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Translating Pilot Project Success into National Policy Development: Two Projects in Bangladesh

The Matlab and Maternal/Child Health and Family Planning Extension projects prove that change can be induced even under difficult circumstances

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Prescriptions for policy change pervade the research literature on population programmes. While the audience for such conclusions may be receptive to the wisdom imparted, established bureaucracies resist systemic renewal and reform. Even if policies are modified in response to research, the promulgated changes often fail to influence what public-sector programmes actually do, since bureaucratic traditions outweigh reasoned responses to research outcomes.

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This is particularly problematic where programmes have matured as complex bureaucracies before an operational model has been developed with demonstrable potential for making an impact on fertility dynamics. For research in such settings to influence implementation, findings must identify not only what ought to be done differently, but also how bureaucratic change can be induced and sustained.

That much of the applied research in population is never, in fact, applied to policy development is well known: operations research, however well targeted on practical organizational issues, often fails to affect operations. Policy research findings, however well focused on relevant policy themes, often fail to overcome the bureaucratic inertia of public-sector programmes. Nonetheless, eliminating the gaps between research, policy and implementation is rarely the subject of systematic inquiry.

The studies in Bangladesh reviewed in this article address the need for a paradigm that not only conducts operations research, but also fosters its utilization. The literature on this theme spans the fields of organizational theory, change and development with applications in the fields of agriculture, manufacturing, commerce and human services.[1]

While even a cursory review is beyond the scope of this brief report, the experience of two studies in Bangladesh have been informed by this perspective and may be relevant to research planning and population policy development elsewhere.[2]

For three decades, Bangladesh population policies have aimed to reduce rates of rapid population growth through the dissemination of contraceptive services. Although modest increases in contraceptive prevalence have been reported in recent years, demographic impact has fallen far short of official goals.[3] Debate focuses on the question of whether this experience represents a policy failure – suggesting that the reliance on contraceptive services is a misdirected effort, or an implementation failure – suggesting that existing demand for services is inadequately addressed by the national programme.

Reliance on research to resolve such fundamental issues has been minimal, not only in Bangladesh, but also in similar settings where the central direction of policy is the subject of discussion and debate. Moreover, where implementation has failed and where operations research is thus presumably needed most, research results typically contribute least to programme development. Weak implementation capabilities are associated with weak capacities to utilize research. Piecemeal prescriptions for change in non-functioning systems are contravened by the broader institutional malaise that operational tinkering is intended to resolve.

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What, then, can be done to develop non-functioning programmes in settings where demand for contraceptive services is limited? No setting is more appropriate for investigating this question than Bangladesh. With a population that currently exceeds 100 million, and annual growth rates that exceed 2.5 per cent, it is the most densely populated country in the world, and among the poorest.

Bangladesh's social and economic institutions perpetuate high fertility; natural calamities, political upheaval and economic adversity perpetuate these institutional constraints to the modernization of reproductive behaviour. Although recent evidence suggests that contraceptive prevalence is increasing, the modest changes observed are consistent with the view that contraceptive services will not succeed in Bangladesh because the institutional climate is unfavourable to widespread fertility regulation.[4]

Quite apart from the societal constraints to the demand for contraception, there are severe organizational constraints to effective service delivery: outreach is sporadic, supervision is weak, staff training is poor, the range of available methods is limited and paramedical support is inadequate.[5] Structural problems obfuscate lines of authority and weaken co-ordination and control.

Officially, the Bangladesh Government has a multisectoral multiministerial programme with components addressed to demand generation as well as contraceptive service delivery.[6] The resources and activities of the national programme are nevertheless concentrated in the Family Planning Division of the Ministry of Health and Family Planning, where links to the health delivery system, the political system and development resources are weak. The structural changes introduced over time have more typically involved the adding of components and functions to the bureaucratic vestiges of earlier policies, than the restructuring of operations in response to research.[7]

This pattern of uninformed programme evolution changed with the development of the recent Third Five Year Plan. Research findings from two rural projects informed changes in the national policy process, and subsequently guided the implementation of revisions in the Ministry's programme.[8] Taken together these projects and their contribution to the Third Plan constitute a research paradigm that may be termed "implementation-based policy development."[9] The design of these projects, their contribution to policy and the lessons from this experience are reviewed in this article for applied research activities elsewhere.

Developing a service model

For operations research to foster planned change where programmes have been developed prematurely, an operational model is needed that generates

commitment to undertake change by providing a credible alternative to existing operations. Such a working model is exemplified by the Matlab Project.

