



IS VILI AS GOOD AS OR BETTER THAN VIA?

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BACKGROUND:

An IARC multicentre cross-sectional study comparing the test characteristics of visual inspection with Lugol's iodine (VILI) and visual inspection with acetic acid (VIA) has established that VILI has a significantly higher sensitivity than VIA to detect cervical intraepithelial neoplasia (CIN 2-3) (92.3% Vs. 73.8%), but the specificity of both tests were similar (84.0% Vs. 82.4%)¹. VILI was performed after VIA and colposcopy in the above studies. Although the tests were carried out by workers blinded to test results, concern existed about whether VILI findings were biased by VIA and colposcopy. We wished to establish the test characteristics of VILI by providing this test first in the sequence followed by VIA, magnified VIA (VIAM) and finally colposcopy in a cross-sectional study involving 5200 women aged 25-59 years in Kerala, India.



OBJECTIVE:

To evaluate the test characteristics of VILI followed by VIA and VIAM in detecting CIN 2-3 lesions.



Satellite lesions (a) do not stain with iodine after the application of Lugol's iodine solution and remain as thin yellow areas.

Geographic satellite lesions after application of 5% acetic acid (a) far away from the squamocolumnar junction, suggestive of low-grade lesions.

METHODOLOGY:

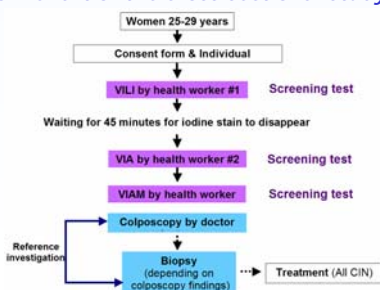
Study design:

Cross-sectional study:

Participating women were tested sequentially with VILI followed by VIA and VIAM by different health workers and the reference investigation, namely colposcopy with or without biopsy; biopsies were taken in women with abnormal or suspicious findings on colposcopy. VILI, VIA, and VIAM were performed by trained female health workers. All were trained in performing and reporting of VILI, VIA and VIAM during a 5-day intensive course, using a training manual prepared by IARC. VIA, VIAM were performed by health workers, blinded to the findings on VILI. Colposcopy was performed by a blinded colposcopist.



Flow Chart of the cross sectional study:



Participants:

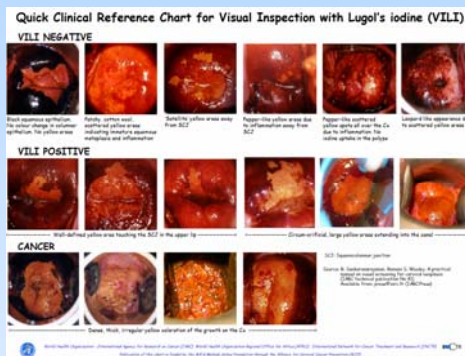
Apparently healthy women aged 25-59 years with an intact uterus and with no history of debilitating physical and/or mental illness from residential localities and villages in Kerala, India.

Recruitment:

Women were recruited in opportunistic open access early detection clinics in Kerala. The study was explained to them during group meetings held by the social workers who also distributed information leaflets. All participating women signed an informed consent.

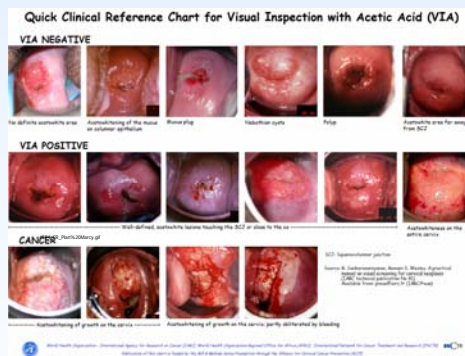
Definition of screen positivity:

- VILI:
 - > Well-defined, dense, thick, bright, mustard-yellow or saffron-yellow, iodine non-uptake areas touching the squamocolumnar junction;
 - > Circumferential, well-defined, thick, dense, yellow lesion(s), occupying a large portion of the cervix;
 - > Growth on the cervix turns yellow.



