

# **Test of Strategies for Implementing STS in Improving Use of Drugs**

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*March 2001*

# **Test of Strategies for Implementing STS in Improving Use of Drugs**

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### **Collaborative Investigators**

Dr. David Lee

Dr. Dennis Ross-Degnan

## **ACRONYMS**

ANC	Antenatal Cases
DHO	District Health Officer
DHS	Department of Health Services
DPHO	District Public Health Officer
HP	Health Post
INRUD	International Network for Rational Use of Drugs
PHC	Primary Health Care Centre
PNC	Postnatal Cases
RPM	Rational Pharmaceutical Management Project (USAID Funded Project)
SHP	Sub Health Post
STS	Standard Treatment Schedule for Health Posts and Sub-health Posts
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organisation

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## **EXECUTIVE SUMMARY**

A study was conducted with the overall objective to test strategies for increasing the use of STS in improving use of drugs.

The study was a three-way design and the three groups consisted of small group training, small group training followed by peer group discussion and control. The study was conducted in three regions of Nepal and sample included randomly selected one hill and two terai (plains) districts from each region. From each sampled district, all health posts were selected making 80 health posts, the study population. The data was collected prospectively by using the carbon copy of prescriptions. The first and second follow-up assessments were carried out two and six months after intervention respectively.

### **Practices for Acute Diarrhoea in Children**

The training combined with peer-group discussion was effective in significantly improving prescribing ORS alone up to six months. The intervention also improved significantly the use of ORS along with antimicrobials but up to two months only.

Similarly, training combined with peer-group discussion was effective in significantly improving the use of ORS along with other drugs (other than antidiarrhoeals and antimicrobials) up to six months.

The training alone was not effective in improving the practices significantly.

### **Practices for Pneumonia in Children**

None of the intervention was effective to improve the practices significantly.

### **Practices for No Pneumonia in Children**

There was a significant improvement in prescribing of antibiotics in no pneumonia with training combined with peer-group discussion up to two months only.

The training alone was not effective in improving the practices significantly.

### **Practices for Cold/cough Preparations for ARI in Children**

None of the intervention was effective to improve the practices significantly.

### **Practices for Scabies**

There was a significant improvement in prescribing of benzyl benzoate alone in scabies with training combined with peer-group discussion up to six months. Similarly, there was a significant improvement in prescribing benzyl benzoate along with antibiotics but only up to two months. In addition, the intervention also improved prescribing of other drugs in scabies up to six months.

The training alone was not effective in improving the practices significantly.

### **Practices for PUO**

None of the intervention was effective to improve the practices significantly.

### **Antibiotics Prescribing Practices in all Conditions**

There was a significant improvement in encounters receiving antibiotics with training combined with peer-group discussion up to two months only.

The training alone was not effective in improving the practices significantly.

### **Average Number of Drugs per Encounter**

There was a significant improvement in average number of drugs per encounter with training combined with peer-group discussion up to six months.

The training alone was not effective in improving the practices significantly.

## **1. INTRODUCTION**

The Standard Drug Treatment Schedule (SDTS) for Health Posts was published by MOH for the first time in Nepal in 1988 following publication of the first Essential Drug list (EDL) in 1986. The Essential Drug List was revised in 1992 and subsequently the Standard Drug Treatment Schedule for Health Posts was also revised in 1993. The Standard Drug Treatment Schedule for Health Posts has been revised, once again, and has been named Standard Treatment Schedule (STS) for Health Posts and Sub-health Posts, 1999. It has also been translated for the first time into Nepali language with the financial support of Rational Pharmaceutical Management (RPM) Project following second revision of Essential Drug List in 1997.

Though the SDTS was revised, published, distributed as well as few training also imparted to implement the SDTS, the impact has never been evaluated. A study was designed in 1994 by International Network for Rational Use of Drugs (INRUD), Nepal with financial support of United States Agency for International Development (USAID)/Rational Pharmaceutical Management (RPM)/ John Snow Inc. (JSI) to see the impact of training using SDTS along with other strategies. The training had to be imparted by UNICEF and strategy evaluation was to be done by INRUD, Nepal. Unfortunately, the training on SDTS could not be imparted. The effect of another strategy i.e. supervision/monitoring to change prescribing practices in accordance with STS was significantly improved.

Experiences have also shown that the compliance with the guidelines increases with use of different types of strategies. Different strategies are appropriate in different contexts. The successful introduction of guidelines is dependent on many factors, including the clinical context and methods of developing, disseminating and implementing those guidelines(1). These experiences are from the industrialized countries. There are few experiences of testing these strategies in developing countries.

Obviously, urgent need was felt to develop an effective strategy to implement STS in health facilities to promote the quality use of medicines. The possible strategies are training, training with self-assessment and peer discussion. A consultancy report (Dennis Ross-Degnan, RPM, April 1996) recommended training primary health care workers on how to use the STS as a reference guide as well as training that focuses on treatment of four key health problems – ARI, Diarrhea, Skin infection and Fever. The report recommended developing simple and colorful wall posters to illustrate differential diagnosis and treatment protocols based on materials in the STS. It also recommended a self-assessment strategy for improving provider practices.

## **2. OBJECTIVES**

The overall objective of this study was to improve the prescribing practices of paramedics of Primary Health Care facilities for selected common health problems by increasing the use of STS.

## **General**

- To test strategies for increasing the use of STS to improve the prescribing practices of paramedics of Primary Health Care facilities for common health problems.

## **Specific Objectives**

- To improve the prescribing practices of paramedics of primary health care facilities for diarrhea by increasing the use of ORS, decreasing the use of antidiarrhoeals and antimicrobials in acute watery diarrhoea in children below 5 years.
- To improve the prescribing practices of paramedics of primary health care facilities for ARI by increasing the use of cotrimoxazole or amoxicillin for Pneumonia, decreasing the use of cotrimoxazole or amoxicillin or other antibiotics in no pneumonia. Decreasing the use of cold preparations and cough preparations in all ARI in children below 5 years.
- To improve the prescribing practices of paramedics of primary health care facilities for scabies by increasing the use of benzyl benzoate, decreasing the use of antibiotics.
- To improve the prescribing practices of paramedics of primary health care facilities on undiagnosed fever (Pyrexia of unknown origin) by increasing the use of paracetamol or aspirin, decreasing the use of antibiotics or antimalarials.

## **3. HYPOTHESES**

- There will be significant increase in quality of management of selected health problems with increased use of STS.

## **4. SIGNIFICANCE OF STUDY**

- Identify the most effective strategy to increase the use of STS in PHC facilities.
- Identifying a method for improving quality of drug use.
- Replication of such strategy in other parts of the country as well as in other developing countries.

## **5. STUDY DESIGN**

### **5.1 Overall Approach and Design**

The study was a pre-post comparison of two interventions randomly allocated to three different study groups. The interventions were

1. action-oriented, small group, face to face training (combined with reinforcement materials) , and
2. peer group discussion using self-assessment findings.

