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MotherCare™ Matters

A Quarterly Newsletter and Literature Review on Maternal and Neonatal Health and Nutrition

Improving Provider Performance—An Exploration of the Literature

Dr. Joe Taylor with a midwife during a supervision visit, Ghana.

Introduction

This issue of *MotherCare Matters* gives an overview of the literature and reports of projects focused on improving the performance of health care providers. It covers a wide range of interventions that have been implemented in developed countries and resource-poor settings, with a major emphasis on maternal health and family planning. Studies that evaluated providers' performance upon completion of training, as well as after they had returned to their practice settings are emphasized; interventions implemented by MotherCare are highlighted. Most of the interventions included in this report were studied using experimental or quasi-experimental research designs and have been categorized according to whether they *predispose*, *enable*, or *reinforce* change. Many of the findings are consistent with Continuous Quality Improvement, Total Quality Management,[1] and recommendations from the meeting on Improving Provider Performance,* which emphasize a systems approach to designing, improving, and maintaining high quality services. Key lessons that emerged from this review, include:

- The most effective interventions are based on and tailored to local needs/problems.[2] To assure maximum impact, needs assessments should identify the etiology of problems, relevant cultural considerations, and potential barriers to change.
- Multi-disciplinary and multi-faceted approaches are the most effective means of presenting new information and assuring that it is incorporated into practice—training may be necessary but is not sufficient.[3]
- Effectiveness and sustainability can be best ensured by strategies that create or strengthen work environments that are supportive of change[4], and that involve all levels of the hierarchy in planning and implementation. Training all cadres and levels of staff together, within a given facility, can help assure such support.
- Maintaining improvements in quality requires follow up through regular monitoring and evaluation and other reinforcing activities such as meetings, feedback, and continuing education.[5]

—Edna Jonas,
Consultant to MotherCare

*see enclosed Policy Brief 3

Findings from the Review

The implementation of interventions to change provider practices involves two stages, primary dissemination of a common body of information to as many health professionals as possible and secondary strategies that enable and/or reinforce changes in the practice setting. An earlier, pre-intervention phase that involves identification of expressed and perceived needs of providers, the practice setting, and patients, is essential to designing effective interventions.[6]

Individuals and institutions generally resist change and their behavior tends to return to the *status quo*. This may be due to a lack of information about the effect of current practices and procedures, stress associated with change, and perceived challenges to decision-making power which are posed by the introduction of new practices. Unless practitioners at all levels, supervisors, and program administrators are involved in decision-making and the introduction of new procedures, and their implementation is well-planned and accompanied by follow-up motivational interventions and reminders, changes may not be sustained.[7]

In their reviews of interventions to improve provider practice in developed countries, the National Health Service (NHS) Centre for Reviews and Dissemination (1999), Davis et al (1992) and Solomon et al (1998) grouped and analyzed various strategies using the PRECEDE system of classifying factors relevant to behavior change in health promotion. PRECEDE incorporates three types of factors that can either precipitate or inhibit behavior change—predisposing, enabling, and reinforcing.[8] This classification system has been adopted for categorizing the interventions reviewed for this issue of *MotherCare Matters*.

Predisposing Strategies

Predisposing factors provide motivation for change. They communicate or disseminate information focused on changing knowledge and attitudes.

Information Dissemination

The dissemination of educational materials, clinical practice guidelines and protocols, and feedback on clinical practice, via print media, didactic workshops, or seminars, without accompanying active dissemination interventions such as interactive training, direct feedback, or discussion, is ineffective in changing providers' performance.[9] On the other hand, in combination with more active strategies, information dissemination can be effective in improving the process and outcomes of care.[10]

Clinical Guidelines and Protocols

Clinical guidelines and protocols can be effective in improving practice and patient outcomes, if their introduction is accompanied by appropriate implementation or dissemination strategies, such as training and institutional support. They are most effective if tailored to local needs.[11] However, the literature is inconclusive as to whether they are more effective when developed locally than nationally.[12]

A study by Frigoletto (1995) on the use of guidelines for the management of labor by nurse midwives found significant differences in care practices between the group actively using the management protocol and the control groups. (The strategy used for dissemination/implementation was not identified.) In the active management group, the frequency of vaginal exams was significantly higher (mean interval 1.6 hours versus 2.5 hours, respectively), significantly more women received oxytocin to hasten labor (70 percent versus 56 percent, respectively), and significantly fewer women requested and received epidural anesthesia (54 percent versus 64 percent, respectively).[13]

A study by Seto et al (1991) compared the effectiveness of various implementation strategies—(i) guidelines, lectures, and opinion leaders; (ii) guidelines and opinion leaders only; and (iii) guidelines and lectures, in improving urinary catheter care provided by nurses. All three strategies led to improved care, with improvements greater for the groups exposed to the first two strategies. Due to a unit of analysis error, the researchers were not able to determine if the differences were statistically significant.[14]

An operations research project conducted by The Population Council in Egypt provides an example of the successful introduction of new clinical practice guidelines:

> In an effort to reduce the use of dilation and curettage under general anesthesia, improve family planning counseling for post-abortion patients, and increase providers' and women's knowledge of post-abortion complications, The Population Council assisted in developing and introducing a new clinical case management protocol in two teaching hospitals in Cairo, Egypt. The protocol featured vacuum aspiration, the use of local anesthesia, and counseling that included referral to family planning services and information on post-abortion care and potential complications.
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> The protocol was introduced through a six-day training of master trainers program for senior OB/GYN specialists that included lectures, demonstrations, and supervised practice, supplemented by modules on counseling. These master trainers were to then instruct junior colleagues individually, and provide supervision and follow up training. Nurses participated in a six-day course on post-hospitalization care, post-abortion family planning, and counseling techniques. This was followed by supervision and monitoring.
>
> A follow up assessment of all trainees conducted three months after the master training found improvements in post-abortion medical care and family planning counseling that could be attributed to the training, and that the proportion of cases treated with vacuum aspiration and local anesthesia had increased. However, physicians' knowledge in several key areas, including potential post-abortion health problems, remained inadequate.[15]

Guidelines have also been found effective in enabling role substitution, i.e., nurses and other health professionals providing services usually provided by physicians. In six randomized control trials, the care provided by nurses who followed the guidelines was compared to 'standard care', generally provided by a physician. All six studies that examined the processes of care and the five that examined outcomes, generally found no significant difference in the process or outcome of care between the two groups, or a positive effect in favor of the nurses.[16]

Competency-Based Training

Competency-based training that ensures trainees demonstrate mastery of skills and knowledge before being certified, is an effective means of introducing new guidelines and protocols, and has become the dominant mode of in-service training for family planning and maternal health practitioners.

Two-week, competency-based, in-service training courses focused on life savings skills for midwives have been implemented in Ghana, Indonesia, Uganda, and Vietnam by the American College of Nurse Midwives (in most cases with MotherCare). In-service competency-based training for physicians, nurses, and nurse auxiliaries, in maternal and neonatal care has also been implemented by MotherCare in Guatemala and Bolivia. The objectives of these MotherCare training programs were to improve: care provided to mothers and newborns; the way women and their families are treated (woman- or family-centered care); and the functioning of the medical "team" within a facility and from one level of care to another.

