Tamil Nadu Health Systems Project
Department of Health & Family Welfare

Non Communicable Diseases Intervention Programme

*Proposal for*
International Innovation Awards

*Commonwealth* Association of Public Administration and Management

Presented on 15.08.2016 at Malaysia on behalf of Government of Tamil Nadu
Cervical cancer – A major public health burden

• Cervical Cancer - a major public health problem

• Gradual development over 10 yrs from Pre-Cancer – Silent killer!

• Prognosis - 80-90% in stage I and 50 – 60% in Stage 2 diagnosis. High Mortality with Late Detection

• South East Asia contributes 35% of global burden

• 122,844 new cases occur each year in India, which is projected to rise to 148,624 by 2020.

• Globally, India accounts for about one fifth of all new Cervical cancer diagnosed and about one fourth of deaths

• Approximately 184 women die everyday, 8 women every hour and one woman every 7 minutes.

Very low Awareness in the community.

No Routine Screening for early identification and detection

Lack of infrastructure to screen and confirm Cervical cancers in Health facilities including Medical colleges

Only Patients with symptoms investigated, when the disease had already caused significant damage.

Field Staff not sensitized and trained for screening and interpreting observation.

Standardized protocols for treatment and follow up not available.

Separate budget for creating awareness, training human resources, screening and treatment of individuals not in place.
OBJECTIVES:

Is a novel initiative to build dedicated systems to create awareness, mobilize, detect, treat and follow-up on patients to ensure effective control of Cervical cancer.

STRATEGY:

All Women aged 30 years and above are screened for Cervical cancer by a economical and cost effective screening test VIA /VILI test (Visual Inspection with Acetic acid followed by Visual Inspection with Lugol’s Iodine)
Cervix Cancer Screening
Evolving a New Methodology

A Life Saving Initiative

https://www.youtube.com/watch?v=ESmA50CFZfU
Can Table top Vinegar be the solution?
Detection by Visual Inspection with Acetic Acid (Vinegar)

- A swab of table top Vinegar
- A Magnifying Lens
- Trained Para Medical Staff – Staff Nurses
- In practical terms, it costs almost nothing
“VIA ..represents a proven, simple means of identifying cervical intraepithelial neoplasia in developing countries.”

A critical assessment of screening methods for cervical neoplasia • ARTICLE
R. Sankaranarayanan, L. Gaffikin, M. Jacob, J. Sellors and S. Robles

Accuracy of VIA in detecting CIN2-3&Invasive Ca
• Specificity : 86 %
• Sensitivity : 79%
Why VIA is a Practical Alternative to Pap Smear

- Simple inexpensive low cost technology
- Affordable, Replicable and cost-effective
  - Can be learned by all types of healthcare professionals
  - Cheap and locally available equipment and Acetic Acid (Vinegar)
  - Possible in existing infrastructure
- Safe, Easy to perform (2 Minutes) and does not need a lab service
- Single Visit
  - Screening result available immediately
- Accurate
  - Good sensitivity
## VIA Compared with other alternatives

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity/ Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HPV Vaccine</strong></td>
<td>Screening is still required</td>
</tr>
<tr>
<td><strong>Biopsy</strong></td>
<td>66-100%</td>
</tr>
<tr>
<td><strong>Pap Smear</strong></td>
<td>47-62%</td>
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<tr>
<td><strong>VIA</strong></td>
<td>67-79% (With VILI combination, Sensitivity goes up to 85 - 90%)</td>
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<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity/ Reliability</th>
<th>No of Visits</th>
<th>Replicable</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV Vaccine</td>
<td>Screening is still required</td>
<td>3 Visits</td>
<td>Not easy</td>
<td>Extreme INR 9000 / 3 doses ($ 43 dollar per dose)</td>
</tr>
<tr>
<td>Biopsy</td>
<td>66-100%</td>
<td>&gt; 3 Visits</td>
<td>No ; Requires High Cost and equipment</td>
<td>High</td>
</tr>
<tr>
<td>Pap Smear</td>
<td>47-62%</td>
<td>&gt;2 Visits</td>
<td>Requires Lab and trained Gynecologist</td>
<td>High</td>
</tr>
<tr>
<td>VIA</td>
<td>67-79% (With VILI combination, Sensitivity goes up to 85 - 90%)</td>
<td>Single Visit</td>
<td>Easy , best and THE ONLY OPTION in low cost settings</td>
<td>Very Low INR 1 /test</td>
</tr>
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# Effectiveness of Different Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIA</td>
<td>76.9</td>
<td>85.5</td>
</tr>
<tr>
<td>VILI</td>
<td>91.8</td>
<td>85.4</td>
</tr>
<tr>
<td>Cytology (Pap)</td>
<td>66.5</td>
<td>93.8</td>
</tr>
</tbody>
</table>
Program Strategy 5 C

