

Job Aids to Improve Diagnosis and Treatment of Malaria in Kenya and Malawi **By Dr. Paula Tavrow, QAP**

Ed Kelly: Our panel session on job aid development, application and evaluation panel, is entitled "Examples from the QA Project and PVOs." The title's not entirely accurate, because we also have members from our CA community participating. Specifically, Frederico Leon from the POP Council, Linda Bruce from PATH, and Adrienne Kols from CCP, and two representatives from the Quality Assurance Program, Paula Tavrow and Wendy Edson.

Tony [Moore] gave us an overview of the state-of-the-art in job aids, some of the theory, and also some of the applications and the results that he's seen in healthcare and in other industries. What we're going to do now is try to give you a quick look into some of the job aids that have been used within our own particular field, health and population in developing countries, on the health worker side and on the client side, which should be interesting.

Our first presenter is Dr. Paula Tavrow, a public health researcher with the Quality Assurance Program, where she is deputy director of operations research. Her particular interest is in incorporating perspectives and concerns of clients. She worked with me on some of the quality assurance client satisfaction work—helped me through my own dissertation, actually. She has over ten years of experience working in sub-Saharan Africa and got her Ph.D. from the University of Michigan. She'll be talking to us about two separate job aids.

Dr. Paula Tavrow: Well, everyone, after that inspiring opening, I think we're all now believers in job aids and I want to show you what you can get from job aids. I'm going to show you some lessons we learned from Tony and other job aid experts when we developed some of these projects.

The first project that we're going to talk about is using job aids to improve malaria treatment in Kenya's private drug outlets. This activity was done in Bungoma district, in the western province of Kenya, and we had a wonderful team from the district health management group and Quality Assurance.

Why are we even concerned about the private sector? For two-thirds of malaria clients, it's the main source for drugs and treatment information. Unfortunately, though, the lack of knowledge of these private outlets, as well as profit motives are leading malaria clients to receive ineffective or unapproved drugs, expired drugs, incorrect doses of drugs, incorrect or no information.

In Bungoma district, more than 70 different anti-malarial brands [of medication] are out there. In a way, when you've got 70 different drugs out there, that's 70 different treatments and you can imagine the complexity and difficulty of that. There is a wide range in cost for a child's malaria treatment, from as low as three cents to as high as over two dollars for treating one child for malaria. Less than one-third of customers at the private outlets were receiving correct information. And about one in 12 customers were getting drugs with no active anti-malarial ingredients at all, which of course could have serious consequences. We decided to introduce a vendor-to-vendor intervention into the district. This was to improve anti-malaria dispensing practices of the private outlets through job aids disseminated by wholesale vendors in the district.

We had seen other models, even in Kenya, where people working in private drug outlets—from small shops or little kiosks, to the larger pharmacies—would be brought in for training. Then they'd go back out and apply that training, and that's a very costly approach.

To give you an example, in Bungoma District, it's estimated that there are 1,500 private drug outlets, in one district of less than a million people. Imagine the expense and difficulty of trying to train all of them. So instead we thought, how do we do it through wholesalers? The District health management team, together with the Quality Assurance Project, developed job aids, which we're going to share with you, and conducted a training that incorporated these job aids. This training was for mobile vendors and wholesale attendants. They're now going to use this to communicate these guidelines to the people who bought drugs from them. Those are the retail shops, the pharmacies—the little private clinics,

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many of which buy drugs every week or two. Hopefully, at the end of the day, malaria clients will get better treatment and will be more likely to comply with that treatment.

We had a three-hour orientation for wholesale shopkeepers to get them to buy into the program, to see the need for them as private sector to participate with the public sector. We then had a one-day training, for mobile vendors and attendants. We did it about five times so we could cover the whole district. We went to different locations, and during that training people were given the job aids and they spent about half the training just working with these job aids and learning how to read them and communicate them to others.

So there were these customized job aids, which were posters. The other two components of the intervention were to collect receipts from the outlets once the mobile vendors gave the shopkeepers the job aid and explained it to them. They then were supposed to get a signed receipt back from the outlet that indicated receipt, and intent to comply with it. Lastly we did an evaluation.

Now here's the shopkeeper job aid, I'm just going to step off the podium for a second just to point out some features to you. The job aid is really important to have for shopkeepers; to be used when he or she is actually dispensing drugs. So we designed the job aid by using a large picture to answer the question, what are the symptoms of malaria? Then, really big on that poster, what is the dosage by age?

