Involving community health workers in malaria diagnosis and treatment: India's National Vector Borne Diseases Control Program (NVBDCP) and supportive interventions

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Preliminary, please do not cite

The appeal of community health workers

- CHWs widely used to provide care for a variety of health issues
  - A bridge between health system and community
  - Potentially useful in prevention, treatment, counseling and mobilization
  - Selected from/by the community, familiar and accepted
  - (primary health care) or limited focus (disease or program specific)
  - Public system or private (NGO)
  - Salaried, pay per performance, or volunteer
- However, little is known about the effectiveness of CHW interventions or how to improve performance (Lewin et al., 2010)

Possible role for CHWs in malaria program

- Diagnosis with RDT or slide collection
- Provision of treatment for uncomplicated cases
- Timely referral of complicated cases
- Motivators for bed net use or indoor residual spray of insecticides
- Communication agents for positive health behavior and environmental sanitation

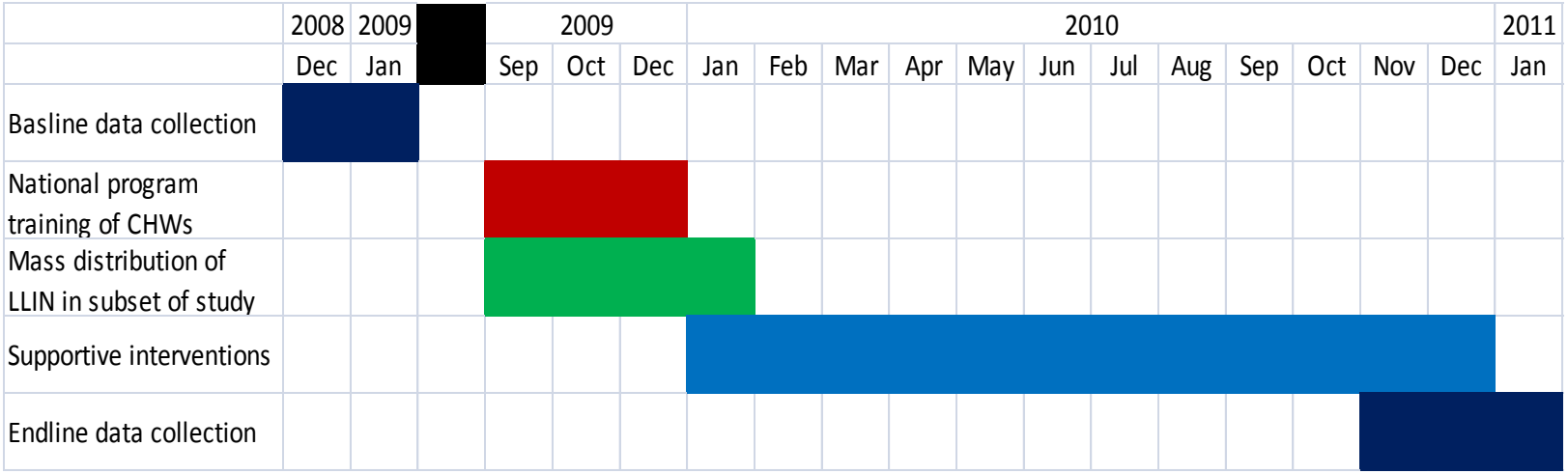
Plan for CHW use under NVBDCP

- Motivation
  - Widespread network till sub-village level (1 per 1000 population)
  - Local availability
  - Familiarity to health system
- Description of plan
  - 3 days training on diagnosis (RDT and slide) and treatment (ACT and chloroquine)
  - Provision of diagnosis (RDT) and treatment (ACT) and referral
  - Facilitators for bed net (LLIN) distribution and IRS and follow up
  - Supervision by formal health workers
  - Incentivized for performance (per slide or RDT) with a ceiling
- Anticipated challenges
  - Low level of education (average 8 years of schooling)
  - No prior experience with curative care
  - Inadequate regular supervision
  - Irregular supply of commodities
  - Workload vis-à-vis MCH and other responsibilities

