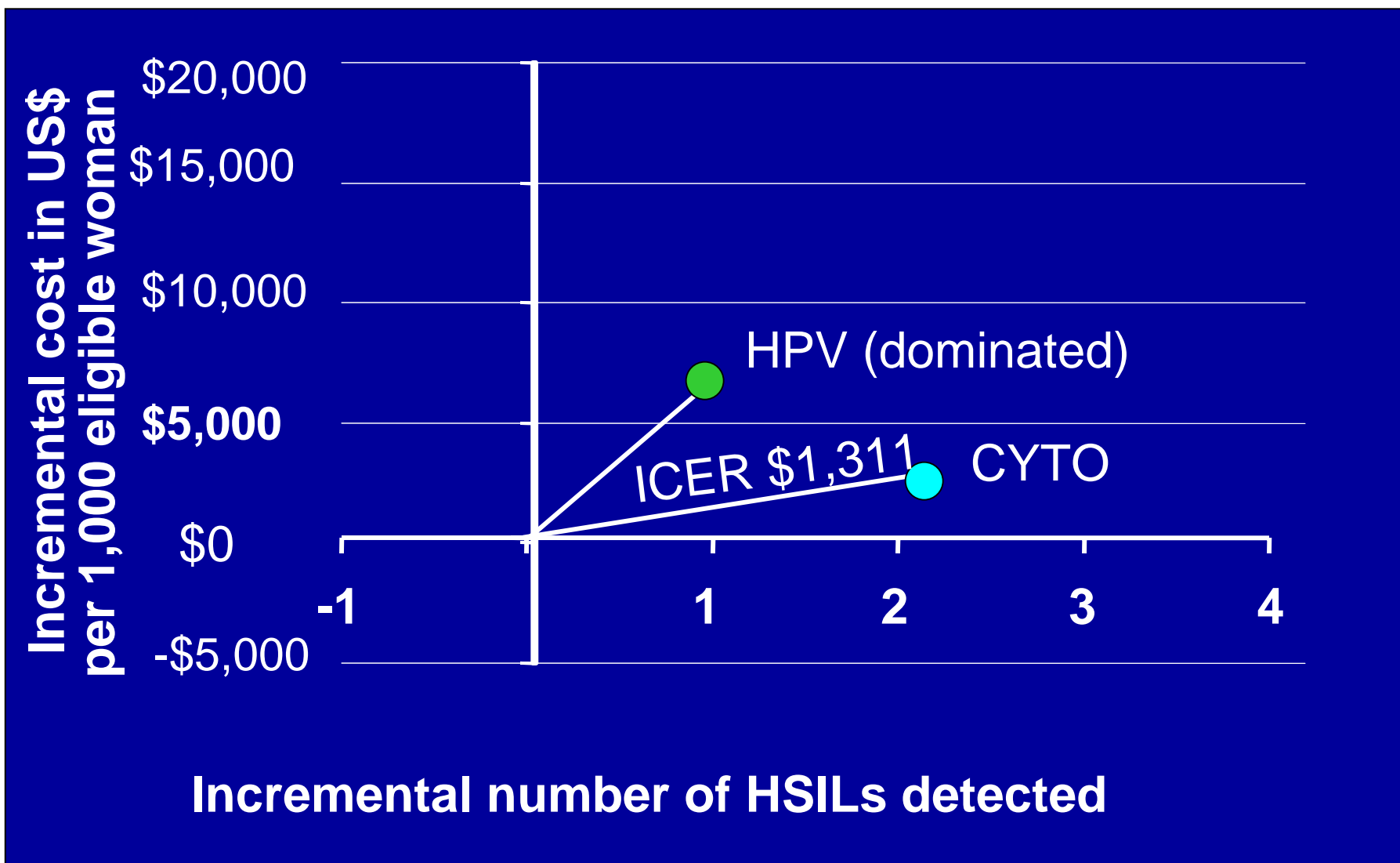
# Unit costs of screening and diagnosis



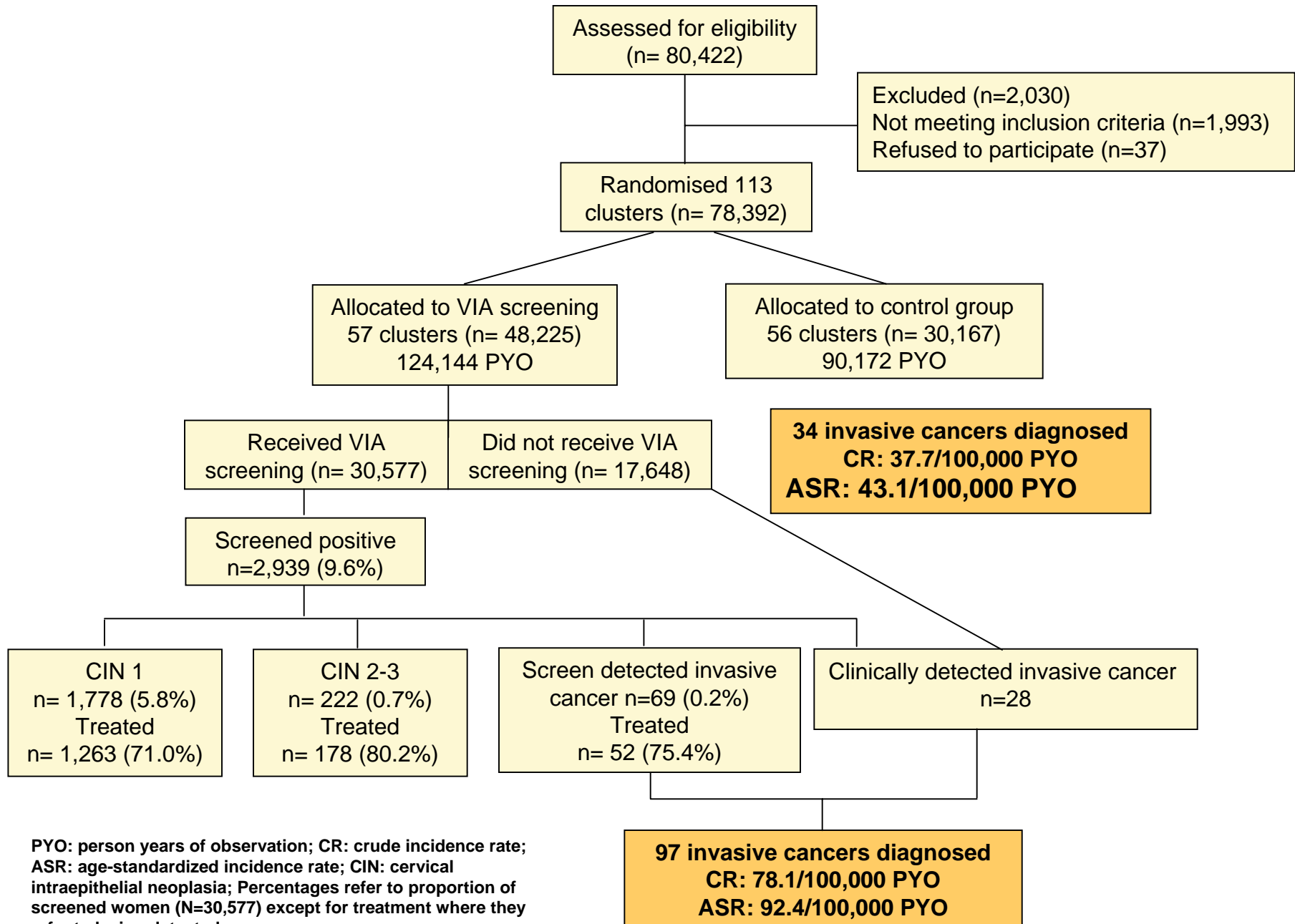
# Costs per eligible women



# Incremental cost effectiveness ratio (ICER)



# Dindigul district cervical screening trial, India



PYO: person years of observation; CR: crude incidence rate; ASR: age-standardized incidence rate; CIN: cervical intraepithelial neoplasia; Percentages refer to proportion of screened women (N=30,577) except for treatment where they refer to lesion detected

The comparative efficacy of test (with VIA or HPV Testing) and treat with cryotherapy in reducing the burden of high-grade cervical cancer precursors is being evaluated in a RCT in South Africa.

# SAFETY, ACCEPTABILITY, AND FEASIBILITY OF A SINGLE VISIT APPROACH TO CERVICAL CANCER PREVENTION IN RURAL THAILAND

- ❑ 5999 tested with VIA by 11 nurses
- ❑ 13.3% (n=798) VIA +
- ❑ 756 received cryotherapy
- ❑ 98.5% of eligible VIA + women accepted immediate treatment
- ❑ >95% experienced satisfaction with their experience

# **INTEGRATION OF SCREENING IN HEALTH SERVICES IN DEVELOPING COUNTRIES**

A VIA-based screening programme is being demonstrated in San Martin province, Peru, covering a target population of >80,000 women.

An integrated VIA/VILI-based screening project is ongoing in Busia district in Western Kenya.

# **SCREENING OPTIONS FOR CERVICAL CANCER IN DEVELOPING COUNTRIES: OPPORTUNITIES AND CHALLENGES**

- Policy and political will
- Infrastructure development
- Integration of testing, investigation/treatment and follow-up care in health services
- Monitoring the efficiency of service delivery
- Evaluation of effectiveness to reduce disease burden

# Thanks!

The Bill & Melinda Gates Foundation  
Our several in-country collaborating  
institutions and colleagues