Then what we had is, in the middle, key issues that they should be aware of—for example, one shouldn't take SP again within three weeks from when they first took it, caretakers need to continue feeding the child, and some of the other key health issues. Those are in red in the middle, and then at the bottom here, this is what you do in these four situations. What are the four most common situations that a shopkeeper faces? For instance when someone comes in and says, "well, I don't have enough money to buy the whole treatment." That came up constantly. We told them, "this is what we advise you to do, here's step one, two, three." So that was using some of these techniques that we learned.

Then we've got the client shop aid. The shopkeeper job aid is for the shopkeepers when they are doing their work, and then the client job aid is to be in the front of the store or to be on the counter. When a client comes in, this is for them, to tell them that they need to treat malaria properly and that these down here are the only approved drugs, and you can see them, so this is intended for, say, a semi-literate population.

We introduced this in April of 2000 and then in October we conducted an evaluation using these two shoppers. We set up four teams consisting of two mystery shoppers, a man and a woman (who were actually just unemployed people in the district), and one supervisor, and they visited 251 private drug outlets. The mystery shoppers were given one task, to try to purchase drugs for their child. One scenario was a mother of a nine-month-old child, she comes in and says, "I think my child has malaria, what would you recommend?"

The other scenario was the father of a two-year-old child, who comes in and asks for Malarquin which is now considered an ineffective drug there, not one of the approved ones.

After they have both come in to that shop or clinic then a supervisor will come by and ask now about stocks and prices, look for if those job aids are visible or ask them about the job aids in order to assess their malaria knowledge. This just gives you a little flavor of one of our mystery shoppers enroute to her next location. Now who were these drug outlets we visited?

We ended up with 101 of what we call intervention outlets, because those were ones that reported that they had received the job aid, and then 151 control outlets. These were largely rural, since this is a largely rural district, but there are some urban areas. Nearly 60 percent of shops were in rural localities. Three-quarters of them were small shops that would sell maybe one or two drugs, about 18 percent were pharmacies, and 7 percent were clinics. The average number of malaria clients per day was approximately 9, of which about half were children.

First we looked for how visible that job aid was among those who had received them. We found that over half were displaying the job aid, in fact, nearly two-thirds, and those nearly two-thirds that were displayed, were visible, or highly visible. We wanted it to be in a place where they could really use it when they were doing your work, that's what we meant really when we said it was displayed and visible. So for the shopkeeper job aid, it's about 44 percent.

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We asked shopkeepers, tell us, can you use this? There's a courtesy bias, probably, but a good 80 percent told us that yes, they found it useful, they used it a lot or they used it some, but they didn't think the client job aid was that useful to the clients. About half said the shopkeeper aid had some usefulness for them. Before we'd asked them this question, we asked them about some drug dosage issues, and we found that a third of the shopkeepers just automatically went over to the job aid to answer a question that was posed to them. So we thought, okay, they are using them.

Now, what was the effect of the job aid on overall malaria knowledge? It was quite significant at low levels of education but at higher levels, with not many respondents, only 28, there wasn't a significant effect on their malaria knowledge. We had about ten malaria questions.

What was the effect of the job aids on whether the outlets asked about the child's condition? For an outlet to prescribe them or dispense a proper anti-malarial, there are a few key questions. If they don't know the child's age, they're probably not going to give the right dosage, they should ask a little bit about symptoms to make sure that it does fit the malaria picture, and the duration of illness. We found that in all of those there was a significant difference between those who had received it and those who had not, but there's still room for improvement.

In the end, were the shoppers sold the correct drugs - those that the guidelines state - which are an effective sulfadoxine peramethamine plus an anti-pyretic? What we found was that among those with job aids, 18 percent ended up with that precise, correct package, compared to only two percent of those in the control group.

What about whether they were told the correct dose? We found that nearly 40 percent of those in the intervention group were told the correct dose and only 15 percent in the control. That job aid had the dosages right there, very visible, easy to tell people the correct dose. What was the cost-effectiveness of this? We collected data at 251 outlets, but using some sampling techniques and so on, we estimated the job aids had, in six months, reached about 500 of maybe 1,500 outlets in the district. We estimate the number of cases treated at about a half a million in that same period of time, and that the ones that were treated properly due to this intervention were about 82,000. The intervention didn't cost very much, not including technical assistance from here. If you were told to replicate this in another district, we estimate the cost, using local people and even some local consultants, at about ten cents per case of malaria properly treated.

