



PJABK 082
75181

is a program of the
**Bureau for Science and Technology, Office of Health and Office of Education
Agency for International Development**

through a contract with the
Academy for Educational Development

and subcontracts with the
University of Pennsylvania, Applied Communication Technology, Needham Porter Novelli and PATH

Contract #DPE-1018-C-00-5063-00

FIELD NOTE

COMPARISON OF KEY VARIABLES BEFORE AND AFTER ORT INTENSIFICATION IN GARUT KABUPATEN, INDONESIA

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August 1988

INTRODUCTION¹

Communication for Child Survival (HEALTHCOM) is a five-year communication project designed to assist developing countries use communication strategies to promote the widespread use of effective child survival practices. HEALTHCOM is sponsored by the Office of Health and the Office of Education within the Bureau for Science and Technology of the U.S. Agency for International Development and is administered by the Academy for Educational Development. The project will work in up to 17 countries, using its research and development approach to promote changes in behavior with regard to child health. The Annenberg School of Communications at the University of Pennsylvania is responsible for the summative evaluation in 15 countries and for providing assistance in formative evaluation when requested.

In July and August of 1986, the Government of Indonesia began to intensify a public health program to reduce infant and child mortality resulting from diarrheal diseases. The Health Department conducts the program under its Directorate of Communicable Disease Control and its Sub-Directorate of Diarrheal Disease Control. Technical assistance for the communication component is provided by the Center for Community Health Education in collaboration with HEALTHCOM.

HEALTHCOM is active on a national scale in Indonesia, although the major efforts to date have been centered in West Java province (with a population of approximately 32 million). Lessons learned in West Java will assist the Government of Indonesia to develop a national strategy for child survival interventions. The West Java interventions are designed to promote the use of oral rehydration therapy (ORT) to treat cases of infant and child diarrhea. The oral rehydration solution promoted in West Java is called Oralit.

¹We are grateful for the help provided by many individuals in the preparation of this report. These include Dr. Sutoto of the Sub-Directorate of Diarrheal Control, Dr. Mantra of the Center for Health Education in Jakarta, Pak Omay of the Center for Health for Health Education in Bandung, and the staff of these organizations, who provided guidance and insights concerning research activities. The professional staff and interviewers at Survey Research Indonesia (SRI) implemented all aspects of data collection and data processing. Dr. John Davies of the Academy for Educational Development provided useful insights and a bridge of understanding between the many public and private sector organizations that participated in the study. The study would not have been possible without financial assistance provided by USAID/Jakarta and the supportive efforts of many of its staff. We are grateful to all of these persons and organizations, and we hope this report serves to justify their many efforts.

The HEALTHCOM program in West Java targets four populations of primary health care providers: mothers (and other caretakers of children under the age of five), health care workers at regional clinics (puskesmas workers), local volunteers (kader), and retailers of medicines. The program teaches each population of health care providers to distinguish between three types of diarrhea -- beginning diarrhea, diarrhea with weakness, and diarrhea with vomiting -- and to provide correct treatment for each type of diarrhea.

The project in West Java began in 1986 with a pilot phase in Garut Kabupaten. During this phase, a limited number of ORT interventions were carried out. These activities included the production and airing of three radio messages, training of puskesmas workers, kader, and a limited number of retailers, and the production and distribution of training materials (posters, flyers, kader badges and house signs, certificates of training, and reporting forms).

The effort in Garut focused on promoting the use of home fluids, feeding, and using Oralit to treat cases of infant and child diarrhea. Health care providers were to be reached by the radio messages, printed materials, and health workers who had received the training.

In order to evaluate this pilot phase, interviews were conducted with an equivalent sample of approximately 300 caretakers before and after the launch of limited program activities. Interviews were also conducted with a small sample of puskesmas workers, kader, and retailers of medicines in the same primary sampling units as caretakers.

This field note summarizes the findings from that evaluation. The following summary describes changes in awareness, knowledge, and practice from the time of a baseline survey (June 1986) to the time of an after-survey conducted approximately six months after intensification efforts were launched.