Research questions

- Does accessibility of diagnosis and treatment increase by involving CHWs in malaria care/fever case management?
  - Not answered definitively, suggestive evidence from before/after comparison around introduction of CHW malaria training
- Can CHW performance be improved through low-cost supportive interventions?
  - Randomized exposure of supportive interventions across villages
    - Community mobilization
    - Community mobilization and supportive supervision to CHWs

Study timeline and data



- Baseline data collected by NVBDCP: 1952 households in 90 villages
- Endline data collected by researchers, 2693 households in 140 villages

Two supportive interventions

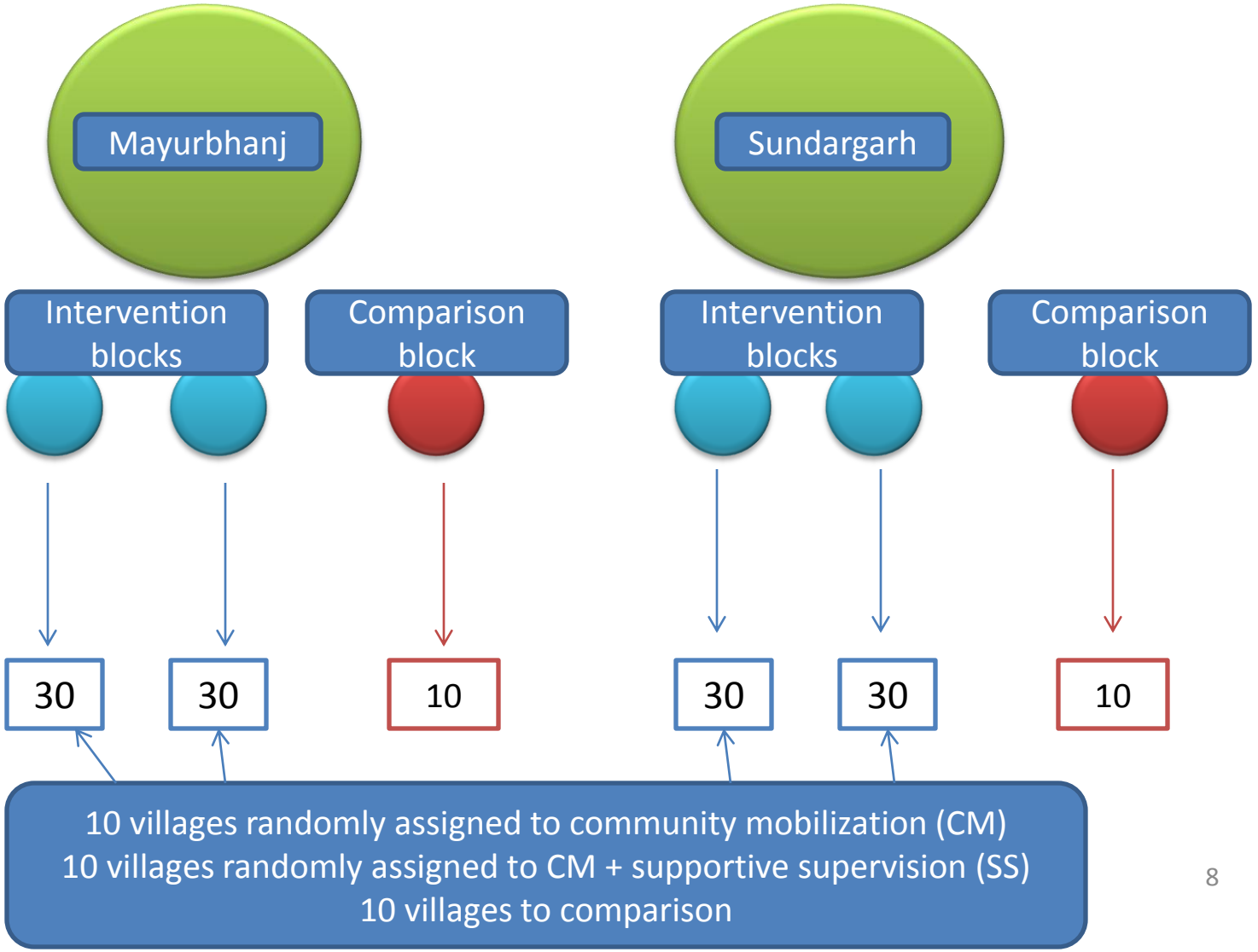
- Supportive supervision to CHWs
  - Attempt to address anticipated challenges
  - CHWs supported by local NGOs, twice monthly
    - Hands-on repeat training of RDT and drugs dosage
    - Knowledge on malaria transmission and prevention
    - Record keeping
    - Accompanied visits up to two fever cases during the last 15 days
    - Reporting of commodity stock-outs
- Community mobilization
  - Attempt to raise awareness and demand for malaria prevention and treatment
    - Community meetings of women's and men's groups
    - Sensitization programs in schools and churches
    - Community based monitoring of bed net use
    - Use of local media, methods and materials