Recent evaluations of these courses conducted by MotherCare and other researchers found overall improvements in practice upon completion of training, as well as significant changes during follow up assessments conducted one to three years later. These programs combined training with enabling and reinforcing strategies, such as training teams of providers together and post-training follow up visits. The development of these training programs was also preceded by needs assessments. The Guatemala, Indonesia, and Bolivia programs serve as examples. (See Boxes 1, 2, and 3, pages 4-11.)

Competency-based training has also been successful in upgrading the skills of mid-level providers so they are able to perform procedures traditionally performed by physicians, as shown in the example from Mozambique. (Box 4, page 12.)

Lessons Learned About Competency-Based Training: Evaluations of the MotherCare training

programs and training conducted by JHPIEGO, PRIME, AVSC, and others have identified a number of factors that facilitate and/or hinder adoption and maintenance of new skills and quality of care.

- Findings from the evaluations of the MotherCare training programs and of a pre-service education program on emergency obstetric care for physicians in Bangladesh (Box 5, page 13), highlight the *importance of assuring that satisfactory levels of competence are attained during training,* particularly among providers who are delivering services alone and/or without regular, on-going supervision. These evaluations found that trainees who were not able to perform skills at an acceptable level upon completion of training, were often not able to properly use the skills and/or improve their competence over time.[22] These findings have particular relevance for rural midwives who generally work alone and in settings without on-going support and supervision. They also highlight the importance of assuring that trainees have sufficient clinical practice during training, and on-going supervision and support after they return to practice.
- The post-training evaluations by MotherCare in Bolivia and Indonesia highlight the *deficiencies of many pre-service education programs and the inability of short in-service training programs to make up for the gap*. (See Boxes 2 and 3.) What is clear is that the level of skills among "skilled birth attendants" is lower than is safe for safe motherhood, and that there is a need to learn "normal" birthing care as well as care for complications.

Box 1—Guatemala In-Service Training

In Guatemala, MotherCare identified the lack of professional obstetrical experience and/or specialized training of personnel as one cause of poor medical care. To address this and as part of the introduction of newly developed hospital protocols, the Project used a competency-based approach to train physicians, nurses and auxiliaries in interpersonal communication skills and the management of obstetric and neonatal complications. Objectives of the training were to improve (i) care for mothers and newborns; (ii) communication between women/families and providers; (iii) record keeping by the use of partographs by all providers; and (iv) functioning of the medical team within a facility.

Physicians from the health zones of Solola, Totonicapan, and San Marcos were trained at the hospital-based medical school in Quetzaltenango. Two physicians were trained each month from May 1997-May 1998 by a tutorial specialist in gynecology and obstetrics. Nurses (57) and auxiliaries (83) were trained in the hospitals where they worked by three obstetricians and two general practitioners with training in obstetric complications, starting in 1997. Two or three nurses and auxiliaries were trained each month.

Monthly follow-up visits by an obstetrician to augment the training began in February 1999. These visits were used to review themes covered during the training, as well as cases. An emphasis was placed on case management. A key outcome of these visits was strengthened working relationships between the providers.

A final evaluation was carried out in June 1999, between 13 to 25 months after training, to assess the knowledge, skills, and attitudes of a sample of the trained providers. Clinical skills were assessed using case scenarios and complication audits, and a level of confidence checklist. Other evaluation tools included a knowledge test and a level of satisfaction course review survey. The trained providers were differentiated into two groups, Trained 1, (Solola, Totonicapan, and San Marcos) and Trained 2 (Retalheleu and Suchitepequez) because only nurses and nurse auxiliaries were trained in these two hospitals and because the training program began later than in the other three hospitals of the Trained 1 group. Untrained providers from another health zone were used as a control group. In addition, interviews were conducted with hospital and nursing directors to determine their opinion of the training, use of partographs within the facility, their relationship with the Comadronas (traditional birth attendants),

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These findings underscore the importance of assuring that pre-service curricula and teaching methodologies are up-to-date and consistent with more recently developed in-service training programs. Much of the focus of development assistance is currently on in-service training. However, as recommended by the May 2000 MotherCare workshop on Improving Provider Performance in Safe Motherhood,[23] greater emphasis should be placed on pre-service education. The work by MotherCare in Bolivia, where medical school curricula have been updated, is an example of the type of efforts that will be required.

- Evaluation of the Ghana and Bolivia MotherCare LSS training programs found that *staff deployment practices and a shortage of adequately prepared trainers* contributed to diminished effectiveness of their programs and to improving and maintaining the quality of care within health facilities.

In *Ghana*, several trainees were transferred to new practice sites after beginning the course, and, therefore, had to interrupt their training. This had obvious detrimental effects for the trainees and the institutions in which they practiced. It also led to diminished effectiveness and cost-effectiveness of the training. Assuring that trainees remain in the same institution throughout training and for an adequate length of time afterwards can help ensure that providers acquire requisite skills and maximize the benefits and cost-effectiveness of training.

Another problem reported in Ghana, was that a number of the trainers were not highly proficient in the skills they were supposed to teach

Box 1—Guatemala In-Service Training *(continued)*

staff coverage with the monthly rotation through the maternity ward, the monthly follow-up visits by MotherCare, and strategies to promote sustainable continuing education in their institutions.

The evaluation found that the percent mean scores on the knowledge test did not differ among the three groups, Trained 1, Trained 2, and Untrained (74.6 percent, 75.0 percent and 70.6 percent, respectively). Overall, the knowledge test revealed good recognition of septic abortion, breech presentation, and postpartum endometritis, and good understanding of management of severe pre-eclampsia and lacerations, by all providers. However, calculation of Apgar scores, identification of lacerations as a cause of postpartum bleeding, management of premature rupture of membranes, regardless of gestational age, and thermal control of healthy low birthweight newborns, remained weak after training.

The skills' level of confidence evaluation looked at prenatal care, care during labor, newborn care, and postpartum care. This assessment found no differences in total confidence scores when the two trained groups were compared. Group 1, scored 81 percent and Group 2, 82 percent. However, both Groups 1 and 2 scored significantly higher than the Untrained providers, who scored 66 percent. There were variations between the facilities in levels of confidence in performing specific skills and in overall confidence scores, although the differences in the total scores and scores for most of the skills were not statistically significant.

The skills' application assessment found that the trained providers in Group 1 were significantly more capable of using a partograph and in managing a breech delivery and postpartum hemorrhage (three of the four skills assessed) than the Untrained providers. The mean percent scores for Group 1 were 82 percent, 46 percent, and 74 percent, respectively, compared 25 percent, 31 percent and 58 percent for the baseline. The trained providers also scored marginally, significantly higher in newborn resuscitation than the baseline, 57 percent versus 51 percent. However, skill levels for breech delivery and newborn resuscitation remained below the accepted level of competence even after training. (See Table 1, next page.)

Almost all the trained providers were able to describe a complication they had recently treated, including postpartum hemorrhage, breech delivery, severe pre-eclampsia, cephalopelvic disproportion, fetal

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and, thus, were not effective instructors. This, as well, undermines both the effectiveness and cost-effectiveness of training.[24] Adequate planning that includes training of trainers can help avoid this problem.

In *Bolivia*, the staffing of physicians and some nurses in health centers, particularly in the rural areas, relies on posting new medical and nursing graduates to these centers for one year of practicum experience. At the time of the course evaluation in 1999, only 108 of the 291 providers who had participated in the MotherCare training program were still working in facilities in the three MotherCare districts. Eighty one percent of the physicians, 61 percent of the nurses, and 56 percent of the auxiliaries had retired or moved. This indirect system of staffing causes continual turnover and undermines the benefits of competency-based in-service training in sustaining the quality of services within facilities.