SURVEY FINDINGS

Knowledge and Practices Related to the Use of Oralit

After the intensification of activities in Garut, about 25 percent of all reported cases of infant or child diarrhea appeared to be treated with Oralit (Table 1). The statistic reflects Oralit treatment at home, at the puskesmas, by kader, and by all other health care providers. There was an apparent increase in the percentage of cases that were treated with Oralit from the time of the baseline survey, but the increase was not

statistically significant. The sample of caretakers was composed of 255 mothers from the before-sample and 377 respondents from the after-sample.

Table 1 indicates that although the use of Oralit may not have increased, the percentage of mothers who had heard some information about Oralit had increased from 35 to 51 percent (the increase is statistically significant). The table also indicates that, after the intensification, 91 percent of the mothers knew that Oralit is a treatment for diarrhea. However, knowledge about Oralit already was quite high before the intensification: 83 percent of the mothers knew that Oralit is a treatment for diarrhea.

After the intensification, about 36 percent of the mothers could correctly demonstrate or explain that Oralit should be mixed using the entire packet and one glass of water. Although there seems to have been some improvement in mixing abilities since the time of the baseline survey, the increase was not statistically significant.

According to Table 1, mothers who could demonstrate or explain how to mix Oralit correctly (presumably those mothers who are more likely to be using Oralit) reported that a child should be given 1.23 glasses per day at the time of the baseline survey. The number of glasses that mothers reported should be given increased to 1.61 glasses per day after the intensification. Although the increase of 0.38 glasses per day is statistically significant, knowledge about how much Oralit should be given per day is still quite low. (Mothers are told to give one glass of Oralit after every loose stool).

TABLE I
COMPARISON OF KEY VARIABLES

	BEFORE MEAN	AFTER MEAN	CHANGE	SIG.
Oralit Used to Treat Last Case of Diarrhea (ALL PROVIDERS)	17%	25%	+ 8 %	N.S.
(BASE: Only Caretakers Reporting Current/Previous Case, N=554)				
Heard Information About Oralit	35 %	51 %	+ 15 %	p < 0.05
(BASE: All Respondents, N=632)				
Know Oralit is a Treatment for Diarrhea	83 %	91 %	+ 8 %	N.S.
(BASE: All Respondents, N=632)				
Demonstrate or Explain Mixing Oralit Correctly	28 %	36 %	+ 8 %	N.S.
(BASE: All Respondents, N=632)				
Give How Many Glasses or Oralit Per Day	1.23	1.61	+ 0.38	p < 0.05
(BASE: Caretakers Who Demonstrate or Explain Correct Mixing, N=219)				

N.B. Before-After Means are computed at the cluster level and have been adjusted statistically to reflect differences in sample composition that are observed between data collection waves

Sources of Treatment and Information

Table 2 shows that after the intensification, 60 percent of the diarrhea cases were treated at home, 47 percent were treated at the puskesmas, 25 percent were treated by going to retailers, and 11 percent were treated by a nurse (categories NOT mutually exclusive). Treatments by all other providers each represent less than ten percent of the cases. Although there was a statistically significant increase in the number of mothers going to a kader to treat the last case (from zero percent to four percent), the reach of kader was still very low.

While Table 2 indicates that kader treated very few children, Table 3 indicates that kader also did not reach many mothers with information about how to treat diarrhea. Although there was a six percent increase in the number of mothers who reported having heard information about how to treat diarrhea from a kader, only eight percent of the mothers have been reached by this channel after the intensification. The findings are important for planning further intensification efforts because, no matter how well kader are trained, they will not achieve favorable outcomes if they reach a very small percentage of the population.

Most mothers obtained information about how to treat diarrhea from the puskesmas and from neighbors, relatives, and friends (Table 3). Table 2 shows that mothers went outside of the home to treat diarrhea, contacting the puskesmas and retail shops. In developing strategic plans about how to reach mothers with program messages, it seems that puskesmas workers and retailers already represent viable channels. Although neighbors, relatives, and friends are an important source of information, it is not clear how the program can increase their knowledge of case management. Possible channels include the puskesmas, retailers, and the mass media, particularly radio.

Radio does not appear to have reached many mothers with messages about how to treat diarrhea. About four percent of the mothers mentioned hearing anything on the radio about treating diarrheal diseases (Table 3). However, because an overwhelming majority of the mothers reported that they sometimes listen to the radio, the radio is still potentially an important source of information. It may be important to broadcast radio messages more frequently, on more radio stations, and during times when mothers most likely will be listening. Also, it seems important to monitor radio messages to make sure that messages are broadcast according to the original schedule.