VIA and VIAM:

- > Opaque, dense, dull, definite, well-defined acetowhite lesions touching the squamocolumnar junction or close to the external os;
- > Large, circumferential, well-defined, thick, dense acetowhite lesions;
- > Leukoplakia and warts on the cervix;
- > Growth on the cervix turns acetowhite.



Treatment:

Cryotherapy was offered for those with ectocervical lesions involving less than one quarter of the cervix. Those with large CIN lesions or lesions extending into the endocervical canal were treated with loop electrosurgical excision procedure (LEEP) or cold-knife conization. Those with invasive cancer were referred for surgery and/or radiotherapy.



Statistical methods:

CIN 2-3 lesions were considered as true positive disease to calculate sensitivity, specificity and predictive values of the screening test in order to obtain conservative estimates of accuracy.

RESULTS:

Recruitment was initiated in January 2003 and completed in January 2005. A total of 5200 women were recruited. 176 women who had inconclusive colposcopy and no biopsy were excluded from the analysis.

	Number	Percentage
Women recruited	5,200	
Age of women recruited (years)		
25-39	2,201	42.3
40-49	1,986	38.2
50-59	1,013	19.5
Pre-menopausal women	4,489	86.3
Total number of pregnancies*		
0	49	0.9
1-2	2,367	45.5
3-4	2,368	45.5
5+	373	7.2
Literate women*	4,845	93.2
Married women*	4,641	89.3
Squamocolumnar junction fully visible	4,579	88.1
VILI positivity	590	11.4
VIA positivity	430	8.3
VIAM positivity	480	9.2

Characteristics of women recruited and positivity rates.

Percentages based on women for whom such information was available.

* Information was missing on pregnancies (n=43), education (n=2) and marital status (n=3).

VILI: visual inspection with Lugol's iodine; VIA: visual inspection with acetic acid; VIAM: visual inspection with acetic acid using low-level magnification

Test	Sensitivity (95% CI)	Specificity (95% CI)	PPV	NPV
VILI	75.8 (63.3 - 85.8)	90.6 (89.7 - 91.4)	9.2	99.7
VIA	71.0 (58.1 - 81.8)	93.3 (92.5 - 94.0)	11.7	99.6
VIAM	79.0 (66.8 - 88.3)	92.4 (91.6 - 93.1)	11.6	99.7

Accuracy of screening tests for the detection of CIN 2-3.

VILI: visual inspection with Lugol's iodine;

VIA: visual inspection with acetic acid; VIAM: visual inspection with acetic acid using low-level magnification;

PPV: positive predictive value;

NPV: negative predictive value

CONCLUSIONS:

- > VILI, VIA and VIAM were confirmed as promising alternatives to cytology in low-resource settings.
- > VILI had higher sensitivity than VIA, but lower than VIAM to detect CIN 2-3.
- > Specificity of VILI was lower than both VIA and VIAM.
- > When VILI was provided first in the sequence of visual inspection-based tests specificity decreased. Sensitivity also decreased, but it was still higher than VIA.
- > VIAM had higher sensitivity than VIA and VILI in this study.

Acknowledgements:

The investigators gratefully acknowledge the generous support of The Bill & Melinda Gates Foundation to the study through the Alliance for Cervical Cancer Prevention (ACCP). We are grateful to the District Collector, the numerous women's organizations, panchayath office bearers, voluntary organizations, staff of the local health services and civic leaders in the project area who facilitated the conduct of the study. We thank all the women and their families who participated in the programme.

¹ Sankaranarayanan R., Basu, P., Wesley, R. S., Mahé, C., Keita, N., Mbalawa, C. C. G., Sharma, R., Dolo, A., Shastri, S. S., Nacoulma, M., Nayama, M., Somanathan, T., Lucas, E., Muwonge, R., Frappart, L., & Parkin, D. M. (2004). Accuracy of visual screening for cervical neoplasia: Results from an IARC multicentre study in India and Africa. *International Journal of Cancer*, 110, 907-913.