Evaluation design

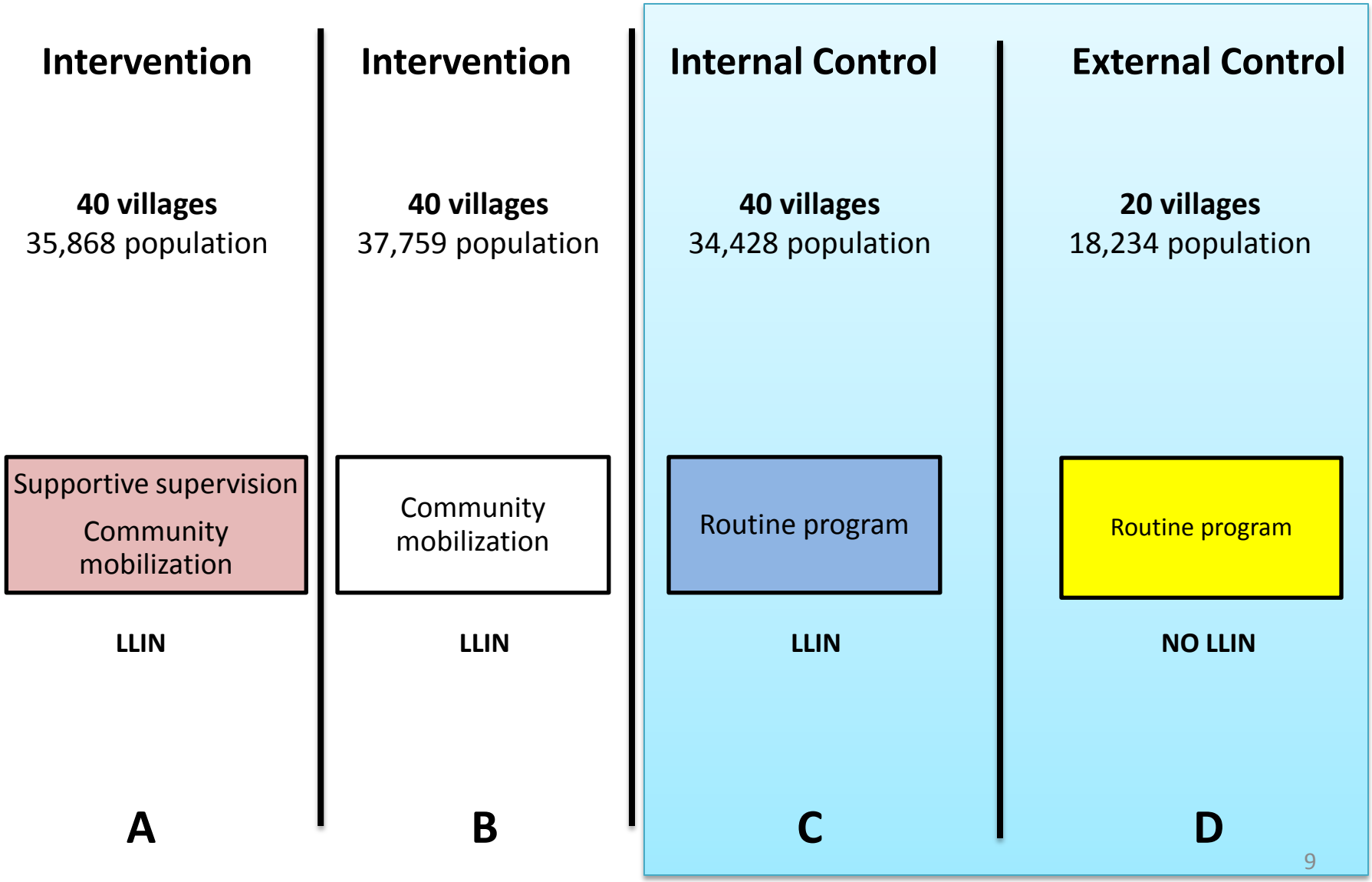
2 districts in Orissa, purposively chosen