- *Whole-Site Training* (WST)[25] is an approach that attempts to address the problems discussed above, through a holistic, systems approach. WST is a hybrid of predisposing, enabling, and reinforcing strategies. It was developed by AVSC International as a way of strengthening (i) integration of training and supervision, (ii) training follow up, (iii) application of newly acquired knowledge and skills in the workplace, (iv) capacity building at work sites, (v) selection of trainees, and (vi) the content and timing of training. WST also seeks to diminish the disruption of services at home work sites, which occurs when training is conducted centrally. It is a flexible program designed to meet local training needs and is comprised of six elements:

Box 1—Guatemala In-Service Training *(continued)*

distress, uterine inversion with shock, vaginal birth after cesarean, preterm labor with premature rupture of the membrane, and shoulder dystocia. They indicated that as a result of the training, they felt confident in their abilities to treat these severe complications. Nurses and auxiliaries also reported that as a result of the team concept fostered during the training, they were more confident in approaching physicians. The untrained providers reported having treated many of the same complications. However, particularly among the non-physicians in the group, they seemed to have been more passive observers and voiced a lack of confidence in their skills, especially in their ability to manage a depressed newborn.

Table 1—Absolute (percent) Mean Scores, Application of Skills by Training Status
MotherCare/Guatemala Training Evaluation, June 1999

Skill Category	Total Possible Points	Trained #1 N=22	Baseline N=24	P Value
Partograph	50	40.9 (82%)	12.3 (25%)	<0.001
Breech Delivery	24	11.0 (46%)	7.5 (31%)	0.01
Newborn Resuscitation	40	22.8 (57%)*	20.3 (51%)	0.05
Post-Partum Hemorrhage	28	20.6 (74%)	16.2 (58%)	0.005
Overall Score		**64%***	**41%**	**<0.001**

* N=21 for TRAINED #1 group

All respondents felt that the training had improved teamwork and appreciated the monthly follow-up visits. Some of the nurses felt that the doctors had greater confidence in them since the training. Nursing and hospital directors in the five hospitals agreed that the training led to changed attitudes towards improving the quality of care; more prompt identification and appropriate management of complications; improved teamwork and greater awareness of deficiencies in care; and recognition of the need to make changes. The lack of participation by the doctors in the training was the most frequently cited difficulty. For example, in hospitals where there are no trained doctors, the nurses cannot make the decision about whether to use the partograph, which they see as having a detrimental effect on their clinical practice.[17]

1. changing the role of supervisors so they play a major facilitative role, helping identify training needs, acting as motivators for change, and sometimes serving as trainers;
2. assessing site training needs and planning to meet them using COPE methodology (discussed below);
3. focusing on teams, not just individuals, including the role of providers at all levels of care;
4. tailoring the level of training to the needs of different employees—considering both training content and depth and including a mix of skills training, updates, and orientations;
5. expanding the locations where training is conducted—moving away from centralized courses, and training providers as service delivery teams at their work sites—an approach which could pose problems for LSS and other competency-based training, which require a minimum volume of patients to provide sufficient practice for trainees; and
6. building sustainable capacity through fostering self-sufficiency in problem identification and solution.

WST has been implemented in Tanzania, Bangladesh, Kenya, and Uganda. Formal evaluation of the approach is currently pending.

Local Opinion Leaders

Local opinion leaders and recognized leaders are in positions to serve as role models. Thus, they have the potential to be influential in promoting

Box 2—Indonesia In-Service Training

In three districts of South Kalimantan, Indonesia, MotherCare conducted in-service training, in Advanced Life Saving Skills (Advanced LSS) for128 midwives (Bidans) primarily from health centers, through a series of two-week courses between April-September 1996 and June-August 1997. In addition, 268 community-based midwives (Bidan di desas [BDD]) from three districts were trained in Basic LSS (using Healthy Mother and Newborn Care plus the LSS modules on hemorrhage and neonatal resuscitation). Both types of training were given at local hospitals in South Kalimantan that had been prepared with a site orientation to the protocols and curricula, and selected for the availability of adequate clinical experience for each trainee. Objectives of the training program were to improve (i) the care of mothers and newborns provided by Bidans and BDDs and (ii) the communication of Bidans and BDDs with women and their families. The training was augmented by a 3-day course on interpersonal communication skills and was supported by a program of on-going peer review and continuing education (PR/CE) by trained midwives of the local chapter of the Indonesian Midwifery Association.

As an alternative to establishing training centers in other districts of South Kalimantan that had insufficient volumes of deliveries for training purposes, MotherCare worked with the MOH to develop an LSS Internship Program for Bidan di desas in six hospitals. This program allows a BDD to fill gaps in her knowledge and skills by spending time (a month is recommended) in the hospital working under the guidance of a clinical instructor.

An evaluation of the trainees and interns was conducted in August 1999, between one and three years after they had completed training. Trainees' knowledge, confidence, and skill level in infection prevention, use of partographs, manual removal of placenta, bimanual compression of the uterus, and neonatal resuscitation, were compared with clinical instructors' (primarily hospital based) who had received the Advanced LSS training but had not participated in the PR/CE program, and untrained Bidans and BDDs (who served as the control). Competence was arbitrarily set at 70 percent or above for the knowledge test and skills assessment. Participants in the BDD internship program were also compared to BDD trainees who participated in the combined LSS & PR/CE program.

The evaluation found that significantly more trainees were competent in their knowledge, confidence,

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changed attitudes and professional practices. However, interventions that have used *local opinion leaders and recognized leaders/experts to disseminate information and to lead or conduct training* have had mixed effects on practice. Some studies have found significant improvements in the quality of care following training. However, many of the published studies did not provide sufficient information on how the leaders/experts were used or whether their use had been combined with other strategies. The reports also did not identify the factors that had contributed to effectiveness or ineffectiveness.[26] Individual training programs that were reviewed for this report did not assess this strategy.

Outreach Visits

Outreach visits are conducted by trained professionals to providers (physicians and other health professionals) in their practice settings for the purpose of disseminating various types of information, such as practice guidelines. They have been used most commonly to affect prescribing practices and the provision of preventive services such as counseling for smoking cessation. In some cases, visits have been combined with printed reminders about specific practices or audit and feedback. Studies of these interventions have found visits to be effective in reducing inappropriate prescribing and in increasing the provision of preventive health services, especially services that utilize health education and counseling. A review of 18 trials that used random or quasi-random study designs, by Thomson O'Brien et al (1999), found outreach visits to be particularly promising in changing prescribing practices, when combined with social marketing. However, the researchers also concluded that further research is needed to assess the effectiveness of outreach visits for other types of health care ser-

Box 2—Indonesia In-Service Training *(continued)*

and ability to perform manual removal of the placenta and neonatal resuscitation and in using the partograph, than untrained Bidans and BDDs. Bidans and BDDs who received the training scored higher on the knowledge test and in all five skills than those not trained. (See Table 2, below.) Clear differences between the trained and untrained groups were also seen in their descriptions of managing complicated cases.