TABLE 2
SOURCES OF TREATMENT FOR LAST CASE OF DIARRHEA
 (BASE: Only Caretakers Reporting Current/Previous Case, N=554)

	BEFORE MEAN	AFTER MEAN	CHANGE	SIG.
Last Case of Diarrhea Treated at Home	76 %	60 %	- 16 %	p < 0.04
Last Case of Diarrhea Treated at <u>Puskesmas</u>	55 %	47 %	- 8 %	N.S.
Last Case of Diarrhea Treated by <u>Kader</u>	0 %	4 %	+ 4 %	p < 0.04
Last Case of Diarrhea Treated by Retailer	11 %	25 %	+ 14 %	p < 0.04
Last Case of Diarrhea Treated by Doctor	10 %	4 %	- 6 %	p < 0.01
Last Case of Diarrhea Treated by Nurse	11 %	11 %	0 %	N.S.
Last Case of Diarrhea Treated by Trad. Healer	6 %	0 %	- 6 %	N.S.
Last Case of Diarrhea Treated by Relative, Neighbor, or Friend	1 %	3 %	+ 2 %	N.S.

N.B. Before-After Means are computed at the cluster level and have been adjusted statistically to reflect differences in sample composition that are observed between data collection waves

TABLE 3
SOURCES OF INFORMATION ABOUT TREATMENT OF DIARRHEA

(BASE: All Respondents, N=632)

	BEFORE MEAN	AFTER MEAN	CHANGE	SIG.
Heard Information About How to Treat Diarrhea (ALL SOURCES)	56 %	66 %	+ 10 %	N.S.
1. <u>PUSKEMAS</u>	30 %	20 %	- 10 %	N.S.
2. <u>KADER</u>	2 %	8 %	+ 6 %	P < 0.04
3. <u>POS YANDU</u>	3 %	1 %	- 2 %	N.S.
4. DOCTOR	4 %	4 %	0 %	N.S.
5. NURSE	5 %	7 %	+ 2 %	N.S.
6. PHARMACY	0 %	0 %	0 %	N.S.
7. SHOP	2 %	0 %	- 2 %	N.S.
8. NEIGHBOR-RELATIVE	19 %	33 %	+ 14 %	P < 0.02
9. RADIO	4 %	4 %	0 %	N.S.
10. TELEVISION	5 %	1 %	- 4 %	P < 0.04
11. NEWSPAPER	0 %	0 %	0 %	N.S.
12. MAGAZINE	2 %	0 %	- 2 %	N.S.

N.B. Before-After Means are computed at the cluster level and have been adjusted statistically to reflect differences in sample composition that are observed between data collection waves

Treatment of Diarrhea at Home

Although the evidence does not show an increase in the use of Oralit overall, we can examine whether or not there was an increase in the use of Oralit by specific health care providers. Table 4 examines those mothers who treated the last case of diarrhea at home and finds that the increase in the use of Oralit (from seven to 13 percent) is not statistically significant. However, because only about 60 percent of the mothers reported treating the last case at home, in the population at-large it appears that, after the intensification, only about eight percent of the mothers treated with Oralit.

At the time of the baseline survey, eight percent of all mothers could verify that they had received Oralit packets by actually showing a packet of Oralit. After the intensification, about ten percent of the mothers could show a packet. The moderate percentage of mothers who were able to show a packet of Oralit (eight to ten percent in the population at-large) suggests that many mothers had experience using the product.

When we look only at those mothers who treated diarrhea with Oralit (N=54), we find that mothers reported giving an average of 1.6 packets before the intensification and 1.4 packets after the intensification (the difference is not statistically significant). Unfortunately, mothers do not yet seem to comprehend the quantities of Oralit that children should be given. A possible explanation for giving less than two glasses is that if Oralit is perceived as a medicine, more than two glasses could be mistaken by mothers as a dangerous quantity. However, if Oralit is promoted as a kind of extra fluid, rather than as a medicine, it might be easier to encourage mothers to give a glass of Oralit each time the child has loose stools.