Origins of the Matlab Project

Established in 1977 as an experiment to ascertain whether family planning services could succeed in unfavourable societal contexts, Matlab functions as an autonomous project, isolated from the formal government bureaucracy and insulated from operational constraints which hamper implementation. This isolation was necessary to protect the logical integrity of the design: demonstrating success in Matlab would require research showing the existence of contraceptive demand that can be activated with an appropriate system of supply. Demonstrating that services fail would require a design that minimizes the range of interpretations of failure, and hence an experimental system of supply that is sufficiently rigorous as to lay to rest arguments that failure arises from flawed implementation.

Matlab is a field research station of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). Located in an isolated rural riverine subdistrict 35 miles to the south of Dhaka, Matlab is in many respects typical of the ecological, social and economic situation in the vast deltas of the Meghna and the Padma rivers. Economic deterioration, famine, political upheaval and environmental adversity have prevented the development of towns, slowed the introduction of modern amenities and social services, perpetuated poverty and sustained high mortality. These adverse circumstances nevertheless enhance the importance of Matlab research, since success there lends credence to the hypothesis that family planning can work, even in unpromising societal settings.

Research on contraceptive service delivery in Matlab was not initially successful, however. An earlier project, known as the Contraceptive Distribution Project (CDP) was conducted during the period 1975 to 1977 to test the hypothesis that household distribution of oral contraceptives would reduce fertility.[10] Although services failed to affect fertility,[11] the CDP experience guided the design of the second Matlab project.

Thus, to understand why the Matlab Project succeeded, it is important to understand why the earlier experiment failed. Owing to its emphasis on contraceptive technology, the CDP design minimized the role of supply-side sociology.

Social research for developing the service delivery strategy was minimal, so that the organizational structure, staffing pattern, training programme, service regimen, information systems and supervisory system were based on imported ideas of what would succeed rather than diagnoses of what works in the

Bangladesh social context. As an inappropriate supply system, services generated controversy rather than behavioural change.

Use prevalence initially increased, lending support to the notion that demand was present, but prevalence soon declined, and returned to pre-project levels within 24 months, suggesting that the CDP system of supply could not sustain lasting behavioural change. The demographic failure of CDP demonstrated that "supply" is not simply the provision of pills; instead, it concerns the complex science of interfacing of service systems with social systems.[12]

Matlab Project design

In the Matlab Project experiment, special services were introduced in 70 villages with a baseline population of 89,350 and demographic dynamics were monitored in a neighbouring 79-village comparison area with a baseline population of 85,596. In the comparison area, usual government services were provided, and social, economic, and demographic conditions were otherwise comparable to those in the treatment area villages. Since October 1977, all currently married women in the treatment area have been visited twice a month, consulted about their contraceptive needs and provided with contraceptive care. Basic health problems are addressed by maternal/child health (MCH) outreach, and referral services are available at nearby clinics. In the initial project period, health care was family planning support oriented, but with time the service regimen has been expanded to incorporate increasingly comprehensive services for the priority problems of mothers and children.[13]

By 1978, evidence of demographic impact was apparent, and by 1981 the effects were substantial. Modern contraceptive prevalence rose from 5 to 35 per cent and fertility declined by 25 per cent. That observed changes occurred in treatment areas only and areal fertility differentials commenced nine months from the onset of project services strongly suggests that the fertility decline in treatment areas was caused by the experimental service regimen in that locality.

Explanations of the surprising impact of the project focus on its successful strategy of adapting the service delivery strategy to social conditions in rural Bangladesh, a process that has been referred to as the "sociology of supply." Four elements of the design collectively comprise the sociology of supply in Matlab.[14]

Client oriented services. Particularly critical to the success of the Matlab experiment is the role of young, married and literate village women as primary service providers. As community health workers, they are responsible for visiting twice a month all women in their village, discussing contraceptive preferences, providing methods and referring women to nearby clinics for basic

health or family planning services. Each village has one such female worker, 20 of whom comprise a team assigned to a cluster of villages termed a "union," where a clinic is staffed by a resident female paramedic. One male supervisor is assigned a union to provide overall administrative support for operations.

The Matlab system attempts to confer special status on the female village workers, building upon what is known about the origins of social status in Bengal, and its importance in all aspects of village life. Female workers were hired from influential families in the villages where they lived and worked.

Although high social status contributes to their credibility as family planning workers, their youth and relative wealth are inconsistent with the extrafamilial activities required by their job. Because village workers are women who are in *purdah* or seclusion (see page 47 for further details about this system) and restricted to their hamlet, supervisory support is addressed to enhancing their status as health referral workers and community liaison personnel. Work areas are delineated by socially acceptable boundaries, a strategy that minimizes social opposition to routine household visitation.