- Counseling about Cervical Cancer.
- Cervical Screening – VIA / VILI
- Cryotherapy
- Comprehensive treatment, referral & follow-up
- Control of Cancer Cervix.
Pilot by Chennai Corporation – 2005

- Largest and first of its kind in a major Metropolitan city - Chennai in South India
- Single visit
- From two Health posts, it was increased to 30 and then to 93 health posts in the City
- Focus from Gynecologists to Multi Purpose Health Worker (MPHW)
- Modules developed for Medical Officers and Para-Medical staff and trained
- Creating Demand through
  - Women Welfare Camps
  - Women wellness clinics
- Training of private Doctors
Conquering Problems
Innovation & Equipment
Ms Lakshmi became pregnant after VIA + and cryo treatment.

- Pilot initiatives concurrently evaluated by National Institute of Epidemiology and Costing exercise done by Public Health Foundation of India.

- Key lessons learnt in the pilot and Gaps identified were carefully examined and incorporated in the scaling up strategy developed for state wide implementation.
State wide Scaling up by TNHSP

- A first of its kind and State wide large scale program at a budget of INR 82.69 Crores.

- The program was scaled up in 16 districts in 2012 and later extended to the remaining 16 districts in 2013.

- The people benefitted as the program focused on creating awareness about prevention, treatment and control through early detection thereby reducing complications.

- The Health care system has benefitted since various levels of health facilities from PHCs to Tertiary care hospitals are equipped with appropriate equipment and Manpower.
Scaling up to all 32 districts in a phased manner; four NCDs

<table>
<thead>
<tr>
<th>Districts</th>
<th>Phase I (16 districts) - 2012</th>
<th>Phase II (16 districts) - 2013</th>
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</thead>
<tbody>
<tr>
<td>Thanjavur</td>
<td></td>
<td>Thiruvallur</td>
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<tr>
<td>Virudhunagar</td>
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<td>Thiruvannamalai</td>
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<tr>
<td>Sivagangai</td>
<td></td>
<td>Vellore</td>
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<tr>
<td>Theni</td>
<td></td>
<td>Salem</td>
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<tr>
<td>Chennai</td>
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<td>Namakkal</td>
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<tr>
<td>Cuddalore</td>
<td></td>
<td>Krishnagiri</td>
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<tr>
<td>Kancheepuram</td>
<td></td>
<td>Dharmapuri</td>
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<tr>
<td>Villupuram</td>
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<td>Karur</td>
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<tr>
<td>Trichy</td>
<td></td>
<td>Coimbatore</td>
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<tr>
<td>Perambalur</td>
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<td>Tirupur</td>
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<tr>
<td>Dindigul</td>
<td></td>
<td>Niligiris</td>
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<tr>
<td>Erode</td>
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<td>Erode</td>
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<tr>
<td>Nagapattinam</td>
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<tr>
<td>Madurai</td>
<td></td>
<td>Tirunelveli</td>
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<tr>
<td>Thiruvarur</td>
<td></td>
<td>Thoothukkudi</td>
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<tr>
<td>Pudukottai</td>
<td></td>
<td>Kanniyakumari</td>
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<tr>
<td></td>
<td></td>
<td>Ramanathapuram</td>
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</tbody>
</table>
NCD PROGRAMME – A SHORT PROFILE

- Opportunistic screening for women attending any Government Health facility.
- Women in addition screened for Breast cancer, Hypertension and Diabetes Mellitus
Cervical Cancer Screening and treatment programme - an overview

Target Women screened for Cervical Cancer (VIA/VILI) → PHC, GH, GMCH, ESIC dispensaries & hospitals, 100 municipal dispensaries & hospitals

Secondary evaluation using Colposcopy → GH, GMCH, ESIC hospitals, 10 municipal hospitals

Biopsy test for confirmation → Govt. Medical College Hospital

Staging and treatment → Govt. Medical College Hospital

Diagnostic and treatment services are linked with the Chief Minister’s Comprehensive Health Insurance scheme
Items for VIA / VILI procedure for Cancer cervix

Equipments:
- VIA / VILI Kit
- Colposcopy Kit

Consumables:
- 3% Acetic Acid (500 ml)
- Lugol’s Iodine (500 ml)
- Sodium Hypochlorite Solution (500 ml)
Key Strategies of NCD Intervention

- **Awareness programs**
  - Mass media campaigns through visual media, print materials
  - Interpersonal communication through contact programs in Schools and Factories and Network of women Self Help Groups.

