

Client Job Aids to Reduce Antimicrobial Resistance in Niger and Use of an Obstetric Care Management Map in Uganda By Dr. Wendy Edson, QAP

Ed Kelley: Dr. Wendy Edson, from the Quality Assurance Project works with us in operations research and has over 20 years' experience in healthcare as a nurse researcher and maternal and child health program manager in Africa and the United States. She has degrees from the University of Maryland and Johns Hopkins.

Wendy Edson: I'm going to talk to you about improving patient adherence with job aids in Niger. I wanted to introduce the research team, besides myself: Dr. Boukar, Sabou Djbrina, Ibrahima Mahamane, from the West Africa Regional Office, and then Peggy Kooniz-Booher is the behavior change and communication consultant.

The study's purpose was to develop and evaluate the effectiveness of job aids in improving caretaker compliance with antibiotic regimens for the treatment of pneumonia in children. The rationale for this is that improving patient counseling and patient adherence to an antibiotic regime will help to curb the development of antimicrobial resistance. The target study population was caretakers of children with pneumonia that were treated as outpatients in the Boboye district in Niger, and these were largely literate caretakers, and healthcare workers at these clinics.

I'm going to walk you through three steps in this presentation. Step one was the formative research, step two was developing the job aids, and then step three was testing the effectiveness of the job aids. For the formative research, we wanted to know what information is currently given to the caretaker at the health center and what are the reasons for not counseling. For caretakers, we wanted to know what were the cultural beliefs about antibiotics, how information is disseminated traditionally, and how are antibiotics used in the home?

We did a lot of data collection to find out what the messages should be for the job aids to improve adherence. We observed health workers in the clinics. We followed the women, the caretakers, (who were mainly women), home, and observed them giving the antibiotic in the home. We conducted focus groups with caretakers, both men and women, and we also conducted key informant interviews.

Our results show that pneumonia is seen as an important and serious illness. We found, however, that there were barriers to care. One is that usually the cost of the visit is borne by the father, thus he's making the decision for the visit. The drug Cotrimoxazole used to treat pneumonia is available at the market as well as in the health center; and it's a drug that is considered effective by parents - well tolerated, and easy to use.

We found that in Niger, at the clinic, only two or three days of the five-day medication course is given, and the caretaker must return for the rest of the course. Health workers offered little counseling on administration of the antibiotic. It was usually given to the caretaker in a paper cone. Sometimes there were marks on the cone to indicate the dosage. When we observed the women in the homes, they usually crushed the tablet with their finger and mixed it with available water. Medication was not usually stored properly in the home—in other words, not out of reach of children in a safe and dry place.

The most respected sources of information were health workers and regional radio. Most caretakers could not read or write; however, they could distinguish letters and numbers and were familiar with pictures of diarrhea, polio, HIV, etc.

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So step two was to develop the job aids. First, we held a workshop to present the results of the formative research to the national, regional, and district level participants. Then we formed a technical committee to oversee the development of the materials.

During the workshop, we reviewed behavior change and communication theory, just to get everyone on the same page. We reviewed the IMCI guidelines, which were the ideal health worker behavior, and presented the study results. Then, in small breakout groups, the workshop participants compared the ideal and actual behaviors of health-care workers and caretakers and developed strategies for behavior change and the messages for the job aids.

After the workshop, the artist drew the images for each message. For example, for this image, the message was to prepare the tablet by crushing it with a spoon and mixing it with clean water. For this image, the message was that the father should be involved in the care of the child and to give the medication with a spoon. Remember that in the formative research, the father was the one who made the decision about providing resources for a clinic visit.

This message was to store medication in a safe place out of the reach of children, and a basket was usually where women put things of value to them, up high, in a basket. And then our final image was to finish the entire package of medicine, the envelope is empty and the child is healthy and well, smiling.

The technical committee then reviewed the images and suggested changes; they really took ownership of the job aid development. Decisions were finalized on a set of job aids for both health care workers and for the caretakers in the home. The first one was a counseling card containing all four images on administering the antibiotic. On the reverse side of the counseling card was a text taken from the national IMCI Manual on dosing. On the left is administering the antibiotic, and on the right is dosing, the correct dosing schedule for the antibiotic.

The next part of the package was a medication envelope. This was specifically a job aid for the caretaker—packaging the antibiotic in the envelope. One side of the envelope had the four pictures, four images repeated, and on the flip side of the envelope there's a schema of when the medication should be taken. So down the side is the days and then across the top is the time of day, morning, noon, or night. We did this in black and white because we wanted to keep the costs down; color would have been too expensive.

The next job aid is a poster showing good interpersonal communication. In our formative research we found that this was lacking, interpersonal communication skills during the health worker observations. We developed a positive picture of a health worker communicating with the father, who's also there, and the mother and actually pointing to the envelope, right here, the envelope for the medication. Repeated at the side are the four images, and at the top the schema for when to give medication. The health workers really loved this poster.