3 endemic blocks per district, randomly selected

A total of 140 endemic villages, randomly selected



Possible gains from involvement of CHW in malaria case management

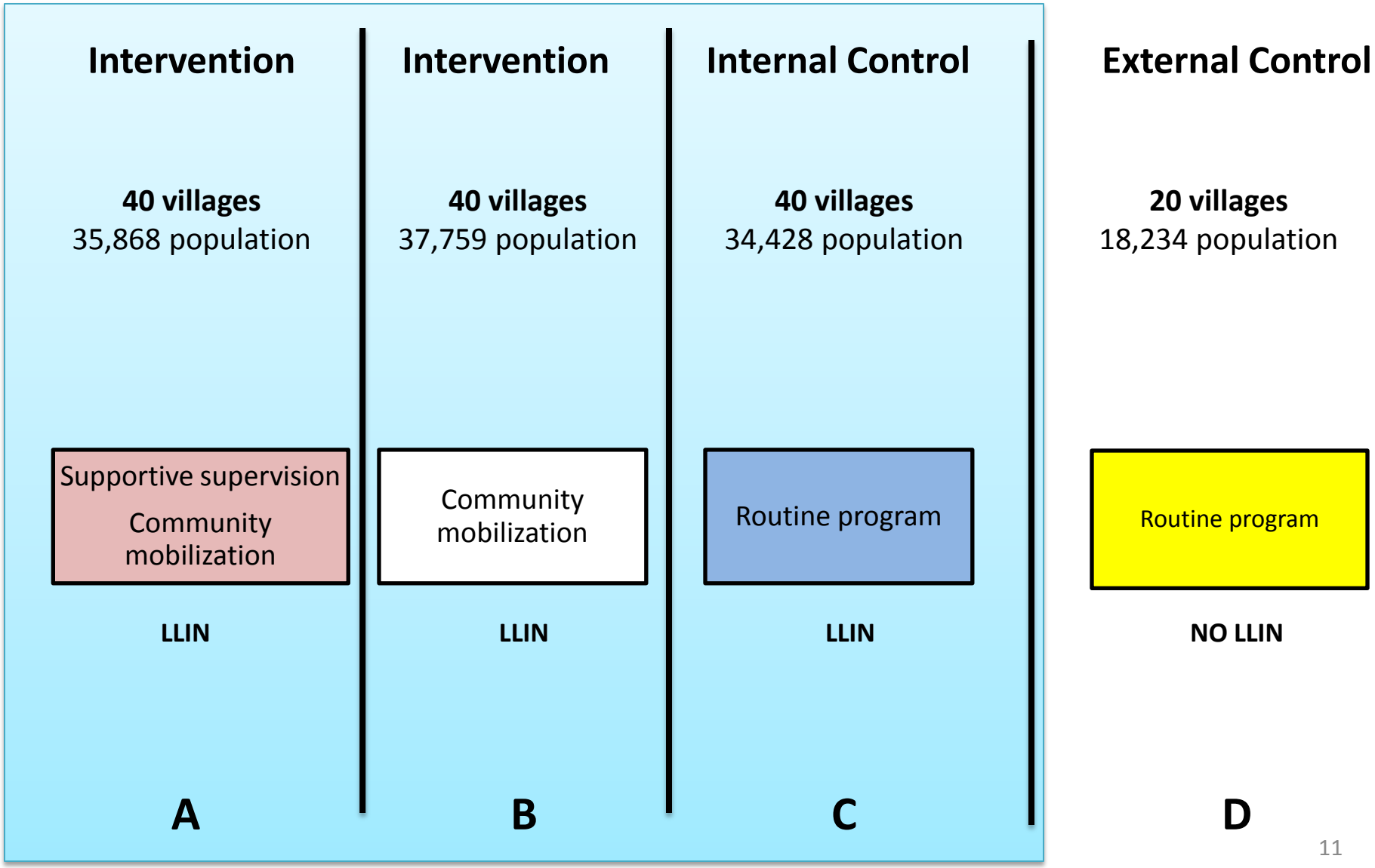


Shifting patterns of care seeking and promptness

Fever care seeking rates	Baseline % (SE)	Endline % (SE)
Care sought	49.1 (2.7)	60.7* (2.7)
Fever diagnosed within 24 hours	15.6 (2.8)	86.9*(3.0)
Fever diagnosed within 24 hours **(Under 5 children)**	33.3 (2.1)	92.3* (7.7)
First contact of care		
CHW	0	12.2* (2.9)
Multi purpose health worker	40.1 (3.5)	9.7* (2.7)
Primary health center	36.5 (3.5)	44.7 (4.5)
Others (private hospital/lab, unqualified provider)	23.4 (3.0)	33.3 (4.3)

* Significant difference between periods, $p < .05$

Effectiveness of supportive supervision



Impact of additional supervision and community mobilization

Fever care seeking rates	SS+CM	CM	Control
Care sought	59.5	60.1	57.6
Fever diagnosed within 24 hours	85.3	85.1	83.3
Fever diagnosed within 24 hours **(Under 5 children)**	91.9#	88.9*	74.2
First contact of care			
CHW	27.7#	26.6*	17.1
Multi purpose health worker	10.4	12.7	10.6
Primary health center	31.6	26.2	34.7
Others (private hospital/lab, unqualified provider)	30.3	34.5	37.5
Received medicine	93.3	93.2	93.3
Received medicine within 24 hours	80.1#	80.3*	78.0
Received medicine within 24 hours **(Under 5 children)**	86.4#	80.3	70.2

SS: Supportive supervision; CM: Community mobilization

Significant difference between SS+CM and control; * Significant difference between CM and control

Impact of additional supervision and community mobilization

Fever care seeking rates	SS+CM	CM	Control
Provider of treatment			
CHW	29.6#	29.6*	20.0
Multi purpose health worker	12.7	12.4	9.4
Primary health center	45.9	43.4	48.6
Others (private hospital/lab, unqualified provider, traditional healer etc.)	11.9#	14.7*	22.0