- **Quality assurance at health care facilities**
  - All facilities and equipment for screening made available

- **Trained personnel at all levels**
  - 2432 female NCD Staff Nurses were appointed and trained exclusively for the program and posted to PHCs, GHs and Medical Colleges.

- **Inter department coordination**
  - School education, Labour welfare and Rural development

- **Data analysis of screening and treatment**
  - Online reporting system by HMIS
  - Patient tracking and follow up
IEC Hoardings - Cancer Cervix
Community / work place / school based CaCx awareness creation

- 258255 Self Help Groups
- 16369 Schools
- 400 workplaces
staff nurse taking anthropometric measurements for calculating BMI

G.I I Thirukuvalai, Nagapattinam Dt.

VIA / VILI Room

GH Nannilam, Thiruvarur Dt.

COLPOSCOPY
## Outcome of Screening (July 2012 - June 2016)

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Number screened</th>
<th>Screened (%)</th>
<th>Number positive</th>
<th>Positivity Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,44,49,595</td>
<td>1,17,33,084</td>
<td>81% of Target</td>
<td>3,87,691</td>
<td>3.30% Screened</td>
</tr>
</tbody>
</table>

Women who are VIA /VILI positive are followed up with Colposcopy and confirmed with Biopsy.

Staging and treatment based on Biopsy results
Observations by World Bank and Government of India

“The beneficiaries satisfied with the availability of CaCx screening, treatment and follow up services available on all days in comparison to the earlier ‘Selected clinic days’.

“Beneficiaries interviewed at random to assess the quality of services provided as part of the Monitoring and Evaluation”.

“There was no focus on the ‘Life Style Modification (LSM)’ in the past whereas with the implementation of this program, the staff nurse becomes the point of contact for the beneficiaries during all their visits and is able to focus on the LSM.”

“The feedback from the beneficiaries who undergo treatment for early cancers of Cervix are very appreciative of the intervention through this program for saving them as an individual and as a family”.

Source: Aide Memoire of World Bank and National Institute of Epidemiology (NIE)
Cost Implications
Budget for Cervical Cancer: Rs.82.69 Cr.

EXPENDITURE INCURRED FOR 2011 – 15

- Salaries (Rs.58.90 Cr)
- Training (Rs.6.05 Cr)
- Reagents (Rs.8.18 Cr)
- Forms & Registers (Rs.1.54 Cr)
- Equipment (Rs.7.99 Cr)
Cost Implications in terms of per woman screened

Average cost for per woman screened =

\[
\frac{\text{Total budget spent for cancer component}}{\text{Total no of women screened}} = \frac{\text{(INR 82,69,00,000)}}{\text{(1,17,33,084)}} = \text{INR 70.47}
\]

In the up-scaling, the average cost per woman screened has comedown to INR 70.47 from INR 102 calculated in the District level pilot program. With more number of women getting screened on an average per day, the average cost per woman screened would proportionately get reduced further.

65 % of screening done in Primary Health Centers reaching the rural women.
Recruitment of key staff – outsourced and regular mode and their training
Existing health staff coping up with increased demand
Continuous need for training / Refresher Training / CME.
Shortage of Gynecologists
Attrition

Identification of space for conducting procedures- inadequacy, disconnected rooms, OP Vs Screening registration area etc.
Privacy of the women

Development and revision of online screens
Increase in screening load with up-scaling and IEC activities
HMIS issues in PHCs
CHALLENGES

PROCEDURAL / PROTOCOL ISSUE
- Occasional protocol deviations and incorrect practices
- Revision of protocols as the program evolved
- Initial resistance of the health staff to take up the new Protocol and Strategy

SOCIAL ISSUE
- Motivating women to come forward for taking the screening tests

BUDGET ISSUE
- Sustaining the IEC activities which were budgeted in the scale up
- Increased demand for screening services enhanced the need for budgeting, salaries for contract staff nurses, supply of drugs / reagents etc.,
- Sustainability after the end of World Bank funding
### CHALLENGES