The three study groups consisted of

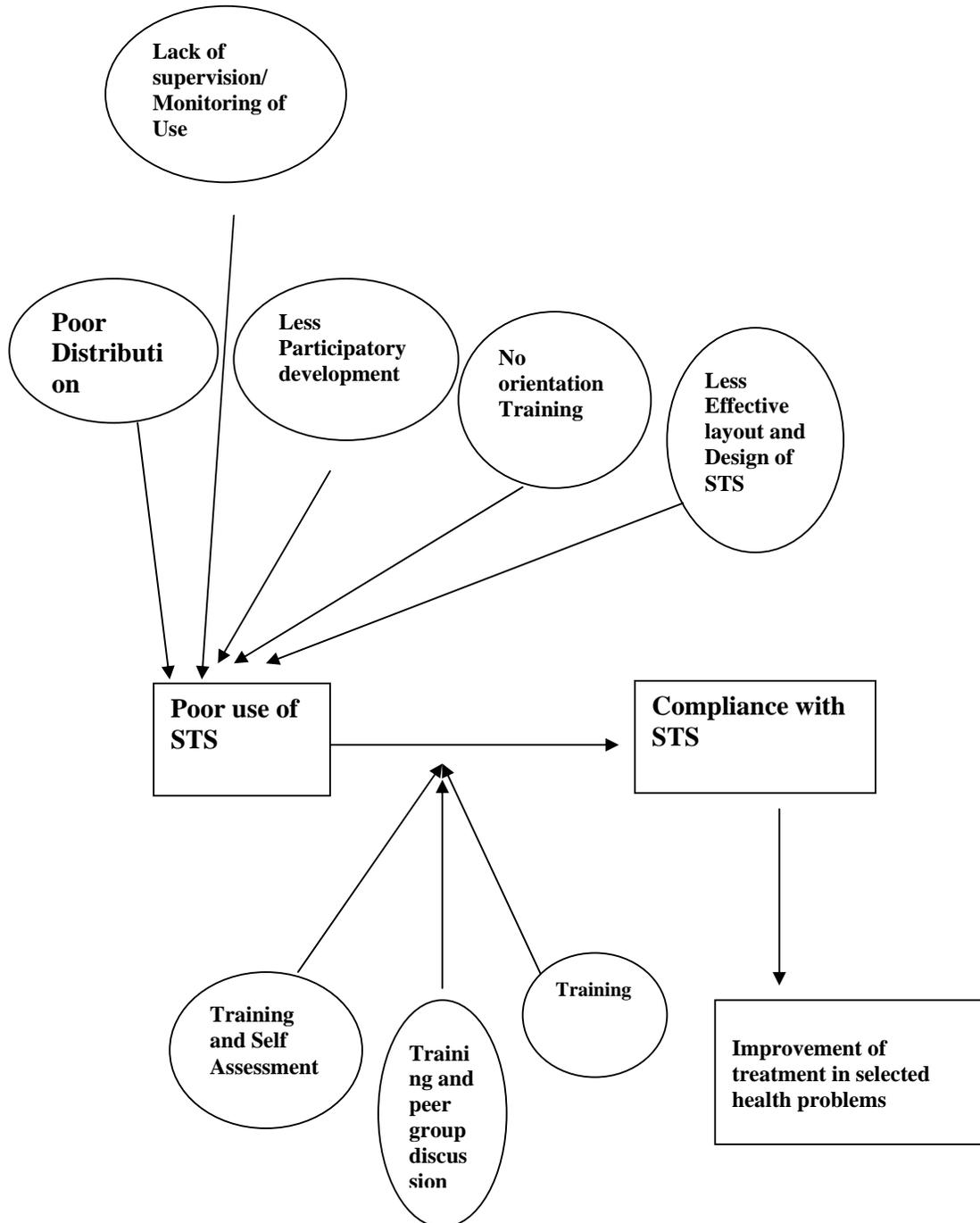
- a. No intervention
- b. Small-group training only
- c. Small-group training, followed by Peer group discussion

There were 84 health posts from randomly selected nine districts stratified and randomised within terai and hill districts. The districts were from randomised three administrative regions.

Within three strata, districts were randomized to receive training and training plus peer group discussion. Separate training were given in each district. The intervention allocation is presented below.

Outcomes is to be measured by comparing difference in selected indicators before intervention and two months and six months after intervention.

## Conceptual Framework of the study



## 5.2 Structure of Interventions

Although there could be a number of options for training activities to achieve changes in knowledge and practices, interventions used by the team for this study were as follows:

- Small Group Face -to -Face Training

A small group (10-15) of prescribers within a district were invited to a meeting for presentation and discussion focusing on how to use STS as well as its use in the diagnosis and treatment of four selected health problems (acute watery diarrhoea and ARI in children, scabies and fever). In each district, two trainings were conducted, one for incharges and second for other prescribers. However, in one district only one training was conducted because of less than 15 prescribers in the district. Each training in the training only districts had five sessions spread over two days, each session not exceeding three hours. The total training was of 12 hours. In addition, one more session of three hours was conducted on third day in the training plus peer group discussion districts. The training sessions were on Problems related to Treatment Services, Appropriate Treatment of Patient, Standard Treatment Schedule, Diagnosis and Standard Treatment Schedule, Treatment and Standard Treatment Schedule for prescribers from training only districts.

The peer-group discussion group had an additional session on Self -assessment and Indicators. Each session included group works as well as interactive discussion by all members of the group. Experienced action oriented trainers conducted the training and Investigator, District Health Officer (DHO) and District Public Health Officer (DPHO) facilitated the training.

- Self-assessment and Peer-group Discussion

A Self-assessment Indicator Encounter Form, a modified WHO Prescribing Indicator Form was developed (Annex-1). The participants were oriented during the training on how to enter data from the prescription pad into the form. Similarly, the participants were oriented on how to enter data into Indicators Consolidation Form, a modified WHO Drug Use Indicator Consolidation Form from the findings of Self-assessment Indicator Encounter Form (Annex-II).

The peer-group discussions were conducted by DHO/DPHO using Indicators Consolidation Form. A guideline was developed by the research team to conduct the peer-group discussion (Annex-III). One of the investigators was present during each peer-group discussion.

## **Summary of the Interventions**

### **1. Small-group Training**

#### Training Programme

- Small in size (15 or fewer)
- Facilitated by experienced action oriented trainer
- Co-facilitated by investigator and DHO/DPHO
- Two to three days
- Limited content, but repeated in different ways
- Active learning methods: role play, case study, group exercise and interactive discussion

#### Reinforcement Materials

- Well-indexed course reference manual
- Colourful Wall poster (key elements of diagnosis and treatment based on STS) (Annex-IV)
- With credibility of INRUD, Nepal

#### Self-assessment and Peer-group Discussion

- Self-assessment Indicator Encounter Form
- Indicators Consolidation Form
- Guidelines for DHO/DPHO to conduct peer-group Discussion

## 6. DETAILED METHODOLOGY

### 6.1 Design

The study was a three ways design with a total sample (n) of 84 health posts in the baseline. The data was collected by using carbon copy of prescriptions prospectively. The baseline data has been used to measure changes, which followed the interventions. The intervention had been implemented in the sequence below:

#### Training and sequence of data collection and interventions

	Intervention Development and Rapport with MOH and Districts	Baseline	Small group Training	First & Second Peer Group Discussion	First Follow Up	Third, Fourth and Fifth Peer Group Discussion	Second Follow up
Study Month	1-2	3	4	5-6	7	7-9	10
No Intervention		PP	-	-	PP	-	PP
Small Group Training Only		PP	INT-1	-	PP	-	PP
Small Group Training + Self assessment +Peer group Discussion		PP	INT-1	INT-2	PP	INT-2	PP

**Note:**

PP = Prescription Pad

INT= Intervention (1= small group training, 2= Self -assessment and Peer-group Discussion)

There were randomly selected nine districts from three regions (East, Central and Midwest). Of the selected districts, small group training was allocated randomly to two hill districts and four terai districts. The training was conducted in small group of 10-15 prescribers in each group. There were two training groups in five districts and only one group in one district.

The self-assessment and peer-group discussion was allocated randomly to two terai districts and one hill district.

The baseline data was collected prospectively by using carbon copy of prescriptions. A duplicate prescription pad and carbon paper were distributed to all study health facilities by the research team at the time of orientation in November, 1999, two months before baseline.

The in-charges from health facilities were invited to the district health office and oriented on use of prescription pads by DHO/DPHO using the structured guidelines developed by the research team (Annex-V).

A separate guideline on use of prescription pads and storing of used prescription pads was also provided to prescribers through DHO/DPHO (Annex-VI).

Two copies of Standard Treatment Schedule for Health Posts and Sub-health Posts were also distributed to each health post at the time of orientation.

## **6.2 Sample Selection**

The study was conducted in nine districts, stratified and randomised within terai and hill districts. Out of five regions, three regions (East, Central and Mid-west) were randomly selected. From each region, one hill and two terai districts were randomly selected. Thus, there had been three hill districts and six terai districts in the study. From each sampled district, all health posts were selected for the study making 84 health posts, the study population. However, four health posts, one each from Sunsari, Bara, Banke and Surkhet were excluded from the study because of non-participation in the assigned intervention or not providing curative services. Thus, the total number of health posts was 80 in the study.

The study included following hill districts: *Ilam, Dolakha and Surkhet*.

Similarly, the terai districts were: *Morang, Sunsari, Bara, Mahotari, Banke and Bardia*.

The name of health posts and number of prescriptions collected from each health post in the baseline, first assessment and second assessment are presented in Table-1.