Given basic training in household communication and service techniques, and field support from supervisors, female workers can interact effectively with their village clientele. Supervision thus aims to support female village workers in the execution of the socially challenging task of introducing reproductive behavioural change where such change would not spontaneously occur.

The Matlab Project outreach strategy was guided by CDP findings which showed that service credibility derives from providing a wide range of contraceptive options and basic health care services in a manner that permits women encountering problems readily to switch methods or receive counselling and care from household workers. The complex method regimen, in turn, requires staff competence in the delivery of multiple methods, and readily available health referral services.

The continuous regimen of field visitation, together with the complex service regimen has demonstrated that, by building rapport and understanding, providing support for fertility regulation behaviour and offering contraceptive supplies to women in their homes, services can influence contraceptive use dynamics.

Internal cohesion. Social institutions in rural Bangladesh are not conducive to the formation of peer networks among unrelated women. A woman facing problems with contraceptive practice has neither familial support nor an extrafamilial peer network to support contraceptive practice. Similarly, a worker facing problems in her job has no natural social network supporting their resolution. Simple but effective support systems have been developed in Matlab to build internal cohesion in the work force, so that a worker is not alone in efforts to confront task-related difficulties. A system of information collection, compilation and exchange is used in conjunction with frequent and regular staff meetings to foster peer support among project staff. Workers meet twice a month in a local clinic with paramedics and supervisors jointly to review progress, problems and future activities.

The Matlab worker support system is hierarchical, as well as lateral, with gender roles delineated in culturally acceptable ways that nevertheless confer upon women an unusual degree of authority. Two lines of support form a dual leadership system, i.e. one is clinical and female-operated and the other is administrative and male-directed. Taken together, these lines of support comprise a network of relationships designed to substitute strong system support for the social support that reproductive behavioural change would otherwise require.

Critical to achieving cohesion is designating appropriate gender roles for project supervisory staff. Thus, female paramedical supervisors, residing in nearby clinics, provide clinical support for the village service workers and conduct household visits on request. Male supervisors liaise with village leaders: they support women's contraceptive preferences in discussions with husbands and confer with religious leaders as needed.

Task accountability. Mechanisms for achieving accountability include an information system which records reproductive histories about each woman in a village, and routine reports provide supervisors with information about the pace of work, the content of services and the problems encountered. Workers can readily ascertain their own performance from the service registers, set rational goals, solve problems and place demands on supervisors to help solve them. Supervisors, in turn, can discipline or replace workers who fail to perform their duties.

Community relations. Bangladesh rural society is often characterized as diffused, lacking structure and rife with conflict.[15] A common theme in the literature on family planning programme is the "need for community participation." In the Bangladesh context, however, the uncritical application of this axiom can inflict the consequences of social diffuseness on the programme rather than engendering the support of traditional village government. Therefore, organizing services must accommodate conflicting operational needs – the need to be detached from village factionalism, yet linked to elites. In general, activities that require sustained and continuous organization or resources are provided by the project with minimal reliance on community organization. Nonetheless, intermittent and ad hoc community contributions to project functioning have been substantial. For example, each union served by the project

was requested to donate facilities for clinics, in exchange for assurances of project-provided paramedical services, pharmaceuticals and maintenance. Contributions engender a spirit of community collaboration even when operations are administratively autonomous.

In sum, findings demonstrate that an appropriate system of supply, with structures and functions that are adapted to client needs and consistent with village institutions, can affect reproductive behaviour, even in the absence of social conditions that independently induce demographic change. Matlab thus represents a service model with potentially important implications for Bangladesh policy.

Although the replicability of the operational design may be questioned, the fact remains that the project worked – a conclusion supported by demographic data of unequivocal quality.[16] The success of the project has thus shifted the focus of research to the supply-side: since demand exists that can be met with services, the new challenge is to identify what is transferable, to institute operational change and to sustain bureaucratic transition in the national programme to a new operational design.

The Matlab experience also has international policy implications. Apart from the central finding that services could succeed, the paradigm represented by Matlab is broadly relevant to policy. However, the specific elements of the design are not necessarily exportable, since the sociology of supply necessarily differs from setting to setting. Nevertheless, the principles of informed system development, of diagnosing institutional constraints and tailoring services accordingly, is broadly relevant to programmes elsewhere, particularly where the demand for contraception is fragile, and the need for rigorous systems of supply are correspondingly acute.

Policy response to the Matlab Project

Given the questions that have been raised about the demographic relevance of family planning services in rural Bangladesh, it seems that the unequivocal findings from Matlab would have immediate policy effects. By 1981, however, none of the findings from Matlab was under active review by the Government of Bangladesh and operational implications were widely dismissed by senior officials as irrelevant to policy.