<table>
<thead>
<tr>
<th>PROCUREMENT CUM LOGISTICS ISSUE</th>
<th>Large scale supply of logistics like drugs, reagents, forms, cards and registers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMINISTRATIVE ISSUES</td>
<td>Ambitious large scale up-scaling activity suffered initial delays like non arrival of reagents and other supplies like registers in time.</td>
</tr>
<tr>
<td></td>
<td>Struggles to transfer the manual data into online system when screens were developed.</td>
</tr>
<tr>
<td>INTEGRATING LEVELS OF HEALTH CARE</td>
<td>Integrations of institutions at various levels especially in tertiary care institutions.</td>
</tr>
<tr>
<td>FOLLOW UP ISSUES</td>
<td>Follow-up of women found positive in the screening test especially loss to follow up.</td>
</tr>
<tr>
<td></td>
<td>Retaining the VIA /VILI (+) women referred for Colposcopy in the general OPD.</td>
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<tr>
<td></td>
<td>Break in referral linkages.</td>
</tr>
<tr>
<td></td>
<td>Ensuring assured Colposcopy.</td>
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KEY STRATEGIES AND SOLUTIONS

- Recruitment hurdle and attrition of NCD staff nurses overcome by outsourcing

- Staff nurses exclusively provided for the program @ one per PHC, Two per GH, Medical Colleges & Corporation / Municipal Health facilities

- Skill based training on Colposcopy & Cryotherapy to Female Medical Officers to overcome shortage or non availability of Gynecologists.

- Periodical refresher training programme for addressing gaps in knowledge and skills and CMEs for OG specialists

- Provision of space with privacy sorted out by the cooperation of DPMUC’s & district officials

- IEC activities and sensitization of Self Help groups to motivate women for screening

- The NCD staff nurse able to counsel women on ‘Life Style Modification’ as part of the approach for prevention.
• **Screening tools** (includes Ring Lens System for cost effective VIA / VILI method) for detecting Cervical cancer available in each and every health facility in Tamil Nadu at all levels of health care namely Primary, Secondary and Tertiary care institutions.

• A uniform screening and treatment protocol for early detection

• **Provision of Colposcopy services** at each GH and Medical College has enabled screened positive individuals for cervical cancer to travel less distance for confirming the diagnosis and if necessary to undergo biopsy of the lesion.

• Issues with **NCD online screens**, data capture, tracking defaulters, and reporting solved by frequent meetings with the Software designer.

• The **online – screen system** enables data entry, data access and data retrieval for improving the patient management. Provision made for follow-up of patients through line-listing and tracking online.
STRATEGIES AND SOLUTIONS (Contd…)

- Program Implementation issues addressed by meetings, inspections & video conferencing

- Roping in Chief Ministers Insurance Scheme (CMCHIS) for screening, diagnostic and treatment services and conducting outreach camps

- **Display boards** for the beneficiaries to inform services available and protocol boards for health staff for adherence

- Adopting Colposcopy calendar by mapping referral institutions with Government hospitals / Medical college hospitals providing Colposcopy services was implemented to overcome backlog in Colposcopy services.

- The **process pathway** was thoroughly studied through stakeholders meeting at State level and a **Follow up protocol** developed and finalised. State and District level health staff trained effective follow-up.
The program has a sound database and offers a good potential for Research and publications.

The National Institute of Epidemiology has conducted concurrent evaluation of the up-scaling and carried out different surveys which form a natural base for manuscripts.

The Project has identified some potential research topics including focus on Cervical & Breast cancer for documenting the manuscripts.
Lessons learned

- A well conceived and planned large scale cancer program based on **sound pilot initiatives** is cost effective and operationally feasible.

- Uninterrupted and **timely supply of reagents etc.**, intensive monitoring and supervision form vital elements of sustaining the program.

- **Quality training** forms the basis for the effectiveness of the program.

- Sustained and **reliable budget** base is essential.

- Establishing the **linkages between the facility centres** at three levels is crucial for ensuring the final treatment to the patient.

- A **strong HMIS** would facilitate effective monitoring.

- **IEC activities** to create awareness through media and roping in SHG women **add strength** in reaching the program to the community.
Thank You

धन्यवाद

தந்தி

Grazias

Obrigado

Danke