We concluded that four in five outlets that received a shopkeeper job aid think they're useful to them, a third are using them spontaneously, nearly half the outlets are displaying them properly. Most importantly, outlets receiving the job aid were significantly more likely to provide correct anti-malarial treatment and information. It seems also that job aids had the most impact on the malaria knowledge of outlets with less education, just the people you want to reach.

Now on to the impact of improved job aids on malaria diagnosis in Malawi. We had a study in Malawi in Machinga district, and what we were interested in knowing was whether rapid malaria diagnostic tests could be performed correctly if job aids were added, or if instructional inserts were improved, I should say.

What are rapid malarial diagnostic tests? They are a new type of test equivalent to a pregnancy test. You can take some blood from someone, put it on a little strip, insert it in a vial, add some reagent, shake it around, wait ten minutes, add something else, and then you can read right off the strip if someone has malaria. That's quite an improvement over microscopy. It is also an improvement over just going by symptoms alone, but it does have a cost.

The main advantages are that the tests do not require specialized training, they have high sensitivity and specificity, and give results in ten minutes. So that's the product; what we were interested in knowing is how can we make it easy for people to follow all the steps properly. Right now they're just asking someone, does the child have a fever and they're just using that. There is no cost of a current medical diagnosis of malaria. If you insert a product like this into a situation and people don't follow it correctly, it's costly but you're not getting much benefit out of it, so it's important that they do it correctly.

So the objective was to investigate whether improvements made to the job aids or to the instructional inserts that are inside the boxes accompanying these would significantly improve performance.

This was the methodology employed: Structured observation of providers using these products, diagnostic tests with the original job aids that were in the product, followed by interviews with providers. Then, first revision of these,

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using a local artist, then another round of structured observation, more interviews, looking at how these products are being used and what errors are occurring. Second, revision of the job aid, and now structured observation of a new set of providers with the second, revised job aids. That was the process.

Now, I'm just going to show you two sections of the job aid. Unfortunately it's a little blurry so I'll come off the stage and try to show you some key issues, so you can see the difference in the job aid, just a simple job aid. This is the original and it's very hard to see, but these are the first three steps. It says remove the fast malaria strip from the package, label the strip with the patient number, and place the reaction tube in the reaction stand and add four drops of sample buffer, and there's a little picture right there. A lot of errors occurred trying to get through those steps, interestingly enough.

This was the second revised product. First, you must wear gloves to perform this test, don't just assume they're going to do that, understand that they need to do that. Then, showing them in the second step how to open the pouch. They had this thing and they were saying, well, what do you do with it, how do you even open it? Here it is, that's how to open it and then how to roll it back up so that moisture doesn't leak out and all the rest of them dry up. Lastly, remember on the original, it said label the test strip with patient identification number. Here you write, I think in pen, the name and their patient identification number on the strip and it shows you where to do it and how. This is very important, because these are little, tiny strips, how does somebody know how to even use these things, a brand new product. So those are some of the revisions.

How to interpret the results? This is a key issue. If you interpret wrongly, what's the point of the test? This was the original saying, if there's no line it's indeterminate, one line, negative, two lines positive. Seems pretty straightforward. You know what the problem was—this isn't how the strip looked. I know it seems so basic, but... here's the revised one. Those are the strips, that's how they actually looked. They've got these little raised pieces and so on and so forth and then you can see, that's where the line is, the control line, and that line over there, that's the test line or else it's invalid, you have to try it again. This indeterminate was really unclear, what does that mean, indeterminate, invalid means it didn't work, try it again, and so a better explanation of that and so on and so forth.

This gives you a flavor of some of the revisions that were made, working closely with the providers every step of the way. And these were people who understood English well, so language wasn't the problem. You saw the results a little bit earlier, but we'll see them again. On the original job aid, 15 percent used it without error. With the revised job aid, 80 percent could now use the rapid test without error—pretty dramatic change.

So what do we conclude? That these improved job aids and instructional inserts to accompany a new product can dramatically increase the likelihood that the products are going to be used properly without training, because training for everyone in this new product is probably not going to happen. Several iterations of revisions are necessary. You have to just keep working with them, until you think you've sorted most of this stuff out. And lastly, inserting well-marked pictures at the key steps, where they saw errors being made. Those were the places they put the pictures, and that seemed to reduce errors.