Apparently very few mothers are using Oralit to treat their children when they suffer from diarrhea, and when they do use Oralit, the quantities given are very low. Table 4 shows that the use of LGG (an oral rehydration solution made from water, sugar, and salt available in the home) is very low. About eight percent of the mothers treating diarrhea at home used LGG before the intensification, and about four percent after the intensification (the decrease is not statistically significant).

TABLE 4
HOME TREATMENT FOR LAST CASE OF DIARRHEA

	BEFORE MEAN	AFTER MEAN	CHANGE	SIG.
Oralit Used to Treat Last Case at Home	7 %	13 %	+ 6 %	N.S.
(BASE: Only Caretakers Who Treated Diarrhea at Home, N=361)				
Able to Show Oralit Packet	8 %	10 %	+ 2 %	N.S.
(BASE: Only Caretakers Reporting Current/Previous Case, N=554)				
# Oralit Packets Given at Home	1.6	1.4	- 0.2	N.S.
(BASE: Only Caretakers Who Treated with Oralit, N=54)				
LGG Used to Treat Last Case at Home	8 %	4 %	- 4 %	N.S.
(BASE: Only Caretakers Who Treated Diarrhea at Home, N=361)				

N.B. Before-After Means are computed at the cluster level and have been adjusted statistically to reflect differences in sample composition that are observed between data collection waves

Treatment of Diarrhea at the Puskesmas

Although the use of Oralit has not increased overall, there was a greater tendency (by mothers) to say that Oralit was given by the puskesmas after the intensification than before (Table 5). At the time of the baseline survey, only ten percent of the mothers going to the puskesmas reported that Oralit was given to the child or given to the mother to take home. In contrast, after the intensification, 29 percent of the mothers (who went to the puskesmas) reported that Oralit was given, a statistically significant increase of 19 percent. Because only 47 percent of the cases were treated at the puskesmas, for the population at-large it seemed that about 14 percent of all cases were treated with Oralit at the puskesmas (after the intensification).

Only three mothers (two before the intensification and one after) reported that the puskesmas gave Oralit to the child to drink. The overwhelming majority of mothers reported that the puskesmas gave packets of Oralit to take home. Therefore, the increase mentioned above almost entirely reflects Oralit that was given to the mother to take home. Although puskesmas workers also may have been giving Oralit to the child at the puskesmas, mothers were either unaware or tended not to report it.

When we look only at mothers who reported that the puskesmas gave Oralit to take home, we find that the quantities given increased as a result of the intensification. If a mother comes to the puskesmas with a child with diarrhea, the worker is to give her five packets of Oralit to take home. At the time of the baseline survey, puskesmas workers gave an average of 1.4 packets to take home (based on the reports of mothers). The quantity given increased to 2.3 packets after the intensification, an increase of almost 1 packet. Although one might question the reports of mothers, it seems that the quantities of Oralit distributed to mothers by the puskesmas is still very low.

Based on the reports of mothers, it seems that puskesmas workers did not reduce the tendency to give pills and injections to treat children with diarrhea. Before the intensification, about three out of four children suffering from diarrhea were given pills and about half of the children received injections. Although the program hoped to achieve a decrease in these patterns of treatment, there was no noticeable change after the training of puskesmas workers.

TABLE 5
 PUSKESMAS TREATMENT FOR LAST CASE OF DIARRHEA

	BEFORE MEAN	AFTER MEAN	CHANGE	SIG.
Oralit Used to Treat Last Case at <u>Puskesmas</u>	10 %	29 %	+ 19 %	p < 0.02
(BASE: Only Caretakers Who Treated Diarrhea at <u>Puskesmas</u> , N=284)				
# Oralit Packets Given at <u>Puskesmas</u>	1.4	2.3	+ 0.9	p < 0.06
(BASE: Only Caretakers Who Received Oralit at <u>Puskesmas</u> , N=59)				
Pills Used to Treat Last Case at <u>Puskesmas</u>	74 %	78 %	+ 4 %	N.S.
(BASE: Only Caretakers Who Treated Diarrhea at <u>Puskesmas</u> , N=284)				
Injections Used to Treat Last Case at <u>Puskesmas</u>	48 %	54 %	+ 6 %	N.S.
(BASE: Only Caretakers Who Treated Diarrhea at <u>Puskesmas</u> , N=284)				

N.B. Before-After Means are computed at the cluster level and have been adjusted statistically to reflect differences in sample composition that are observed between data collection waves

Knowledge of Puskesmas Workers, Kader, and Retailers

The intensification in Garut sought to train puskesmas workers, kader, and retailers in the use of ORT to treat three different types of diarrhea. Data was collected from a sample of 81 kader, 227 retailers, and 61 puskesmas workers about knowledge related to the treatment of these types of diarrhea.