Provider of treatment (< 24 hours)			
CHW	32.4#	31.9*	20.2
Multi purpose health worker	11.3	13.0	9.2
Primary health center	45.2	41.8	47.6
Others (private hospital/lab, unqualified provider, traditional healer etc.)	11.4#	13.3*	23.1

SS: Supportive supervision; CM: Community mobilization

Significant difference between SS+CM and control; * Significant difference between CM and control

Impact of interventions on CHW confidence and motivation

Construct	SS+CM	CM	Internal control
Self-efficacy	4.06	4.02	3.81
Autonomy	4.36	4.35	4.17
Self-development	4.18	4.11	4.02
Competence	4.54#	4.33	4.13
General motivation	4.49#	4.25	4.03
Burnout	2.88	3.14	3.16
Job satisfaction	4.26	4.3	4.13
Recognition and contribution to community health	4.38	4.07	3.81
Supervision and support	4.31#	4.28*	3.93
Less workload	3.91	3.82	3.84

Mean score out of maximum 5

Significant difference between SS+CM and control; * Significant difference between CM and control

Cost of interventions

Cost	Per capita per annum
Supportive supervision	US$ 0.02
Community mobilization	US$ 0.37

- Relatively low-cost activities
  - total per capita health spending in India approximately US$ 67
  - and public per capita health spending US$ 13
- But alternative uses?
- Do gains from CM or SS persist after intervention period or must they be continuously applied?

Conclusion

- Large shifts in care seeking behavior after introduction of new NVBDCP program
  - Likely related to involvement of CHWs but also other factors such as increased availability of commodities
- Supportive interventions result in:
  - more prompt diagnosis and treatment
  - shifts from informal providers to CHWs
  - little additional gain from SS over CM
- Gains from supportive interventions on CHW's perceived competence and motivation
- Implications for scale-up of NVBDCP: to shift care-seeking to CHWs, consider additional demand-side mobilization?