

***Prevalence of Pre - malignant Lesions
&
High Grade HPV Infection among
Rural Women living in Low and High
Arsenic areas of West Bengal***

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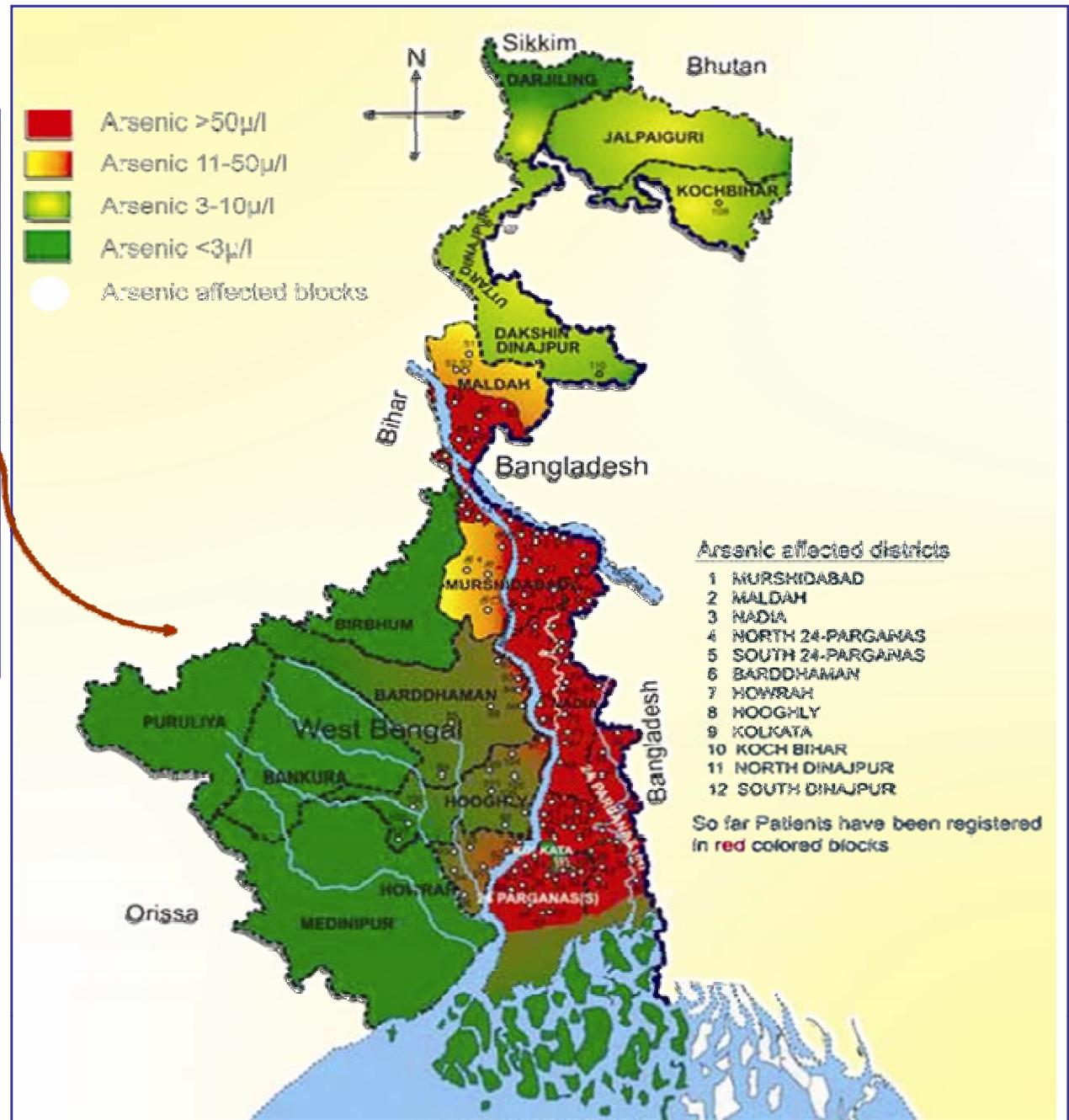


Arsenic Situation in West Bengal

- ❖ **8** districts in West Bengal show high level of ground water Arsenic, a known environmental pollutant
- ❖ **42.7** million population are exposed to Arsenic contamination through drinking water.