**Table I : Name of Districts, HPs and Number of Prescriptions included in the study**

District	Health Post	Baseline	1st Assessment	2nd Assessment
Dolakha	Boch	77	107	106
	Dolakha	114	130	121
	Jhule	90	102	102
	Khopachagu	12	54	65
	Laduk	0	30	104
	Lamabagar	0	30	31
	Melung	99	108	71
	Namdu	103	112	106
	Phasku	0	106	0
	Suri	118	111	111
Sunsari	Baklauri	128	143	127
	Bhutaha	122	137	127
	Chatara	109	129	122
	Devangunj	78	113	119
	Madheli	108	116	121
	Prakashpur	121	139	92
	Sitaganj	144	245	80
Bardia	Baghnaha	104	136	113
	Deudhakala	101	131	116
	Khairapur	106	131	148
	Khairichandanpur	45	132	130
	Nayagaun	109	121	106
	Neulapur	104	97	126
	Patabhar	88	66	112
	Sanoshree	104	126	120
	Sorhawa	112	162	161
	Banke	Gangapur	29	58
Jayapur		28	61	48
Kanchanpur		47	99	101
Khajura		60	102	104
Narayanpur		19	21	5
Phattepur		31	73	102
Samsergunj		51	106	107
Udayapur		15	21	67
Udharapur		49	105	110
Mohatari		Balawa	30	111
	Bardibas	111	136	146
	Ekdhara	54	63	126
	Pipra	75	128	135
	Ramgopalpur	53	54	110
Surkhet	Simardahi	83	113	112
	Bajedichour	26	9	26
	Baspani	37	19	53
	Kafalkot	0	12	6
	Katukuwa	129	202	179
	Latikoili	101	140	124
	Lekhgaun	96	111	115
	Lekhparsa	99	142	143
	Matela	45	100	101

Contd.

**Table I (contd.)**

District	Health Post	Baseline	1st Assessment	2nd Assessment
Ilam	Amchowk	47	40	108
	Banjho	47	92	110
	Chisapani	47	96	100
	Fikkal	106	117	128
	Kolbung	28	86	103
	Luringtar	55	48	104
	Pyang	29	98	108
	Sakhejung	97	0	92
Bara	Bariyapur	103	166	207
	Bhodha	0	134	115
	Chyutaha	106	158	121
	Gadahal	0	124	114
	Haraiya	101	101	107
	Hardia	57	103	102
	Parsauni	68	111	110
	Pheta	101	160	118
	Rampur	102	129	130
	Rampurwa	94	94	107
	Simraungadh	98	135	119
Morang	Babiabirta	88	104	98
	Bayarban	104	117	115
	Budhnagar	113	135	99
	Dadarbariya	106	132	100
	Hasandaha	104	106	0
	Jhorahat	101	110	100
	Kerabari	122	115	121
	Madhumallah	107	107	115
	Majhare	90	106	100
	Rani	103	107	106
	Ranjani	94	120	100
	Tankisinwari	100	107	103
	<b>TOTAL</b>	<b>80</b>	<b>6082</b>	<b>8358</b>

**The training districts included Sunsari, Dolakha and Bardia. Similarly, training plus peer-group discussion districts were Mahotari, Banke and Surkhet. The remaining three districts Ilam, Morang and Bara were control.**

The baseline data included the prescriptions from health posts during January, 2000. The first assessment included prescriptions during April, 2000. Similarly, the second assessment included the prescriptions during July, 2000.

One hundred prescriptions from each health post were selected by systematic random sampling for the analysis of following indicators in baseline, first assessment and second assessment.

- Number of drugs prescribed
- Encounters with an antibiotic
- Encounters with an injection
- Drugs prescribed by generic name
- Drugs prescribed from Essential Drug List

However, all prescriptions collected during January, April and July, 2000 were used for four selected health posts (acute watery diarrhoea and ARI in children below five years, scabies and pyrexia of unknown origin (PUO) in all age groups. For this purpose, prescriptions with single diagnosis only were included in the study.

The small group training was completed within February, 2000. The five peer-group discussions were completed by the end of June, 2000.

### **6.3 Survey Instrument**

For data collection, prescription pads similar to those supplied by MOH but with a carbon copy were developed taking permission from Department of Health Services, MOH. It was field tested in two health posts (Bode and Thimi, Bhaktapur district) and then finalised.

DHO/DPHO oriented and instructed the in-charges from health posts for using, storing and returning back the copy of used prescriptions, as mentioned in the guideline.

The Self-assessment Indicator Encounter Form and Indicators Consolidation Form were also field tested and finalised.

### **Focus Group Discussions (FGDs)**

The FGDs, one each in the study districts were conducted with 6-8 incharges by investigators at the district health office using guidelines at the time of orientation of prescription pads (Annex-VII). The findings from FGDs were utilised in developing training materials. Similarly, FGDs were undertaken in the intervention districts, six months after training. The guideline for FGD is annexed (Annex-VIIIA). The findings from second FGDs provided overall response to the interventions.

### **6.4 Rapport Establishment at Different Level**

A written permission for undertaking study as well as making small changes in existing encounter form was obtained from the Director General, Department of Health Services. In the next step, rapport was established with Regional Directors and in-charges of District Health Office by the investigators.

### **6.5 Development of Course Contents and Training Materials, and Training of Trainers**

The investigators developed a course content for imparting training. In developing training materials, findings from focus group discussion were also taken into account. The training materials included Training Manual, Trainer's Guide and Wall Chart.

The research team conducted the training of trainers in Kathmandu in the first week of January, 2000. The trainers for imparting training to the prescribers were medical graduates from the Institute of Medicine with experience in conducting action-oriented training. The trainers were trained on course contents and methodology to be applied in the training followed by training practice before the research team.

The course contents are based exclusively on Standard Treatment Schedule and drug use indicators.

A simple and colourful wall chart with diagnostic features and treatment for four key health problems was developed based on STS. It was field tested in health posts of two districts (Bode for Bhaktapur and Imadol of Lalitpur), finalised and printed.

## **6.6 Training of Prescribers and Peer-group Discussion**

The trainers carried out training of prescribers in the district headquarter. Each training was co-facilitated by one of the investigators and DHO/DPHO of the study district. The participants were provided with training materials eg training manuals and wall chart for their use at workplace.

The peer-group discussions were conducted at DHO/DPHO office. The discussions used Indicator Consolidation Form compiled by the incharge of health post incorporating self-assessment findings (from Indicator Encounter Form) of all prescribers of the health post. Each prescriber carried out the self- assessment of their prescribing practices analysing 100 prescriptions in each month, selected by systematic random sampling. The detailed methodology for self-assessment is described in the training manual. The DHO/DPHO followed the structured guidelines for the discussion.

## **6.7 Collection of Prescription Pad**

The prescription pads were collected every month from the district health office. The incharges were invited to the office along with the copies of used prescriptions. The investigators checked randomly the copies of prescriptions for clarity and completeness. They were provided with additional prescription pads and carbon paper as per need.

## **6.8 Data Analysis**

The data were coded and entered in Excel and were analysed using SPSS package. Analysis of the impact of intervention was based on control-intervention, pre-post comparison. The independent t-test was used to compare the changes between the control and interventions.

## 7. RESULTS

### 7.1 Practices for Acute Diarrhoea in Children below Five Years (Table II)

There was a significant increase in prescribing of ORS alone for acute diarrhoea in children below five years with training *plus* peer group discussion compared to control in both first and second follow-up assessments ( $p= 0.001$  and  $0.05$  respectively). Similarly, the intervention resulted into a significant decrease in prescribing of ORS along with antimicrobials in the first follow-up assessment ( $p=0.01$ ). In addition, the training *plus* peer group discussion significantly increased the prescribing of ORS along with other drugs (other than antidiarrhoeals and antimicrobials) in both first and second follow-up assessments ( $p=0.002$  and  $p= 0.044$  respectively).

The training *plus* peer group discussion did not significantly change the practices of prescribing ORS along with antidiarrhoeals, and antimicrobials alone in children below five years.

The training alone had no significant effect in changing the prescribing practices of ORS alone and ORS along with antimicrobials or antidiarrhoeals. It did not also significantly change the prescribing of ORS along with other drugs.