Trained Bidans compared to untrained and Clinical Instructor Bidans: Trained Bidans scored significantly higher on the knowledge test and were significantly more confident than the untrained Bidans. Mean scores on the knowledge test were 63 percent and 48 percent, respectively, and overall confidence scores were 59 percent and 47 percent, respectively. Overall knowledge scores of the trained Bidans did not differ from those of the clinical instructor Bidans, but the confidence scores of trained Bidans were significantly higher, 59 percent versus 53 percent for instructors. Trained Bidans also scored significantly higher on the performance assessments for all five skills, than untrained Bidans, but had virtually the same average score as the clinical instructors. However, acceptable levels of competence were not achieved by the majority of trained Bidans and clinical instructors. Only 46

Table 2—Percentage of LSS Trained and Untrained Bidans with Scores ≥ 70% in Knowledge Test and Skill Assessments
MotherCare/Indonesia Training Evaluation, August 1999

Category	Trained N=33	Untrained N=24	P Value
Knowledge Test	27%	4%	0.03
Skill Assessments			
Infection prevention	39%	17%	0.12
Manual removal of placenta	100%	33%	<0.001
Bimanual compression	12%	0%	0.13
Neonatal resuscitation	39%	0%	0.001
Partograph	61%	25%	0.02
Average score for five skills	**46%**	**0%**	**<0.001**

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percent of trained Bidans and 48 percent of clinical instructors scored at least 70 percent (minimum competency) in performing all five skills, and none of the untrained Bidans scored 70 percent for all five.

Trained compared to untrained Bidan di desas: Trained BDDs scored significantly higher on the knowledge test than untrained BDDs, 65 percent versus 59 percent. Trained BDDs also scored significantly higher in performing all five skills than untrained BDDs, with scores of 71 percent and 51 percent, respectively. (See Table 3, below.) However, only 67 percent of the trained BDDs and 6 percent of the untrained BDDs scored at least 70 percent for all five skills (competency). There was no difference in the overall level of confidence scores between the two groups.

Trained BDDs compared to Intern BDDs: The trained BDDs had statistically higher average skill assessment scores than the interns, and more trained BDDs achieved skill scores of at least 70 percent (67 percent vs 25 percent, respectively). (See table below.) This may reflect the greater scope and depth of the LSS training program and its emphasis on developing problem-solving skills. Nonetheless, the scores of trained BDDs were still barely acceptable. Average scores were 71 percent for the trained BDDs and 62 percent for the interns. The overall mean knowledge scores of the two groups (65 percent and 62 percent, respectively) and confidence levels (62 percent and 65 percent, respectively) were not significantly different.

While the trainees who received the Basic and Advanced LSS training and participated in the follow up PR/CE programs scored higher than untrained Bidans and BDDs and the BDDs who participated only in the Internship program, the level of competence of the trainees was still inadequate, overall. This raises questions about their level of knowledge and skill prior to in-service training, and the adequacy of a short in-service training program, with follow-up supervision provided by the PR/CE Program, to meet their needs.[18]

Table 3—Absolute and percent mean skill assessment scores for LSS trained and untrained Bidan di desa
MotherCare/Guatemala Training Evaluation, June 1999[19]

Skill Category	Total Points	Trained N=33	Untrained N=47	P Value
Infection Prevention	**54**	**42.7 (79%)**	**37.6 (69%)**	**0.01**
Decontamination	18	12.4 (69%)	11.2 (62%)	0.18
Cleaning	14	12.6 (90%)	10.4 (74%)	<0.001
Steaming	22	17.7 (81%)	15.9 (72%)	0.04
Manual removal of placenta	**62**	**57.6 (93%)**	**36.3 (59%)**	**<0.001**
Interpersonal communication	6	6.0 (99%)	5.2 (87%)	<0.001
Steps	40	36.4 (91%)	21.3 (53%)	<0.001
Care after	16	15.2 (95%)	9.9 (62%)	<0.001
Bimanual compression	**64**	**26.6 (42%)**	**17.3 (27%)**	**<0.001**
Interpersonal communication	6	3.1 (52%)	2.5 (42%)	0.02
Steps before	10	3.6 (36%)	1.8 (18%)	<0.001
External	8	4.1 (51%)	3.4 (43%)	0.003
Internal	24	11.2 (47%)	7.3 (30%)	<0.001
Care after	16	4.7 (29%)	2.3 (15%)	<0.001
Neonatal resuscitation	**42**	**28.4 (67%)**	**13.4 (32%)**	**<0.001**
Full	32	24.9 (78%)	12.6 (39%)	<0.001
Breathing only	4	2.2 (54%)	0.7 (19%)	<0.001
Stimulation only	6	1.3 (22%)	0.1 (2%)	<0.001
Partograph	**37**	**28.2 (76%)**	**24.6 (66%)**	**0.03**
Completion	20	18.5 (92%)	15.5 (78%)	0.002
Interpretation & Management	17	9.7 (57%)	9.1 (53%)	0.25
Average for 5 Skills		**71%**	**51%**	**<0.001**

vices, such as maternal and newborn care, and to identify the factors that lead to success.[27]

Enabling Interventions and Strategies

Enabling factors provide the needed support/environment for change to take place, and usually include resources, facilities, and skills.[28]

Supportive Supervision

Managers, policy makers, supervisors, and physicians have key roles to play in creating an atmosphere that supports the adoption of newly acquired skills and assures the sustainability of improvements in the quality of care.[29] Indeed, trainees have sited the lack of such support as a reason for not using newly acquired skills, as shown in the following example from Nepal.

- In Nepal, JHPIEGO developed a comprehensive, standardized family planning course for family planning service providers, in collaboration with Nepal's National Health Training Center, the Family Health Division, and USAID/Nepal, in 1993. The course consolidated and replaced a number of separate method- or topic-specific courses, and sought to (i) provide health workers with the full range of essential family planning information and skills necessary to improve the quality of services; (ii) standardize training; and (iii) improve training effectiveness and efficiency by introducing competency-based, humanistic training techniques. The course was offered through two-week (12-day), competency-based sessions and included: counseling, client assessment, infection prevention, oral contraceptives, barrier methods, DMPA, STD and

Box 3—Bolivia In-Service Training

In Bolivia, the focus of the MotherCare in-service education program was on improving (i) the quality of care provided to mothers and newborns by health providers, (ii) communication between women/their families and health providers, (iii) record keeping, and (iv) the functioning of the medical team within a facility and from one level of care to another. Trainers were selected from among the physicians (obstetricians and neonatologists) and nurses who worked in the two training centers in La Paz and Cochabamba and had participated in a TOT course in 1996. Each of the four-week competency-based courses included physicians, nurses, and auxiliaries working in the health posts, health centers, and hospitals in the MotherCare districts. These courses were part of the introduction of new maternal and newborn care protocols and utilized adult learning techniques—case studies and discussions rather than lectures. A total of 291 participants were trained in 12 courses during 1997-98. Following completion of the courses, in May 1998, follow-up support visits were made by MotherCare/Bolivia staff to all of the hospitals, half of the health centers, and one-quarter of the health posts.

The final evaluation was conducted at a central location in January 1999, one to two years after completion of the course. The assessment used a convenience sample of 17 trained providers and a sample of 11 untrained providers from non-MotherCare districts who had not received any maternal/child health training in the past three years. The final evaluation tools included a knowledge test, level of confidence skill assessment, complication audit, and individual interviews with the trained providers. The teams being evaluated worked together on the clinical skills/case scenario portion of the assessment. Assessment scores for those who had received follow up visits by MotherCare were not separately identified or compared with the other trainees'.