A 7-point scale was created to measure knowledge about treating the different types of diarrhea. For beginning diarrhea, the providers were taught: 1) give extra fluids, 2) continue feeding the child, and 3) DO NOT give Oralit. For diarrhea with weakness, the providers were taught to: 4) give extra fluids, 5) continue feeding, and 6) give Oralit. For more serious diarrhea, the providers were taught that: 7) the child needs to be treated at the puskesmas.

Using this 7-point scale, we found that puskesmas workers had an average score of 2.0 before being trained, and 4.8 afterwards. Kader had an average score of 0.7 before the intensification and 1.8 afterwards. Retailers had a score of 2.0 before and after the intensification. The increase in knowledge for puskesmas workers and kader is statistically significant. A possible reason the scores of retailers did not increase is that training may have been directed towards large stores and pharmacies, while this sample of retailers mostly included very small shops in rural areas.

Table 6 compares the three groups of providers, after the intensification, on these seven items of knowledge. We see that puskesmas workers have a moderate degree of knowledge although there is substantial room for improvement. Even after their training, a large percentage of puskesmas workers still believed that Oralit should be given to treat beginning diarrhea. Less than half of the puskesmas workers reported that a child having diarrhea with weakness should continue to be fed.

Although some kader understood the importance of extra fluids and feeding for beginning diarrhea, a much smaller proportion understood the importance of fluids and feeding for a child having diarrhea with weakness. Retailers had even less knowledge of the importance of extra fluids and feeding, for both beginning diarrhea and diarrhea with weakness. Only a small percentage of retailers knew that Oralit should be given to treat diarrhea with weakness.

TABLE 6

KNOWLEDGE OF PUSKESMAS WORKERS, KADER, AND RETAILERS

ABOUT HOW TO TREAT THREE TYPES OF DIARRHEA

(After Garut Intensification)

	<u>PUSKESMAS</u>	<u>KADER</u>	RETAILERS	CARETAKERS
	Receiving Training		**All Respondents**	
BEGINNING DIARRHEA				
1. Give Extra Fluids	85.7	47.7	3.4	9.3
2. Continue Feeding	85.7	38.5	2.6	3.7
3. NOT Give Oralit	61.9	61.5	83.6	84.1
DIARRHEA WITH WEAKNESS				
4. Give Extra Fluids	66.7	18.5	1.7	3.7
5. Continue Feeding	52.4	50.0	2.6	3.2
6. Give Oralit	76.2	60.0	19.0	22.0
DIARRHEA WITH VOMITING				
7. Give Extra Fluids	52.4	16.9	0.0	1.3
8. Continue Feeding	33.3	7.7	0.0	0.3
9. Give Oralit	85.7	52.3	28.4	32.1
10. Treat at Hospital	71.4	90.8	91.4	82.5
MEAN (10-point scale)	6.7	4.1	2.3	2.4
Standard Deviation	2.2	1.7	0.8	0

Although the knowledge of puskesmas workers is higher than that of kader and retailers, all three groups need more training about the use of extra fluids and continued feeding. Although the appropriate use of Oralit is a key element in oral rehydration therapy, Table 6 suggests that training should not stress Oralit at the expense of extra fluids and feeding.

We see that knowledge about what to do for the three types of diarrhea is increasing as a result of the intensification, for most providers. However, levels of knowledge are still very low. The findings may suggest that case management objectives need to be translated more clearly into training and message development strategies. Also, mothers need to be reached by radio, because interpersonal channels of communication have a limited reach.

SUMMARY AND CONCLUSIONS

There is some encouraging evidence that knowledge about Oralit is increasing as a result of the intensification. There is a pronounced increase in the percentage of mothers who have heard some information about Oralit. Also, almost all mothers recognize Oralit as a treatment for diarrhea, although this knowledge was high even before the intensification.