**Table II: Prescribing Practices for Diarrhoea**

Practices	Training			Training + Peer group			Control			Control Vs Training		Control Vs Training + Peer group	
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II
ORS alone (%)	17.9	18.5	3.7	12.8	36.6	46.5	16.0	2.9	7.9	ns	ns	<b>S</b> (p=0.001)	<b>S</b> (p=0.05)
ORS+Antidiarrhoeals <sup>1</sup> (%)	1.7	0.0	0.0	0.0	0.3	0.0	0.0	2.1	0.0	ns	ns	ns	ns
ORS+Antimicrobials <sup>2</sup> (%)	55.5	65.7	87.6	58.3	40.2	36.9	51.6	77.0	75.1	ns	ns	S (p=0.01)	ns
ORS+ other drugs <sup>3</sup> (%)	10.5	5.3	5.6	0.0	20.2	12.5	6.2	4.7	0.9	ns	ns	S (p=0.002)	S (p=0.044)
Antidiarrhoeals alone (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ns	ns	ns	ns
Antimicrobials ± other drugs (%)	14.5	10.5	3.2	28.8	2.6	4.1	26.2	13.3	16.2	ns	ns	ns	ns

<sup>1</sup> Kaolin, Pectin, Loperamide, Diphenoxylate + Atropine

<sup>2</sup> Diloxanide, Metronidazole, Tinidazole and Antibiotics

<sup>3</sup> Other than antidiarrhoeals and antimicrobials

### **7.2 Practices for Pneumonia in Children below Five Years (Table III)**

There was no significant change in prescribing of co-trimoxazole alone, and co-trimoxazole along with paracetamol or other drugs in any intervention group compared to control for pneumonia in children below five years in the first and second follow-up assessments.

Similarly, there had been no significant change in prescribing of amoxicillin alone, and amoxicillin along with paracetamol or other drugs in any intervention group compared to control in the first and second follow-up assessments.

### **7.3 Practices for No Pneumonia in Children below Five Years (Table IV)**

There was a significantly decrease in prescribing of antibiotics for no pneumonia in children below five years with training *plus* peer group discussion compared to control in the first follow-up assessment only ( $p= 0.000$ ).

The training alone had no significant effect in changing the prescribing practices of antibiotics in no pneumonia in the first and second follow-up assessments.

There had been no significant change in prescribing of paracetamol alone or other drugs in any intervention group compared to control in the first and second follow-up assessments.

### **7.4 Practices for Prescribing Cold/Cough Preparations in ARI (Table V)**

There was no significant change in prescribing of cold/cough preparations for ARI in children below five years with any intervention in both assessments.

**Table III: Prescribing Practices for Pneumonia<sup>4</sup>**

Practices	Training			Training+Peer group			Control			Control Vs Training			Control Vs Training+Peer group		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II		
Cotrimoxazole alone (%)	12.4	15.5	13.3	1.3	4.7	16.3	18.2	14.5	0.0	ns	ns	ns	ns		
Cotrimoxazole + Paracetamol (%)	35.3	35.6	67.9	21.7	54.6	58.5	23.4	35.6	51.3	ns	ns	ns	ns		
Cotrimoxazole + other drugs <sup>5</sup> (%)	22.5	16.3	9.6	16.7	23.0	11.9	12.2	12.7	8.3	ns	ns	ns	ns		
Amoxicillin alone (%)	1.1	0.0	0.5	0.0	3.4	0.0	7.7	3.0	0.0	ns	ns	ns	ns		
Amoxicillin + Paracetamol (%)	2.6	18.4	4.6	26.3	6.3	2.8	0.0	15.6	8.3	ns	ns	ns	ns		
Amoxicillin + other drugs (%)	12.0	2.2	1.7	1.3	1.2	3.1	0.0	9.1	9.0	ns	ns	ns	ns		
Antibiotics other than Amoxicillin and co-trimoxazole (%)	14.3	12.1	2.3	32.9	6.8	7.4	38.5	9.4	23.0	ns	ns	ns	ns		

<sup>4</sup> Pneumonia and severe pneumonia

<sup>5</sup> Other than Paracetamol

**Table IV: Prescribing Practices for No Pneumonia<sup>6</sup>**

Practices	Training			Training+Peer group			Control			Control Vs Training		Control Vs Training+Peer group	
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II
Antibiotics (%)	71.9	51.6	65.4	96.9	7.1	35.4	66.7	88.9	59.5	ns	ns	S (p=0.000)	ns
Paracetamol alone (%)	17.9	34.3	19.2	3.1	60.7	46.5	33.3	5.6	26.2	ns	ns	ns	ns
Other drugs (%)	10.2	14.1	15.4	0.0	32.1	18.1	0.0	5.6	14.3	ns	ns	ns	ns

**Table V: Prescribing Practices for ARI<sup>7</sup>**

Practices	Training			Training+Peer group			Control			Control Vs Training		Control Vs Training+Peer group	
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II
Cold/cough preparations in ARI (%)	34.2	21.1	9.4	22.7	6.9	10.5	26.5	10.9	19.7	ns	ns	ns	ns

<sup>6</sup> Common cold, cold and cough, cold and fever and mild ARI

<sup>7</sup> No Pneumonia, Pneumonia, Severe Pneumonia, Very Severe Pneumonia, ARI

### **7.5 Practices for Scabies in all Age Groups (Table VI)**

There was a significant increase in prescribing of benzyl benzoate alone in scabies with training *plus* peer group discussion in both first and second follow-up assessments ( $p= 0.002$  and  $p= 0.035$  respectively). The intervention resulted into a significant decrease in prescribing of benzyl benzoate along with antibiotics in the first follow-up assessment only ( $p= 0.005$ ). Moreover, there had been a significant decrease in prescribing of other drugs in scabies in both assessments with the intervention ( $p=0.029$  and  $p=0.027$  respectively)

There had been no significant change in prescribing of benzyl benzoate alone, and benzyl benzoate along with antibiotics or other drugs with training alone compared to control in the first and second follow-up assessments.

**Table VI: Prescribing Practices for Scabies**

Practices	Training			Training+Peer group			Control			Control Vs Training		Control Vs Training+Peer group	
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II
Benzylbenzoate alone (%)	34.6	16.4	11.5	20.9	39.7	35.5	20.3	7.9	4.8	ns	ns	S (p=0.002)	S (p=0.035)
Benzylbenzoate + antibiotic (%)	15.1	36.6	26.3	25.1	13.5	14.2	26.0	51.6	34.1	ns	ns	S (p=0.005)	ns
Benzylbenzoate + other drugs <sup>8</sup> (%)	32.5	29.6	36.1	31.7	43.5	40.8	24.3	25.1	34.5	ns	ns	ns	ns
Antibiotics ± other drugs (%)	7.8	9.5	21.3	21.4	2.1	9.6	17.8	15.3	26.6	ns	ns	ns	ns
Other drugs <sup>9</sup> (%)	10.0	7.9	4.9	0.9	1.2	0.0	11.6	0.1	0.0	ns	ns	S (p=0.029)	S (p=0.027)

<sup>8</sup> Other than antibiotics

<sup>9</sup> Other than antibiotics or Benzyl benzoate

## **7.6 Practices for PUO (Pyrexia of Unknown Origin) in all Age Groups (Table VII)**

There was no significant change in prescribing of paracetamol alone, aspirin alone, antibiotics alone, and antimalarials alone or their combinations in any intervention group compared to control in the first and second follow-up assessments.

**Table VII: Prescribing Practices for PUO**

Practices	Training			Training+Peer group			Control			Control Vs Training			Control Vs Training+Peer group		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II		
Paracetamol alone (%)	5.7	9.5	13.6	8.3	40.7	39.8	0.0	6.8	0.1	ns	ns	ns	ns		
Paracetamol + other drugs <sup>10</sup> (%)	26.8	4.9	7.5	45.8	26.7	35.8	2.1	4.1	1.8	ns	ns	ns	ns		
Antibiotics alone (%)	0.9	9.5	0.0	5.6	0.0	0.0	0.0	2.4	5.0	ns	ns	ns	ns		
Antibiotics + other drugs (%)	51.7	66.9	55.8	26.4	23.7	19.1	68.8	78.6	79.9	ns	ns	ns	ns		
Aspirin alone (%)	0.0	0.0	1.1	0.0	0.0	3.4	0.0	0.0	0.4	ns	ns	ns	ns		
Aspirin + other drugs <sup>11</sup> (%)	0.0	0.7	14.2	0.0	0.0	0.7	0.0	0.0	0.0	ns	ns	ns	ns		
Antimalarials alone (%)	10.1	0.0	4.2	13.9	8.8	1.2	20.8	0.3	2.2	ns	ns	ns	ns		
Antimalarial + Antibiotics (%)	4.8	8.5	3.5	0.0	0.0	0.0	8.3	7.8	10.6	ns	ns	ns	ns		

<sup>10</sup> Other than antimalarials and antibiotics

<sup>11</sup> Other than antimalarials and antibiotics

### 7.7 Antibiotics Prescribing Practices in all Conditions (Table VIII)

There was a significant decrease in encounters receiving an antibiotic with training *plus* peer group discussion in the first follow-up assessment only.