To complete the package, we developed a short training course on interpersonal communication with training also on how to use these job aids, it was a two-day course. So here's the entire set of job aids and the manual for their use that we developed and you can see the repeated images used and the repeated schema. All these materials were pre-tested and modified. This is some of the pre-testing done with health care workers and then with caretakers and focus groups.

Then we tested the effectiveness of the job aid using an experimental study design in four control sites and four experimental sites. The intervention was interpersonal communication training for the health workers and then use of the job aids, the poster, counseling card and the envelopes for the mothers. We interviewed caretakers after the clinic visit and then visited them in their homes four to five days after the clinic visit; the course of the medication is five days. Health care workers were observed at two points in the study. The date of collection was from November 2000 to April 2001, so you're the first ones to hear any results.

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We enrolled 675 children in the study, 327 in the control group and 348 in the experimental group. We conducted home visits on all these children. There were no differences between the control group and the experimental group in terms of child characteristics, child age, gender, or birth order. There were also no differences in maternal characteristics between the two groups, in maternal age, education, or marital status. We did find some differences in household characteristics; for example, the size of the household was smaller in the control group than in the experimental group, and there were more families of full ethnicity in the control group and more houses with a radio in the experimental group.

Some preliminary results: remember the image with the message to use clean water? There was a difference between the control and experimental group that was significant, 73 percent in the control group used clean water versus 94 percent in the experimental group. For the message about storing the antibiotic, there was a small difference, just barely significant, in the control group versus experimental group, 87 in control, 91 in experimental.

What we were hoping for was a difference in patient adherence between the two groups and we measured this with a pill count of the medication at the home visit. There was a significant difference, 76 percent in the control group and 89 percent in the experimental group. We also were happy to see that the follow-up appointment was kept more often in the experimental group versus the control group—58 percent in the control and 79 percent in the experimental group. That means the caretaker came back for that follow-up appointment to get the rest of the medication.

I think what is interesting is that maternal knowledge really did not differ very much; it was actually very high. These were questions that were asked in the home of all the caretakers. Did they know the correct number of pills, antibiotics to give? Yes, they both did. Did they know the correct time of day? There was a little bit of difference in the control group versus the experimental group, the experimental group actually was less than the control group. They did know the correct number of days, five days, and that was the same. We asked them if they thought their child's health had improved, and in the experimental group more mothers answered yes, 47, versus 35 in the control group.

These are preliminary results. We plan to do a further analysis to assess the effect of the health care worker on the clinic within the experimental and control group. We recommend, based on these findings, that the national policy may be changed so that a full dose of antibiotics is given at the first visit in Niger so adherence can be improved with these methods.

Any questions on this, clarification? Yes?

The question was about whether we did pretest or post-test changes. It was like a clinical trial design. The experimental groups were followed throughout the six-month period with home visits, as were the control groups.

Let me briefly touch on another job aid that was done in Uganda. It was the development of a case management map in Uganda by Barbara Kersteins with the Quality Assurance Project and Johns Hopkins University. A case management map is both a job aid and a medical record. It is a critical pathway, an optimal sequencing and timing of interventions by medical staff for a particular condition.

Here's an example of a critical pathway or case management map. The rows down the side list the activities. Across the top are listed the columns of time. So it's a way of documenting medical care with activities and time. The time can be a day. In this example, it is a day of care given for a pre-eclampsia. It could be an hour, for example, if you have a critical pathway for a recovery room. Every hour might have a column, or it might be a month, for example, if you have a critical pathway for prenatal care.

On this one, on the top there is room to record blood pressure and then fetal heart rates below that and whether or not edema, weight, protein area and hyper reflexia were recorded, any medication given, any

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counseling given, and across the top are the days. This case management map was developed for pre-eclampsia in a hospital maternity ward in Jinga, Uganda. These are the steps that were followed: when you're developing a critical pathway you involve the physicians, nurses, pharmacists, therapists, housekeeping, laboratory, whoever is going to be involved in the care of that patient. The scope of protocol was defined here as from admission to discharge. In describing the current process of management, they did this by flow charting all the different activities and from that they developed the case management map. They decided on a two-page format, a large format with colored paper. They developed the prototype, developed a monitoring plan. They then developed training, instruction sheets, and supported their use.

Some of the challenges during this development: the team membership kept changing; they had a problem with not enough physicians, interns, at the facility monitoring the care given on the unit, and there was no familiarity at all with critical pathways. They also experienced the unavailability of needed supplies that should have been used during the critical pathway, such as magnesium sulfate or reflex hammers.

In the preliminary results, there were some improved patient outcomes. These are very small numbers, but the progress to eclampsia from pre-eclampsia before was 17 percent, and then after the intervention was 6 percent. The number of maternal deaths went from 5.5 to 3.1 percent, and the percent of live deliveries went from 56 to 83.