However, there seems to be very little evidence that the use of Oralit to treat infant and child diarrhea has increased as a result of the intensification. The only evidence of an increase in the use of Oralit is a higher tendency for mothers to report that the puskesmas gave them packets to take home. Mothers who were given Oralit at the puskesmas report that an average of just over two packets were given to them to take home, after the intensification. Puskesmas workers, however, were trained to give mothers at least five packets to take home, thus some attention could be given to understanding why the workers are not giving the correct number of packets and to influencing them to give out five packets.

The ability of mothers to mix Oralit correctly did not appear to increase in the population at-large. Overall, about 36 percent of the caretakers could demonstrate or explain how to mix Oralit correctly after the intensification.

There was a significant increase in knowledge about how much Oralit should be given in a day, but mothers still report that only a glass or two of Oralit should be given to a child each day (compared to a correct response of one glass after each loose stool). Those mothers who reported giving Oralit reported giving an average of 1.4 packets (or

glasses) a day after the intensification (not significantly different from before the intensification). This suggests an area for improvement. Mothers do not seem to know how much Oralit should be given and they tend to give Oralit in smaller quantities than recommended. It is possible that mothers perceive Oralit as a medicine, and thus may think that two or more glasses of the solution are a dangerous quantity. However, if Oralit were promoted as a type of extra fluid, rather than as a medicine, it might be easier to encourage mothers to give more.

About half of the mothers report going to the puskesmas to treat the last case of diarrhea. It is plausible that mothers tend to remember serious rather than mild cases of diarrhea, explaining the high tendency for mothers to report going to the puskesmas for treatment.

Although reported contact with the puskesmas might be influenced by the tendency to remember serious cases, the puskesmas seems to represent a viable means of reaching mothers with information about how to treat diarrhea. After the intensification, about 20 percent of the mothers reported having heard information about how to treat diarrhea at the puskesmas. The only other important source of information came from interpersonal sources: about one-third of the mothers reported having heard information from a relative or friend.

After the intensification, only about four percent of the mothers reported going to a kader to treat the last case of diarrhea and only eight percent of the mothers reported having heard information about how to treat diarrhea from kader. These findings are important for future project activities because, no matter how well kader are trained, they will not achieve favorable outcomes if they only reach a small part of the population. Although about 25 percent of the mothers reported going to a retailer to treat the last case of diarrhea, less than one percent of the mothers reported hearing information from retailers.

Only about four percent of the mothers said they heard information about treatment of diarrhea on the radio, despite the fact that an overwhelming majority of mothers say they listen to the radio. This suggests that the pilot messages may not have been broadcast frequently enough, on enough radio stations or at the times that women listen most frequently. It will be important for the project to carefully monitor radio broadcasts to assure that messages are broadcast as planned.

These findings suggest that, in developing strategic plans about how to reach mothers with program messages, channels to consider are puskesmas workers, retailers,

and the mass media, particularly radio. Puskesmas workers and retailers are already viable channels. Puskesmas workers were the most frequently sought group for treatment of diarrhea and were one of the most frequently named sources of information. A quarter of the women reported going to the retailer for treatment of the last case of diarrhea. Radio has the potential to reach a very wide audience in West Java and to teach them about Oralit.

The program in West Java promotes the case management of diarrhea; the program teaches providers to distinguish between beginning diarrhea, diarrhea with weakness, and more serious diarrhea, and promotes a different set of treatments for each type of diarrhea. In particular, the program aims to discourage the use of Oralit to treat beginning diarrhea, while encouraging the use of extra fluids and continued feeding to treat all types of diarrhea. Oralit is recommended only for diarrhea with weakness and more serious diarrhea.

Puskesmas workers and kader are beginning to gain knowledge about how to treat diarrhea. Retailers are not showing improvement, perhaps because the retailers sampled tended to be from small shops where training was not concentrated. Puskesmas workers tend to be most knowledgeable, followed by retailers and kader. An improvement in the training of all these populations seems to be required, particularly in regard to the use of extra fluids and continued feeding during diarrhea.

Overall, the intensification in Garut did more to increase knowledge about Oralit than it did to change practices related to the treatment of diarrhea. That the use of Oralit did not increase appreciably may reflect a situation where not enough mothers were reached often enough by program messages. This suggests a larger role for the radio, which can reach a wider audience than interpersonal sources.