There had been no significant change in encounters receiving an antibiotic with training alone in the first and second follow-up assessments.

### 7.8 Average Number of Drugs per Encounter (Table VIII)

There was a significant decrease in average number of drugs per encounter with training *plus* peer group discussion in the first and second follow-up assessments.

There was no significant change in average number of drugs with training alone in the first and second follow-up assessments.

**Table VIII: Average Number of Drugs and Percentage of Antibiotics**

	Training			Training + Peer group			Control			Control Vs Training		Control Vs Training+Peer group	
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Post I	Post II	Post I	Post II
Average number of drugs per encounter	2.2	2.1	2.2	2.2	2.1	2.2	2.4	2.5	2.6				
Encounters receiving an antibiotic	47.0	42.0	54.0	54.0	45.0	54.0	56.0	61.0	67.0				

## **7.9 Focus Group Discussion Findings**

### **Usefulness of the training**

During FGDs, health workers stated that the training was useful in making diagnosis as well as in choosing treatment-using STS for selected health problems. When asked about the duration of training, health workers suggested for increasing the training period.

### **Usefulness of Peer-group discussion**

During FGDs, health workers stated that the peer-group discussion was useful because they had to assess their prescribing practices themselves as well as compare their findings within the institution and with other colleagues too.

The health worker from Mahotari district stated that "comparison of his data with other health worker gave a feeling of inferiority complex if it was inappropriate use".

## **8. DISCUSSION**

Inappropriate prescribing reduces the quality of medical care and leads to a waste of resources. To address these problems, a variety of educational and administrative approaches to improve prescribing have been tried.

Intervention approaches that have proved effective in some settings are: standard treatment guidelines; essential drug lists; pharmacy and therapeutics committees, problem-based basic professional training; and targeted in service training of health workers.

When completed, the STS should be introduced through an official launch combined with an intensive training programme. Supervision and further training should reinforce their use.

In a study from Uganda, provision of STS alone was compared with facilities receiving either training alone or training plus supervision.

A study testing a strategy- supervision/monitoring and audit feedback by DHO/DPHO in PHC outlets of Nepal by INRUD, Nepal, has improved the quality of care through the outlets.

STS includes diagnostic and treatment protocol for various health problems. There was a need to develop effective strategies to implement STS in health facilities of Nepal to promote the quality medical care.

In this study the research team designed and implemented two strategies- training, training plus peer group discussion for increasing the use of STS. The effects of interventions are discussed below:

### **Practices for Acute Diarrhoea in Children**

The training combined with peer-group discussion was effective in significantly improving prescribing ORS alone up to six months. The intervention also improved significantly the use of ORS along with antimicrobials but up to two months only.

Similarly, training combined with peer-group discussion was effective in significantly improving the use of ORS along with other drugs (other than antidiarrhoeals and antimicrobials) up to six months.

The training alone was not effective in improving the practices significantly.

### **Practices for Pneumonia in Children**

None of the intervention was effective to improve the practices significantly.

### **Practices for No Pneumonia in Children**

There was a significant improvement in prescribing of antibiotics in no pneumonia with training combined with peer-group discussion up to two months only.

The training alone was not effective in improving the practices significantly.

### **Practices for Cold/cough Preparations for ARI in Children**

None of the intervention was effective to improve the practices significantly.

### **Practices for Scabies**

There was a significant improvement in prescribing of benzyl benzoate alone in scabies with training combined with peer-group discussion up to six months. Similarly, there was a significant improvement in prescribing benzyl benzoate along with antibiotics but only up to two months. In addition, the intervention also improved prescribing of other drugs in scabies up to six months.

The training alone was not effective in improving the practices significantly.

### **Practices for PUO**

None of the intervention was effective to improve the practices significantly.

### **Antibiotics Prescribing Practices in all Conditions**

There was a significant improvement in encounters receiving antibiotics with training combined with peer-group discussion up to two months only.

The training alone was not effective in improving the practices significantly.

### **Average Number of Drugs per Encounter**

There was a significant improvement in average number of drugs per encounter with training combined with peer-group discussion up to six months.

The training alone was not effective in improving the practices significantly.

## **9. CONCLUSION**

The training combined with peer group discussion has been powerful to improve the prescribing practices significantly.

The small group training alone is not powerful to improve the practices significantly.

The peer group discussion influences the prescribing behaviour of the health workers has been revealed in the FGD.

The training combined with peer group discussion strategy could be more convenient than supervision/monitoring for improving the prescribing practices of health workers as district health authorities can implement it without travelling to service outlets.

**Annex -I**

**Self Assessment Indicator Encounter Form**

Indicators	Percentage
% of encounters with an antibiotic	
% of acute diarrhoea in children receiving ORS	
% of acute diarrhoea in children receiving antidiarrhoeals	
% of acute diarrhoea in children receiving antimicrobials	
% of no pneumonia in children receiving antibiotics	
% of scabies receiving antibiotics	
% of PUO receiving antibiotics	
% of PUO receiving antimalarials	

**Annex -II**

**INDICATORS CONSOLIDATION FORM**

**Location:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Indicators	First Prescriber	Second Prescriber	Third Prescriber	Average
% of encounters with an antibiotic				
% of acute diarrhoea in children receiving ORS				
% of acute diarrhoea in children receiving antidiarrhoeals				
% of acute diarrhoea in children receiving antimicrobials				
% of no pneumonia in children receiving antibiotics				
% of scabies receiving antibiotics				
% of PUO receiving antibiotics				
% of PUO receiving antimalarials				