Although overall scores on the knowledge test and skills confidence checklist were higher among trained providers, the differences were not significant. Mean knowledge scores were 70 percent and 60 percent, and mean confidence scores were 79 percent and 69 percent, for the trained and untrained providers, respectively. Less than 50 percent of the providers in both groups had acceptable knowledge levels (70%) in a number of key skill areas, such as calculating an APGAR score, describing the key features in managing a breech delivery, or identifying three common causes of fetal demise. Even after the

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HIV/AIDS prevention, and organization and management of family planning services.

Between 1993 and 1995, three training skills courses were held for approximately 15 trainers, each. These trainers included staff nurses and public health nurses based at District or Regional Health Offices or regional training centers. These trainers trained nearly 800 paramedical and health post staff in the two years following their training.

Three years later the knowledge and skills of the providers who had been trained through the program were evaluated. A key problem reported by the trainees was that the content of the training often differed from their pre-service curriculum and, thus, confused them. They also reported that their supervisors did not support adoption of their new skills. This may be due to the fact that the supervisors had not participated in the course, and therefore, may not have understood or agreed with the new skills taught. This was cited by the evaluators as a possible reason for noncompliance with new infection prevention protocols. The trainees also reported that the lack of follow up after training impeded their effectiveness.[30]

- Training different cadres of providers from the same institution together as a team is one way of overcoming these barriers. Providers trained by MotherCare in Guatemala reported that they did not use partographs because the physicians in their home institutions who had not participated in the training, did not 'believe in' or support their use. In contrast, nurses and auxiliaries in Guatemala who practiced in institutions where physicians had been included in the MotherCare training, reported

Box 3—Bolivia In-Service Training *(continued)*

in-service training, more than 50 percent of the providers did not feel confident in performing important skills, such as a vaginal exam to size the uterus, managing a woman who was bleeding after 28 weeks gestation, or filling out a partograph.

Mean scores for the clinical skill assessments were statistically higher among the trained providers. This held true for the overall mean score for all four clinical skills, prenatal care and risk assessment, intrapartum care and use of the partograph, immediate newborn care, and management of postpartum hemorrhage (64 percent for trained versus 48 percent for untrained providers). However, mean scores for both groups were well below 70 percent for each skill addressed, the acceptable level of competence, reflecting inadequacies in the basic pre-service educational programs for the providers and the inability of short in-service training programs to bridge the knowledge and skill gap. Providers also reported that the partograph was generally unavailable and, thus, rarely used.

These problems highlight the importance on incorporating the updated curricula into pre-service education and the need for continuing support from all levels to implement new policies. This is being addressed among the physicians through the inclusion of the in-service training curriculum in the pre-service education curriculum of two university-based medical schools.

The course also led to other significant outcomes. Many nurse auxiliaries reported that following the training, they no longer felt they were the object of discrimination by physicians. They felt more comfortable participating in discussions and offering solutions to problems and more confident in counseling and prioritizing certain interventions with recent medical graduates and others new to their institutions. Communication skills had been strengthened by placing a strong emphasis on a client- and family-centered approach to providing services and by integrating interpersonal communication and counseling with the clinical skills components of the course.

The trainees commented on the pros and cons of training the various cadre of providers together, reporting that it had enhanced their interpersonal communication, but was disruptive during technical lectures because of differing levels of basic knowledge. Providers reported that the least useful parts of the course pertained to skills that they had little opportunity to use in practice.[20]

feeling very positive about their ability to apply new skills and knowledge.[31] Follow up of the MotherCare/Bolivia program that trained auxiliaries, nurses, and physicians together, found that it had had a positive effect on the way the medical teams worked together. [32] Whole-site training also appears to be a promising approach for assuring the necessary support and follow up.

A *minimum caseload and sufficient practice* are essential to assuring that providers are able to fully adopt and maintain newly acquired skills. Findings from post-training assessments conducted in Kenya and Peru suggest that adequate opportunity to practice new skills/a minimum regular caseload may even have a greater effect on skill retention than length of time since training.

- Follow-up assessments of MotherCare training in Bolivia, Guatemala, and Indonesia found that the providers who had little or no opportunity to utilize their new skills experienced declines in their levels of competency.[33]
- A post-training assessment of family planning providers conducted by JHPIEGO in Kenya examined whether providers were using the skills they had learned and whether the length of time following training was related to skill retention. Two groups of providers were evaluated. One group had completed training in protocols for receiving clients, counseling, physical exams, IUD insertion, infection prevention, and final activities, such as concluding observations, information recording, and communication skills, three months before the follow up. The second group had received the same training one year earlier. When directly observed during the assessment, both cohorts exhibited the same number of errors.

Box 4—Mozambique: Medical Assistants Perform Surgery

Following the civil war that began after independence in 1975 and an exodus of more than 85 percent of the country's physicians, Mozambique experienced a shortage of physicians to perform surgical and emergency procedures, including cesarean sections, in rural areas of the country. This led to the creation of a new cadre of providers in the early 1980s, *tecnicos de cirugia* (assistant medical officers with surgical skills). Mid-level professionals who had attained a level corresponding to medical assistant and had three or more years of professional experience in rural areas, were given the opportunity to participate in three-year training courses to upgrade their skills, using a curriculum approved by the Ministry of Health.

Training programs began in 1984, 1987, 1994, and 1996. The first two years of each course were devoted to lectures and practicums at Maputo Central Hospital. Lectures were delivered by specialists with several years of clinical experience and various departments of the hospital, including obstetrics/gynecology and surgery, were involved in the theoretical and practical sessions. All students participated in a 12-hour emergency service twice a week. The third year was an internship in a provincial hospital under the direct supervision of a surgeon. Students' progress was evaluated after three months and subsequently at six month intervals.

At the time the study was published, it was anticipated there would be a total of 46 graduates by the end of 1999. Three workshops organized since 1989 found that the upgraded personnel were performing well. A follow-up assessment of 14 assistant medical officers was conducted throughout 1995. The tecnicos performed a total of 10,258 surgical procedures, including obstetric hysterectomy. Seventy percent of the procedures were performed for emergencies, and 26 percent of the emergency procedures were dilation and curettage of the uterus. Complication rates were low, occurring in 377 cases, and postoperative mortality was approximately 0.4 percent for emergencies and 0.1 percent for elective procedures. A comparison of 1,000 cesarean sections conducted by the medical assistants indicated that the only significant difference in outcomes concerned more frequent superficial wound separation among the medical assistant group. A more extensive evaluation and follow up were in process at the time this report was published.[21]

However, within both cohorts, the providers who were not providing services at the time of the evaluation had twice the error rate of those who were.[34]

- 101 primary care technicians in Peru were trained by PRIME through 5-day workshops that used participatory adult education techniques to teach an integrated reproductive health curriculum, including family planning and management of obstetric emergencies. At the time of the one-year follow up assessment, trainees' test scores were higher than their post-test scores upon completion of training. However, when analyzed by training theme, retention was lower for emergency obstetrics, in comparison to other areas. This was thought to be due to either poor management of the theme during training or the small number of emergency cases the technicians saw in practice.[35]

Introducing New Policies

New policies can be an effective means of introducing and assuring change in clinical practices and improving patient outcomes. To assure that changes are accepted and properly implemented, certain pre-conditions must be met and their introduction should be accompanied by supportive interventions, such as:

- providers and administrators being given adequate rationale and shown the evidence base for the new policy (information dissemination);
- early and continued commitment and involvement by district, hospital, and other key administrators and providers in planning for the changes, implementation, and monitoring results;
- demonstration of new practices by an experienced team of trainers (using opinion leaders and recognized experts); and
- adequate opportunity for providers to develop clinical competencies, using a team-based and competency-based approach [to training].[36]

Examples of the effect of new national and institutional policies from programs in Ghana, Ukraine, and Ecuador are provided in Boxes 6, 7, and 8, respectively, pages 16-18.