*High arsenic area is defined as the region where the ground water level of As is more than **50µg/l** [WHO]*

Arsenic Affected Districts



Clinical Manifestation

Chronic As exposure promotes variety of diseases

- **Dermatologic lesions**

Keratosis

Melanosis

Depigmentation

- **Toxicosis**

Liver

Kidney

Brain

Lung

- **Cancers**

Skin

Lung

Bladder

Kidney

Prostate

Anti Carcinogenic Role of Arsenic

❖ **Arsenic trioxide used in treatment of various hematological malignancies**

(Can Lett 2002, Vol.181, 11-22)

❖ **Inhibits growth & Induces apoptosis in many cancer cell lines including cervical cancer cell lines**

❖ **Inhibits HPV E6/E7 genes in Hela cells**

(The Oncologist 2001 Vol6, 22-28)

Cervical Cancer Scenario

West Bengal shows very high incidence of Ca Cx

- ❖ **Kolkata PBCR (urban) – AAR 20/100,000**
- ❖ **In absence of district PBCR hospital records show a high % of Cacx patients**
- ❖ **70% invasive cancers are due to HPV 16 & 18 infection**
- ❖ **No epidemiological study have EVER been conducted to study Ca Cx risk in arsenic-exposed population**

Contradictory Indicators

- ❖ Anti HPV action of Arsenic - in vitro studies
- ❖ Cervical Cancer reports from high Arsenic area of West Bengal
- ❖ Inhibitory effect of Arsenic on immune system



- Cervical screening of asymptomatic women from high/low As area
- Study on prevalence of CINs, HPV infection & CaCx

Study Area

HIGH Arsenic area
ground water As level
150 - 300 $\mu\text{g/l}$

District	Nadia
Block	Chakdah/ Ranaghat
Total area	44 sq.Km
Population	17546
Eligible women	3864

LOW Arsenic area
ground water As level
below **25 $\mu\text{g/l}$**

District	24 Pgs South
Block	Diamond Harbour
Total area	37 sq. Km
Population	13650
Eligible women	2866

Eligibility Criteria for Screening

No. of Eligible women: 21% of total population - 6730

No. of Target women to be screened: 3000

Asymptomatic Women who are :

- Married
- **25-59** years of Age
- Not pregnant
- No recent delivery
- Hysterectomy not done
- Not menstruating on the screening day



Cervical Cancer Screening Methodology

- ❖ **Examination** of cervix by speculum
- ❖ **Collection** of cervical scrapings for HPV test (HC II) in visually positive women
- ❖ **Visual inspection** of the cervix by applying **5% acetic acid (VIA) & Lugol's Iodine (VILI)**
- ❖ **Colposcopic** examination for the visually positive women
- ❖ **Collecting** tissue sample by punch biopsy for histopathology
- ❖ HPV genotyping in the HPV positive women (*results awaited*)

RESULTS

<i>Screening Tests & No. of women</i>	<i>High As Area #</i>	<i>Low As Area#</i>	<i>Total #</i>
Screened women	1435	1441	2876
Visually Positive women	148 (10.3%)	98(6.8%)	246
Colposcopy & Biopsy	148	98	246
HPV Test	148	98	246
CINs diagnosed	43 (3%)	21(1.6%)	64
Invasive Cancer	03	01	04
HPV positive (High Grade)	18 (12.16%)	08(8.4%)	26

Distribution of CINs

<i>Type</i>	<i>High As Area</i>	<i>Low As Area 20</i>	<i>Total</i>
CIN 1	34	20	54
CIN 2*	6	1	7
CIN 3*	3	0	3

*High Grade CINs & their Relative Proportions

6.08%*	1.05%
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***P<0.05**

Distribution of HPV Positive Cases (*n* = 26)

<i>Type</i>	<i>High As Area</i>	<i>Low As Area</i>	<i>Total</i>
CIN 1	5	4	9
CIN 2	5	1	6
CIN 3	2	0	2
Invasive Ca	3	1	3
Chronic cervicitis	3	2	6

Summary

- Higher prevalence of High grade HPV infection & early cervical lesions in *high As area*
- Chronic Arsenic Exposure indicates an increase of the risk of HPV infection leading to cervical cancer
- This is the first study indicating an association between As exposure and CaCx
- To establish the specific relationship, we plan to screen 5000 women in the next phase

Acknowledgement

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- ✓ District Administration
- ✓ Team of Cancer Foundation of India

THANK YOU



Treatment & Follow up

- ❖ Screen positive women are treated with antibiotics & supporting medicines
- ❖ Histopathologically confirmed CINs are treated by Cryotherapy/LEEP
- ❖ Diagnosed carcinoma cases are referred to Calcutta Medical College & Hospital for further management
- ❖ Screen positive women are reviewed after 1, 6 & 12 months