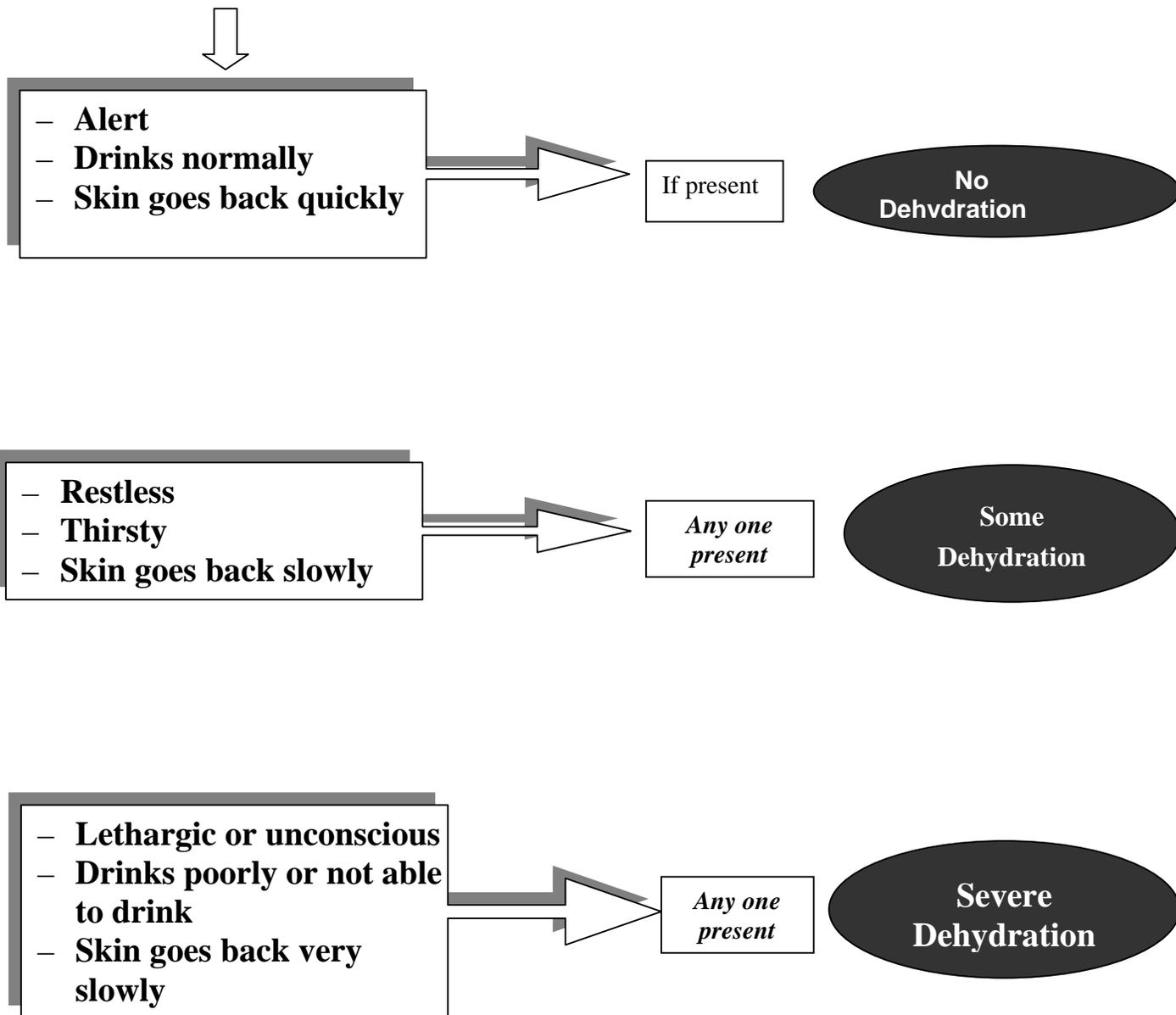
## **Annex -III**

### **Guidelines for DHO/DPHO for Conducting Peer-group Discussions**

1. Check that Consolidation Form from each HP has been brought to the discussion meeting. Enquire for not bringing and instruct to bring compulsorily in the next meeting.
2. Check that the Consolidation Form has incorporated self-assessment findings of all prescribers from each health post.
3. Enquire whether the self-assessment findings of all prescribers from each health post has been discussed at their health posts. If not, find out the reasons and instruct to discuss in the group before coming to this meeting.
4. Discuss the sampling method used for self-assessment. If different methods used, instruct for uniformity.
5. The selected health problems should include single diagnosis only.
6. Do not include TB, leprosy, family planning, ANC, PNC and immunisation cases in the sampling.
7. Discuss the possibility of not following STS in making diagnosis, which might be contributing to few or more cases of diarrhoea, pneumonia and no pneumonia in children below five years, and scabies and PUO in all age groups in the health posts.
8. Anti-diarrhoeal refers to kaolin, pectin, loperamide and diphenoxylate + atropine; antimicrobials include diloxanide furoate, metronidazole, tinidazole and antibiotics (not anthelmintics).
9. Antibiotics also refers to topical preparations but does not include metronidazole and tinidazole.
10. Discuss about excessive or underuse of a drug in a health problem.
11. Instruct to carry out and discuss self-assessment every month.
12. Instruct to use STS by all prescribers.

# Diarrhoea

## Severity of Dehydration



## Treatment

### No Dehydration

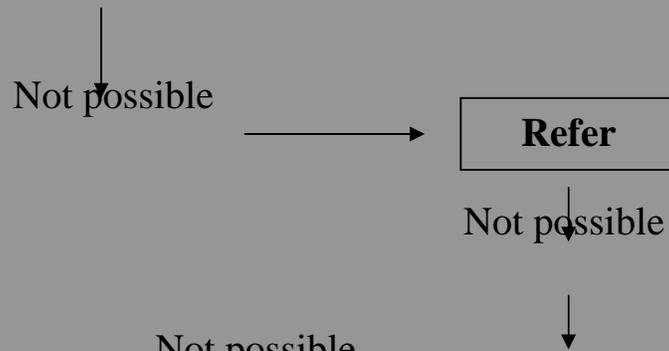
- ◆ Continue to breast-feeding frequently
- ◆ More fluid than usual
- ◆ Plenty of food
- ◆ Re-visit if does not get better in 3 days or to give ORS at home

### Some Dehydration

- ◆ ORS (Refer treatment plan B, page no. 43, STS)
- ◆ Continue to breast-feeding frequently
- ◆ More fluid than usual
- ◆ Plenty of food
- ◆ Re-visit if child gets worse

### Severe Dehydration

- ◆ **IV Ringer's lactate or Normal saline**



Not possible

Refer

Not possible

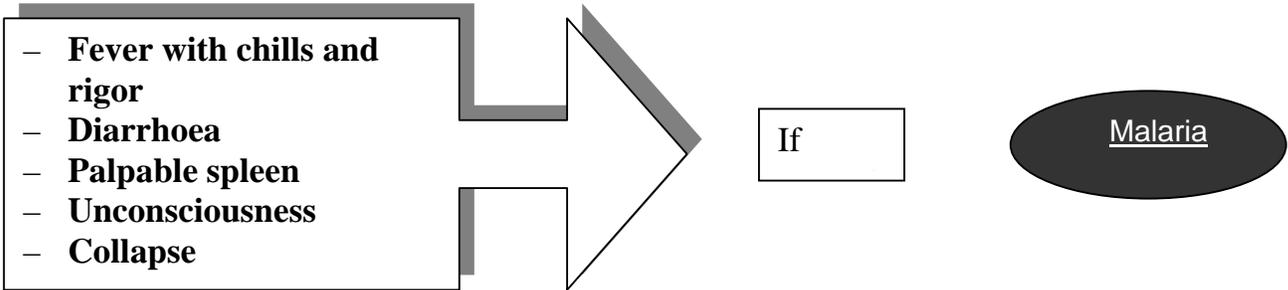
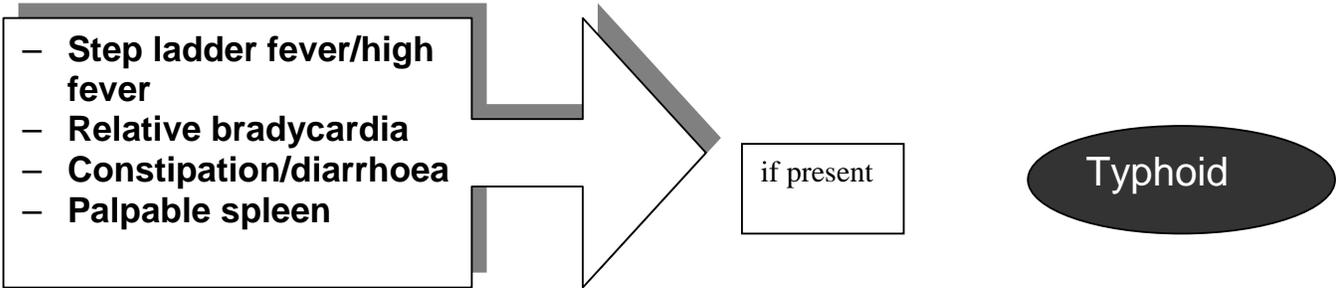
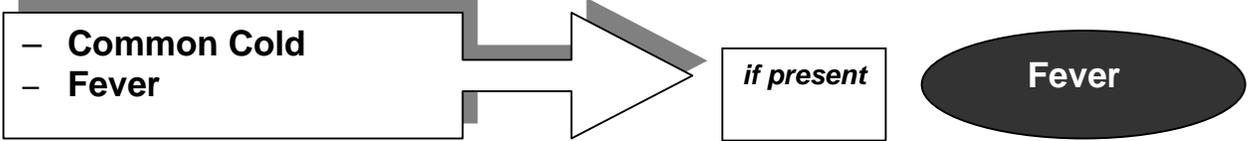
Not possible

ORS

NG tube ORS



# ] Fever



## Treatment

### **Fever**

- Aspirin or Paracetamol
- Remove excess blanket/cloth
- Sponging with tap water
- More fluid