Box 5—Pre-Service EOC Training in Bangladesh

To address the shortage of physicians with adequate training and experience in Emergency Obstetric Care (EOC) in Thana Health Centres (THC), the Government of Bangladesh introduced a six-month course on EOC at the government medical colleges. The goal was to have one physician trained in EOC in each THC. A follow-up survey was conducted in three district hospitals and three THCs in two of the five divisions of Bangladesh that were randomly selected. Structured interviews were conducted with the physician responsible for obstetric care in each facility to collect data on key variables related to EOC functions and facilities.

All physicians in the district hospitals who provided obstetric care and all physicians in the THCs answered questions on her or his training, self-perceived skill levels at the time they finished their medical training and at the time of the interview, and what actions they would take to treat patients with specific signs and symptoms. Their self-perceived skill levels were compatible with the clinical decisions they reported they would make about patient treatment.

Changes in the skill levels of physicians in the district hospitals and THCs between the time of leaving their medical training and the interview depended largely on the level of skill they had achieved by the time they left training. Among those who had not had an opportunity to observe or had only observed procedures during training, and those who perceived that they had needed either assistance or close supervision, 28 percent and 65 percent improved their skill level to full competence at the time of the interview, respectively. Among these groups the skill level of some physicians also dropped. In contrast, almost all of the physicians who had needed only indirect supervision at the time they completed training had improved their skill levels to full competence.

Problem Solving

Empowering providers and program administrators to identify and solve problems can be an effective means of creating an environment of quality and assuring the sustainability of improvements. *COPE* methodology, developed by AVSC International, and the *Performance Improvement Approach* developed by PRIME, are promising examples.

- *COPE (Client-Oriented, Provider Effective)* is a self assessment tool that was developed by AVSC International for local service providers so they could identify problems that impact the quality of services. COPE exercises are designed to be conducted over a 3-day period by a COPE facilitator and staff members at the service site, and involve:

  1. Self-assessment using a checklist that includes topics such as quality of medical and nursing services, community involvement, staffing, administration, and client counseling;
  2. Interviews with 10 clients using a brief structured questionnaire;
  3. Client-flow analysis;
  4. Development of a plan of action that summarizes and is based on the assessment and interview results, including training needs; and
  5. When possible, a return visit by the facilitator after six months for an additional review.[37]

  AVSC conducted a follow up assessment of COPE in 1991 at 11 sites in Ghana, Kenya, Nigeria, and Uganda, from 5 to 15 months after it had been introduced. The evaluators found that the process of identifying difficulties to be addressed by staff within a specified time period had motivated staff to change conditions that may have existed for a long time. The written COPE report served as a reminder to the administration of clinic needs. The evaluators also found that problems associated with infection prevention had been solved and there was a new commitment to seeing high-risk women when they arrived, rather than the old practice of booking them for appointments the following day.

  The proportion of solvable problems that had been solved by the time of follow up varied greatly by site, ranging from one-third to over three-quarters. The most important reason for the disparity between sites appeared to be the level of dedication of the service providers and the interest, cooperation, and involvement of the administration. Most of the problems that service providers reported could not be solved by COPE required funding that was not available.[38]

- **PRIME's *Performance Improvement (PI) Approach***[39] involves a step-by-step analysis of performance problems and design of a system that ensures good performance. The PI Approach allows one to gain an understanding of the factors affecting organizational and worker performance, diagnose which factors are not operating well, and determine a set of actions to address those factors. It is based on the philosophy that people need the following conditions to perform well:

  - information in the form of clear job expectations and clear and immediate performance feedback;
  - an enabling physical environment, including proper tools;
  - incentives and motivation, occasionally, but not always, involving money;
  - organizational support through strategic direction, leadership, communication, and well thought out job roles and responsibilities; and
  - skills and knowledge about how to do one's job.

  The PI process involves collecting information on three linked levels:

  1. **Sector Level**: the policy and economic environment and larger system the organization works within;
  2. **Organization Level**: the organization's goals, how people are organized, the value placed on provider performance and quality, how quality is measured, performance standards that exist, and how work is done; and

3. **Worker Level**: specific tasks and outputs expected of the worker; capacity of the worker to perform, including: willingness, necessary understanding and skills, ability to determine when to perform, knowledge of adequate and appropriate standards; receipt of feedback; and a balance of consequences that don't focus on the negative.

The PI process is organized into five stages, including:

1. **Initial consultation/project agreement**: Clients, stakeholders, and the PI practitioner meet, agree on desired outcomes and discuss how the activity's goals fit with the organization and its objectives.
2. **Performance analysis/needs assessment**: The team defines the desired performance, current level of performance, and the gap. Five performance factors are analyzed, including (i) knowledge and skills, (ii) information (job expectations and performance feedback), (iii) incentives and motivation, (iv) organizational support, and (v) environment. For each gap, the root causes and possible interventions are identified, and a cost-benefit analysis is conducted.
3. **Design of the interventions**: Performance needs are prioritized and experts are consulted.
4. **Implementation**: The intervention is initiated and monitored for factors that my affect implementation, such as leadership support, organizational readiness, and the external environment.
5. **Evaluation**: Changes in the performance gap are measured. A method of evaluation is selected, used, and remains in the workplace as a feedback tool for workers and managers.

Three PI Projects have been implemented, in Burkina Faso, India, and the Dominican Republic:

- The Burkina Faso PI Project was initiated in 1998 to strengthen the performance of community-based distribution (CBD) workers, as part of initiation of a new CBD program in the Leo District. The assessment revealed that multiple and often unrealistic expectations of CBD workers needed to be resolved before other performance improvements could be implemented. Issues needing resolution included, the lack of incentives and easily accessible contraceptives and other necessary supplies. The project is currently being evaluated.[40]
- In early 1999 PRIME began assessing the performance needs of the Indigenous System of Medicine Practitioners (ISMP), who provide most of the curative health services in rural Uttar Pradesh, India. The assessment revealed that the ISMPs needed improved skills in family planning counseling and identifying opportunities for counseling, and incentives to provide counseling, for which they were not allowed to charge a fee. Working with the medicinal supply chain, PRIME developed a system by which ISMPs can easily obtain a reliable supply of commercial-quality contraceptives and sell them at a profit. It is believed that the profit-motive will provide a self-sustaining incentive to perform FP counseling. To make it easier to refer their clients for hospital-based family planning methods, referral linkages are being strengthened. Evaluation of this project is pending.[41]
- Beginning in June 1998, PRIME assisted the reproductive health program of the Dominican Social Security Institute (IDSS) (Dominican Republic) to improve quality and access to reproductive health services. Following the needs assessment and analysis, the following interventions were implemented: improvement in the family planning logistics management system, feedback mechanisms, a supervision plan focused on quality of care, the development of guidelines for reproductive health services and key educational materials, and strengthening of the health information system. An initial evaluation completed in 1999 found that provider performance had improved significantly over baseline levels in areas where the full package of interventions had been applied. In areas where sim-

ple interventions were applied, performance had not increased significantly. This may because the type of interventions implemented (e.g., a feedback system) may take longer to affect performance. In follow-up interviews, local participants reported that they had found the PI approach useful. The IDSS plans to expand the interventions nation-wide.[42]

Reinforcing Factors and Strategies

Reinforcing strategies encourage change through rewards or incentives, including positive feedback.[43]

Provider Motivation

Provider Motivation has a strong influence on the provision of high quality care. Many factors have been found essential to improving and maintaining motivation, including recognition, respect, and reward. Interventions that enhance communication and respect between different cadres of providers and promote positive team working relationships can also increase providers' confidence and motivation. The MotherCare/Bolvia program that trained different cadres of providers together reported improved intra-team communications and a greater sense of self-respect among the various levels of providers.

Remuneration has been shown to have a major impact on worker motivation. A study of the effect of increased remuneration on motivation within the context of health sector reform in Zimbabwe, conducted by the Partnership for Health Reform, found that within that setting, remuneration was the key factor affecting worker motivation. It also found that factors such as job security, the work itself, training, advancement opportunities, supervision, and recognition, even if present, were not effective in improving worker motivation when the level of remuneration was perceived to be unsatisfactory. This study revealed that a long and deliberate process is necessary to gain support for, plan, and

Box 6—Ghana: Permitting Midwives to Manage Post-Abortion Complications

In an effort to reduce the rate of post-abortion complications in Ghana, the MOH changed its policy of allowing only physicians in district hospitals to perform abortion-related services. A new policy that brought care closer to women by allowing midwives in peripheral health facilities to provide the services was introduced in 1996. To assess the impact of this new policy, its introduction was accompanied by an operations research project carried out by Ipas, with the support of MotherCare.

Implementation of the policy was initiated through competency-based training in post-abortion care (PAC) for 40 midwives from private clinics, maternity homes, and district hospitals, along with 4 physicians from district hospitals in 2 districts. This training was followed by monitoring and support visits and refresher training between May 1996 and May 1997. Two districts that did not receive the intervention served as the comparison group.

Evaluations were conducted in February 1997 and July 1998, and included assessment of the knowledge and skills of the midwives and interviews with women who had been PAC patients. As a result of the new policy and training, 43 percent of the women who received PAC services in the two intervention districts between July 1996 and July 1998, were treated at maternity homes, 24 percent at health centers, and 33 percent at district hospitals. Midwives provided complete care for 99.5 percent of the women treated in the maternity homes and health centers and 37 percent of the care in hospitals.

During the evaluation period, no post-service complications were detected among women who had been treated by the trained midwives, and no manual vacuum aspiration services were provided by midwives in the two control areas. Over 90 percent of women treated in maternity homes received family planning counseling and 55 percent received a family planning method with their treatment. In health centers, more than 75 percent of women treated received counseling and 70 percent received a family planning method. Among women treated in district hospitals, 80 percent received counseling, but only 35 percent a family planning method. A skill assessment of the trained midwives and physicians two years after training found that their skill levels remained high.[44]

Box 7—Introducing Family-Centered Maternity Care in Ukraine

MotherCare worked with the Ministries of Health in Russia, Moldova, and Ukraine to improve the quality of reproductive, maternal, and newborn health services by introducing Family Centered Maternity Care (FCMC). Findings from baseline research indicated that modest changes to the physical infrastructure of maternity services were needed, but that significant changes were needed in provider-client interactions and sensitivities. A description of MotherCare's work in Ukraine is provided as an example.

An initial needs assessment indicated that the maternity care practices in use were outdated and ineffective. Antiquated sanitary regulations that impeded every aspect of Family Centered Maternity Care were mandated by the Ukranian Ministry of Health.[45] MotherCare, thus, had to convince experienced providers and policy makers that change was needed and that FCMC was a useful model to implement. An abundance of compelling evidence on the effectiveness of FCMC drawn from the Cochrane Library and a recent successful experience in Ukraine with rooming-in facilitated the acceptance and initiation of FCMC.

The introduction of FCMC was carefully planned and implemented. After attending a lecture on FCMC, an obstetrician requested a demonstration at his hospital. Following the demonstration that was guided by a certified nurse-midwife consultant, a multi-disciplinary technical working group (TWG) was convened to give every discipline and administrative level a voice in the process, develop support, and facilitate implementation at all levels of care. The TWG was responsible for the overall plan, technical support, implementation, evaluation and continuation of FCMC. A two-week evidence-based/competency-based Training of Trainers (TOT) curriculum was developed in collaboration with the TWG.

The TOT included one week of theoretical preparation and one week of clinical training, including 24-hour coverage. A continuous quality assurance FCMC monitoring system was developed for implementation during the clinical week. The first TOT was conducted in May 1996 for a multi-disciplinary team of four midwives, one obstetrician, and one neonatologist. The MotherCare training team included two certified nurse-midwives and one obstetrician.

Subsequent to the training, each site implemented its own "action plan" to create a model FCMC program. Since March 1997, FCMC has been offered as part of the maternity care services at the Odessa Regional Maternity Center and the Donetsk Regional Center for Mother and Child Care. Site visits in September 1997, evaluated implementation and provided technical assistance for the monitoring system. Since the site visit, the system has been monitored through regular data collection. An Advanced FCMC seminar focused on incorporating FCMC into advanced obstetrical care and the appropriate use of technology was recommended. The Advanced Seminar was held in the summer of 1998 for the core trainers and other selected participants.

Adoption of FCMC and its implementation varied between institutions. The Donetsk Center included a moderate risk group of women in FCMC. Between September 19997-March 1998, 188 women participated. The cesarean section rate for this group was 11 percent, compared to an institutional rate of 20 percent. The Odessa Center used lower risk criteria for inclusion. During the same period, 164 women participated. The cesarean section rate for this group was 3 percent, compared to an institutional rate of 12-15 percent.

Other outcomes include: (1) The official sanitary regulations continue to be a barrier to full implementation of FCMC in Donetsk. The Donetsk TWG continues to work with the sanitary epidemiologist and the TWGs in Donetsk and Odessa continue to campaign for changes at the Ministry of Health level. (2) The Odessa FCMC staff and TWG are providing technical assistance to a local maternity interested in developing FCMC. (3) The TWG continues to meet regularly to review progress and monitor clinical results.[46]

implement reforms. However, it did not investigate the impact of increased motivation or other reforms on provider practices/performance.[47]

On-going Monitoring and Evaluation

On-going monitoring and evaluation through a structured supervisory system, a basic tenet of quality assurance, are essential to assuring that newly acquired skills and knowledge are maintained and that new problems are identified and addressed.[48] Such a system of support can include strategies like those discussed above as Enabling Interventions and Strategies and the following interventions that have been tested in a variety of setting.