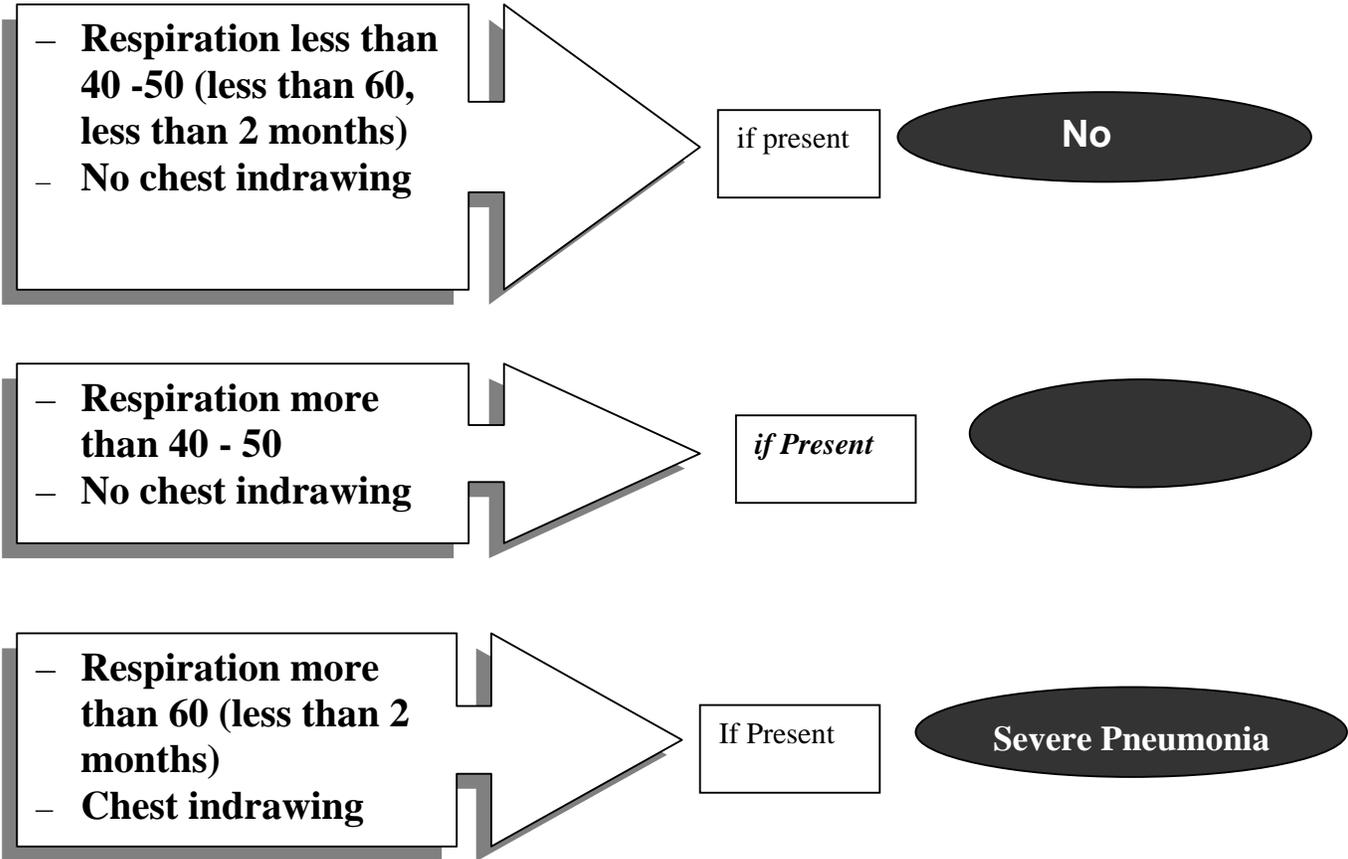
### Malaria

- Chloroquine+Primaquine, If malaria suspected
- Chloroquine+ Primaquine, for radical cure
- Sulphadoxine+Pyrimethamine, if *P. falciparum*
- Refer to hospital if not responding
- Refer to hospital if marked pallor

### **Typhoid**

- Chloramphenicol or Co-trimoxazole
- Aspirin or Paracetamol
- Soft and nutritious food
- Refer to hospital if fever not subsiding after 7 days treatment
- Refer to hospital if increased pallor
- Refer to hospital if severe abdominal pain with vomiting

# ARI



#### **Treatment**

#### **No Pneumonia**

- Keep warm
- Breast feeding frequently
- Clear nose if interferes with feeding
- Re-visit if respiration becomes fast
- Re-visit if the child is not able to drink or drinks little
- Paracetamol, if fever

#### **Pneumonia**

- Cotrimoxazole or Amoxicillin
- Paracetamol, if fever
- Breast feeding frequently
- Keep warm
- Revisit if the child is not able to drink or drinks little
- Re-visit if chest indrawing

#### **Severe Pneumonia**

- Refer after first dose of cotrimoxazole or Amoxicillin
- Refer not feasible, continue antibiotic and follow closely
- Oxygen if cyanosis or unable to drink
- Breast feeding frequently
- Keep warm

# Scabies

- **Intense itching (worse at night)**
- **Itching prominent at wrist, axilla, thigh, scrotum**

if present

**Scabies**

## Treatment

- Benzyl Benzoate
- Used clothing and bedding washed/dry in the sun
- Treatment to close contact



## **Annex -V**

### **Guidelines for DHO/DPHO for Orientation Meeting with HPs Incharges**

- 10 Always use carbon paper before prescribing.
- 11 Maintain the patient record as usual
- 12 Other prescribers should also use the prescription pads provided
- 13 Use the given prescription pads also for the patients of diarrhoea and ARI in children in addition to filling card under the programme .
- 14 Use prescription pad according to serial number.
- 15 Store safely the used prescription pads and bring them to the follow-up meetings.

## **Annex -VI**

### **Guidelines for Prescribers on Using a Prescription Pad**

1. Always use carbon paper before prescribing.
2. Ensure that carbon paper has been placed at the right place.
3. Write prescription clearly.
4. Ensure that carbon paper gives a clear copy.
5. Use prescription pad according to serial number.
6. Store the used prescription pads (carbon copy of prescriptions) safely.

## **Annex VII**

### **Focus Group Discussion (FGD), Discussion Issues**

(at least with 6-8 participants)

1. What kind of patients usually visits the health posts.
2. What are the problems encountered by you in the treatment of patients  
(Bring the issues of problems in diagnosis, choice of drugs, dose, administration of drug, duration, side effects, drug interaction, non-drug treatment, advice and referral).
3. What are the reasons for above-mentioned problems.
4. What are the ways to solve these problems.
5. Which are the useful tools to solve the problems encountered in the treatment.

## **Annex VII A**

### **Focus Group Discussion (FGD), Discussion Issues**

1. In your opinion what are usefulness of the imparted training (discuss the usefulness in making diagnosis, choice of drugs, dose, administration of drug, duration, side effects, drug interaction, non-drug treatment, advice and referral).
2. In your opinion what are usefulness of Peer group discussion/assessment.

## Annex -VIII Prescribing Practices by Districts

### A. Prescribing Practices for Diarrhoea by Districts (Percentage distribution)

Districts	ORS alone			ORS+Antidiarrhoeals			ORS+Antimicrobials			ORS+ other drugs			Antidiarrhoeals alone			Antimicrobials ± other drug		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II
Banke	11.1	46.4	40.7	0.0	0.0	0.0	63.9	27.4	51.3	0.0	26.3	4.0	0.0	0.0	0.0	25.0	0.0	4.0
Bara	25.0	1.4	5.6	0.0	0.0	0.0	33.3	79.5	86.1	16.7	0.0	0.0	0.0	0.0	0.0	25.0	19.1	8.3
Bardia	6.3	26.8	8.3	4.2	0.0	0.0	52.3	63.4	81.2	16.7	4.9	6.0	0.0	0.0	0.0	20.6	4.8	4.5
Dolakha	40.0	22.7	0.0	0.0	0.0	0.0	25.8	42.6	85.2	14.2	8.9	10.7	0.0	0.0	0.0	20.0	25.8	4.1
Ilam	0.0	0.0	2.8	0.0	0.0	0.0	75.0	78.6	83.3	0.0	14.3	2.8	0.0	0.0	0.0	25.0	7.1	11.1
Mahottari	0.0	13.3	33.3	0.0	0.0	0.0	43.8	78.8	58.3	0.0	4.4	8.3	0.0	0.0	0.0	56.3	3.5	0.0
Morang	18.5	6.1	14.3	0.0	5.2	0.0	49.8	73.9	58.5	4.6	2.4	0.0	0.0	0.0	0.0	27.1	12.5	27.2
Sunsari	15.4	3.4	2.0	0.0	0.0	0.0	80.3	91.8	97.2	0.8	2.4	0.0	0.0	0.0	0.0	3.6	2.4	0.8
Surkhet	33.3	39.2	64.4	0.0	0.9	0.0	66.7	31.6	3.3	0.0	22.8	23.9	0.0	0.0	0.0	0.0	5.6	8.3