Reminders

Several reviews of the use of *reminders* in a variety of settings have concluded that reminders in the form of written materials, such as signs posted on walls, and used either alone or in combination with feedback, have a positive effect on provider performance.[49]

Audits

Audits compare actual practice with standard, or best practice. Randomized and quasi-randomized studies have been conducted on the use of both audits of clinical practice records combined with feedback and on audit and feedback as part of multi-faceted interventions. Results of these studies have been mixed, ranging from no effect to a moderately positive effect on providers' performance.[50] This variance may be due to a number of factors, such as the message given in the feedback, the person providing feedback, the recipient, timeliness of feedback, and the mode or vehicle used.[51] Feedback appears to have a positive effect on adherence to guidelines and protocols, and on prescribing and ordering of diagnostic tests. It is most effective when given in close proximity to an event and when providers have previously agreed to review their practice.[52]Studies of the long-term impact of audit and feedback, after they have been discontinued, have found mixed results. A trial by Norton (1985) found continued improvement in the management of cystitis 14 months later, while trials by Cohen (1982), Martin (1980), and Meyer (1991) had equivocal results, with the performance of the control groups continuing to improve as much or more than the experimental groups.[53]

Maternal and perinatal outcome and death audits combined with active feedback have been used to promote improved medical care in many countries around the world. When used as part of an interactive process involving feedback and discussion on a regular basis, and in a supportive, rather than punitive environment, their use can lead to improved patient care and outcomes. However, a review of the 50-year history of maternal death audits in the United Kingdom (Maresh 1998) underscores that the passive dissemination of the findings, such as through published reports, is

Box 8—Reducing the Rate of Cesarean Sections in Ecuador

In an effort to reduce the rate of unwarranted cesareans, the Safe Motherhood Demonstration Project worked with the Isidro Ayora Hospital, a public maternity hospital in Quito, Ecuador to introduce a new hospital policy that mandated a second medical opinion and to train physicians in the new clinical protocol. Prior to the SMDP, the hospital had a cesarean section rate of 27 percent. The policy was introduced through five-day on-site training that involved demonstrations and supervised clinical practice for the medical residents. Under the new policy, women entering the hospital for delivery were screened, and if they met eligibility criteria, were allowed to undergo a trial of labor. Patients were co-managed and a second opinion from a supervising obstetrician was required prior to women being considered eligible for a cesarean section. During the year following introduction of the new policy, the cesarean section rate at the hospital declined to 22 percent, without an increase in adverse birth outcomes. A comparison hospital in Quito experienced a similar reduction in the cesarean section rate, from 26 percent pre-intervention to 24 percent in the year following the intervention. This was attributed to a spill-over effect, since the senior obstetrician at the Isidro Ayora Hospital also taught residents from the other hospital at the city's major medical school.[54]

ineffective.[55] Examples of effective approaches to using maternal and perinatal audits from South Africa, Mozambique, and India are presented below.

- In South Africa, data on all perinatal deaths in one district were collected on a daily basis through the review of case records, discussion of cases with the staff involved, and interviews with the mothers. Each month the list of perinatal deaths was cross checked against the maternity register, the ward death notification book, and the mortuary admission book to ensure completeness. The strategy involved structural and functional rearrangement of the maternity services district-wide, writing and implementing medical care protocols, and regular in-service education. Training topics were determined from the audit, and were designed to address directly avoidable deaths. Following introduction of the intervention, the proportion of avoidable deaths fell from 19 percent in May-December 1991, to 0 in the second half of 1995.[56]
- In Maputo Central Hospital, Mozambique, the perinatal audits incorporated both maternal and fetal/infant aspects. Staff members were sensitized to the immediate and long-term effects of the surveillance routines through regular feedback and perinatal data that was presented on highly visible wall charts and in weekly conferences. This strategy was implemented in an environment that was committed to non-confidential, non-judgmental, straightforward discussion of mismanagement of cases. Following implementation of the audits in 1982, the avoidable intrapartum fetal death rate in the delivery room declined by 65 percent by 1991.[57]
- Baroda Medical College, India, initiated a strategy of medical audits of maternal and perinatal deaths within its teaching hospital and consultations in peripheral medical facilities. This strategy included designing record forms to document clinical management of all cases that ended in maternal death; formation of a committee to keep confidential records of all maternal deaths; compilation and distribution of data on obstetric cases and maternal deaths to staff; weekly departmental meetings of all teaching staff and residents to present data on deaths and emergency cases and to give residents an opportunity to ask questions; six to eight meetings per year to discuss maternal and perinatal deaths in the department; initiation of antenatal care in primary health centers by staff and residents; and meetings with ward nurses every two weeks to discuss nursing aspects of complicated obstetric cases. It was reported that between1965, when the strategy was introduced, and 1984, maternal and perinatal mortality had declined and clinical judgment in maternity care had improved. However, Bhatt (1989) did not provide supporting data.[58]

Evaluations of these strategies indicate that audits can be an effective tool for implementing a quality assurance program by acting as a mechanism for review and diagnosis of problems in care, assessing training needs, and providing information necessary to formulate recommendations and clinical practice guidelines. However, the studies reviewed did not assess the impact of the strategies on specific clinical practices, staff morale, or motivation. The studies did stress the importance of involving staff at all levels in the process of review and feedback and of assuring that interventions using death audits are carried out in a culturally sensitive, supportive, and non-punitive manner that emphasizes support for learning and change.

Audits and feedback in the form of passive information dissemination and that are carried out in the absence of other interventions, have not been found effective in improving outcomes.[59] It is important to keep in mind that the effectiveness of audits is highly dependent upon the quality of recorded data. Researchers have concluded that further research is necessary to identify the best conditions for assuring effective and sustained use of audits in developing countries.[60]

Conclusions

Findings from studies of interventions to improve provider performance are consistent with learning theories that support the importance of peer discussion, and role playing in promoting learning and behavior change, as well as the role of personal, environmental/situational, and behavioral factors. They also point out that learning and change take place through a process involving "impactors" or learning resources. Interventions have different impacts in different settings and, thus, it is not possible to make universal statements about their effectiveness.[61] Therefore, any plan or strategy to improve provider performance must be preceded by a needs assessment and problem identification exercise, and the interventions tailored to address specific problems.

In the third update of their review of randomized controlled trials of interventions to improve physician performance, Davis et al (1995) found that the most promising interventions were reminders, academic detailing or outreach visits, and feedback by patients. They concluded that interventions with the greatest success were those that used enabling strategies or reinforcing methods in combination with predisposing or dissemination activities.

Integrated approaches that employ a combination of needs' assessments, predisposing, enabling, and reinforcing strategies, such as (i) needs' assessments, followed by in-service training, on-going peer review, continuing education, and monitoring and evaluation through regularly scheduled supervision; (ii) educational interventions coupled with outreach visits, printed materials or workshops; or (iii) the dissemination of clinical policies or practice guidelines/protocols combined with competency-based training, and printed materials, have been found most effective in improving provider performance.[62] In most countries, these approaches need to be supplemented with national and local consensus-building and the establishment of training centers. Interventions relying solely on predisposing strategies have some positive effect on physician performance, though the results from studies are not statistically significant.[63]

Quality assurance systems provide a framework and methodology for identifying areas in need of improvement. They require a supportive environment for addressing problems and maintaining improvements over time. Research on the implementation of quality improvement systems in Chile and Niger and the studies discussed throughout this paper, highlight the importance of creating and advocating for a 'culture of quality' at all levels. Regular assessment and review of performance at all levels is essential. Aspects of quality, including professional ethics, equity, and commitment to service should be incorporated into training programs and demonstrated by influential people. The more that quality assurance functions and structures can be built into routine management structures and the stronger the culture of quality, the greater the chance of success and sustainability.[64]

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