**B- Prescribing Practices for Pneumonia by Districts (Percentage Distribution)**

Districts	Cotrimoxazole alone			Cotrimoxazole + Paracetamol			Cotrimoxazole + other drug			Amoxicillin alone			Amoxicillin + Paracetamol			Amoxicillin + other drugs			Antibiotics other than Amoxicillin/Cotrimoxazole		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II
Banke	0.0	0.0	10.0	6.7	68.8	80.0	26.7	25.0	10.0	0.0	0.0	0.0	20.0	6.3	0.0	0.0	0.0	0.0	46.7	0.0	0.0
Bara	10.0	20.0	0.0	20.0	50.0	41.5	20.0	6.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	27.1	50.0	4.0	31.4
Bardia	0.0	22.3	18.8	36.7	62.8	67.1	16.7	9.0	10.4	0.0	0.0	0.0	6.7	1.0	0.0	20.0	0.0	1.6	20.0	5.0	2.0
Dolakha	18.8	0.0	12.5	31.3	0.0	60.4	25.0	18.8	8.3	3.6	0.0	2.1	0.0	67.9	16.7	10.7	3.6	0.0	10.7	9.8	0.0
Ilam	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	100.0	33.3	0.0
Mahottari	3.3	0.0	23.1	46.7	45.8	59.1	0.0	35.4	1.4	0.0	0.0	0.0	36.7	12.5	2.7	3.3	4.2	0.0	10.0	2.1	13.7
Morang	26.6	12.0	0.0	29.2	28.3	50.0	8.4	22.0	14.3	14.3	0.0	0.0	0.0	7.7	14.3	0.0	20.0	0.0	21.4	10.0	21.4
Sunsari	21.4	20.1	6.1	37.5	36.5	75.1	27.2	20.9	9.6	0.0	0.0	0.0	0.0	0.0	1.5	3.1	3.1	3.1	10.8	19.4	4.6
Surkhet	0.0	16.0	15.8	0.0	39.0	40.2	0.0	9.8	22.2	0.0	11.4	0.0	0.0	1.6	5.2	0.0	0.7	8.3	0.0	21.4	8.3

**C - Prescribing Practices for No Pneumonia by Districts (Percentage Distribution)**

Districts	Antibiotics			Paracetamol alone			Other drugs		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II
Banke	95.0	0.0	58.3	5.0	58.3	25.0	0.0	41.7	16.7
Bara	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Bardia	80.0	58.3	70.0	0.0	33.3	10.0	20.0	8.3	20.0
Dolakha	30.4	26.4	75.0	65.5	73.6	25.0	4.2	0.0	0.0
Ilam	100.0	100.0	50.0	0.0	0.0	0.0	0.0	0.0	50.0
Mahottari	100.0	0.0	50.0	0.0	0.0	25.0	0.0	0.0	25.0
Morang	0.0	33.3	41.7	100.0	33.3	45.8	0.0	33.3	12.5
Sunsari	100.0	60.4	50.0	0.0	6.3	25.0	0.0	33.3	25.0
Surkhet	100.0	12.5	10.0	0.0	62.5	76.7	0.0	25.0	13.3

**D - Percentage of Cold/Cough Preparations in ARI by Districts (Percentage Distribution)**

Districts	Cold/cough preparation in ARI		
	Pre	Post I	Post II
Banke	60.0	9.1	9.1
Bara	61.5	14.5	20.0
Bardia	40.4	25.3	19.2
Dolakha	38.8	20.8	6.6
Ilam	46.2	6.7	8.7
Mahottari	47.4	22.6	11.7
Morang	25.4	9.8	23.0
Sunsari	28.0	8.1	2.9
Surkhet	1.7	0.0	9.6

**E - Prescribing Practices for Scabies by Districts (Percentage Distribution)**

Districts	Benzylbenzoate alone			Benzylbenzoate + antibiotic			Benzylbenzoate + other drugs <sup>12</sup>			Antibiotics ± other drugs			Other drugs <sup>13</sup>		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II
Banke	66.7	46.7	57.3	33.3	10.0	12.4	0.0	40.0	30.3	0.0	0.0	0.0	0.0	3.3	0.0
Bara	4.6	2.2	4.4	51.0	53.2	38.5	5.2	17.9	25.1	35.4	26.3	32.0	3.9	0.3	0.0
Bardia	16.7	5.0	5.4	14.3	37.6	25.0	42.1	32.9	31.9	11.9	8.7	29.7	15.1	15.7	8.1
Dolakha	75.0	30.0	25.0	0.0	43.3	25.0	25.0	6.7	41.7	0.0	20.0	8.3	0.0	0.0	0.0
Ilam	20.0	4.2	7.1	0.0	37.5	29.8	40.0	37.5	39.8	0.0	20.8	23.2	40.0	0.0	0.0
Mahottari	6.0	33.5	16.7	26.0	28.3	29.8	22.0	35.1	37.5	44.0	3.1	16.0	2.0	0.0	0.0
Morang	34.6	14.5	3.5	16.5	58.0	33.1	33.7	24.2	39.6	11.0	3.3	23.8	4.3	0.0	0.0
Sunsari	29.4	21.4	11.7	24.6	30.5	29.0	27.3	41.8	38.6	8.2	2.9	17.3	10.5	3.4	3.3
Surkhet	0.0	37.7	36.1	15.4	5.2	0.0	79.5	53.8	52.8	5.1	3.3	11.1	0.0	0.0	0.0

<sup>12</sup> Other than antibiotics

<sup>13</sup> Other than benzylbenzoate or antibiotics

**F - Prescribing Practices for PUO by Districts (Percentage Distribution)**

Districts	Paracetamol alone			Paracetamol + other drugs <sup>14</sup>			Antibiotics alone			Antibiotics + other drugs			Aspirin alone			Aspirin + other drugs <sup>15</sup>			Antimalarials			Antimalarial + Antibiotics		
	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II	Pre	Post I	Post II
Banke	0.0	46.9	64.5	50.0	19.8	24.8	0.0	0.0	0.0	25.0	16.7	7.5	0.0	0.0	0.0	0.0	0.0	2.0	25.0	16.7	1.3	0.0	0.0	0.0
Bara	0.0	5.0	0.1	4.2	0.6	1.0	0.0	2.0	3.9	70.8	82.5	80.9	0.0	0.0	0.6	0.0	0.0	0.0	8.3	0.6	3.8	16.7	9.2	9.6
Bardia	0.0	1.5	5.0	33.3	2.2	7.1	0.0	14.0	0.0	44.4	69.2	71.2	0.0	0.0	1.7	0.0	0.0	0.0	11.1	0.0	8.5	11.1	13.1	6.5
Dolakha	40.0	63.2	43.8	0.0	5.3	0.0	0.0	0.0	0.0	60.0	31.6	6.3	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Ilam	0.0	0.0	0.0	0.0	20.8	4.8	0.0	8.3	11.1	100.0	70.8	84.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mahottari	0.0	26.7	0.0	41.7	21.1	41.7	11.1	0.0	0.0	36.1	52.2	56.1	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	2.3	0.0	0.0	0.0
Morang	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	77.5	70.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	10.0	30.0
Sunsari	0.0	2.7	8.0	29.2	11.2	13.3	2.1	3.1	0.0	56.3	78.9	63.1	0.0	0.0	0.8	0.0	2.7	14.1	12.5	0.0	0.0	0.0	1.4	0.8
Surkhet	50.0	45.0	46.9	50.0	43.4	42.0	0.0	0.0	0.0	0.0	6.6	1.2	0.0	0.0	9.5	0.0	0.0	0.0	0.0	5.0	0.3	0.0	0.0	0.0

<sup>14</sup> Other than antimalarials or antibiotics

<sup>15</sup> Other than antimalarials or antibiotics

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