Several reasons for these reservations were apparent in the course of discussions:

- The question that the project was designed to answer was addressed to international concerns about the efficacy of family planning services in a rural, traditional society. Confirmation of impact was reassuring, but not indicative of a need for change in the national programme. Rather, the design of the programme appeared to be fundamentally sound.
- Since the special resources of the Matlab project were not replicable, the project's operational design was considered irrelevant to policy. Features of the Matlab system that were obviously not replicable, such as the availability of speedboats for supervisory work, detracted from the broader policy lessons that investigators sought to convey.
- Although the operational design of the Matlab project was accepted as a model of what works in Bangladesh society, it was not accepted as a model of what works in the national bureaucracy. For example, changing the staff composition of the Matlab model was not feasible; for – even if resources could be found to hire more women – it is not possible to fire men.

Thus, the project was viewed by Bangladesh government officials as probably irrelevant to their programme because the additional resources, highly trained staff, sophisticated supervisory systems, the organizational structure and other aspects of the project were throught to be non-replicable on a national scale.

Extension Project: a systemic intervention

The Matlab 1981 annual report documented for the first time the demographic impact of the experiment and the operational design that led to its dramatic effects. In response to reservations about the policy relevance of the project, the Bangladesh Planning Commission made resolution of the replicability question a condition for government concurrence with further external funding. ICDDR,B was requested to expand Matlab activities to other areas of the country, but to utilize Government resources, mechanisms and procedures to the extent possible. This new project was to be collaborative, with research direction provided by ICDDR,B and operational direction provided by the usual government administrative system.

Simply replicating the Matlab experiment would have incurred serious risks: a test of overly ambitious change in the public-sector programme would lead to operational failure and official rejection of the policy implications of Matlab. Launched in 1982, the Maternal/Child Health and Family Planning (MCHFP) Extension Project is thus substantially different in its design and objectives from the Matlab experiment. Rather than simply test whether the Matlab system would work if extended to the public sector, the Extension Project identifies the specific barriers to transfer and how those barriers can be removed through sustained organizational change. As an experiment focused on

the supply-side, it does not aim to ascertain whether demand exists, but rather to determine whether existing demand can be activated with the appropriate system of supply in the public-sector programme.

The design has two basic components: a research strategy to assess, through a variety of instruments, the efficacy of the existing MCH/FP programme; its resource, technical and structural constraints; the operational changes introduced by interventions; and the impact of the interventions on MCH/FP programme effectiveness, and an intervention strategy in which ICDDR,B staff use organization-building and training to transfer elements of the Matlab project to the public sector MCH/FP programme.

Research strategy

The Extension Project resembles a paradigm referred to in the organization research literature as "organization development." In this approach, research is typically initiated by senior management who invite consultants to assist their organization in identifying operational problems and improving organizational functioning. Social science research is used to identify problems and worker focus-groups are constituted to identify solutions, test alternatives and provide feedback on results to programme managers.

The idea of the approach is not so much to focus the attention of managers on the problems of a small segment of the organization, so that the problems there can be readily diagnosed and dealt with without major prior commitments to structural change, but to represent all levels of the organizational hierarchy in the design so that the system is the subject of analysis and collaborative problem-solving. In this way work cannot be dismissed as relevant only to a particular issue, unit or locality.

Joint "ownership" of research and decision-making is cultivated in order to foster utilization of results. Typically, change agents are affiliated with the consultant organization and have no formal authority in the host agency. They facilitate change through counterpart support and close liaison with implementation committees.[17]

While the available research literature informed the design, much of what was tried departed from conventional notions of the organizational development paradigm,[18] since much of what has succeeded elsewhere is obviously inappropriate for Bangladesh.

Developing a consensus among senior officials that change was needed and developing research strategies that could contribute to the planning process were major components of project activities. Although the organization development approach assumes that change agents are competent organization researchers,

ICDDR,B expertise derives more from its experience as a biomedical research centre with excellent field epidemiological skills than as an organization skilled in operations research. It was thus necessary to develop organization research capabilities within ICDDR,B as the project was launched. Although some of the usual features of the organization development paradigm were missing, the Extension Project experience may be relevant to situations where bureaucratic functioning is rarely the subject of systematic review.

The initial ICDDR,B response to the order creating the Extension Project was to resist and subsequently to placate the Government with token activity that would contribute nothing of significance to scientific knowledge. Largely in response to donor pressure, ICDDR,B ultimately agreed to undertake a serious scientific investigation of the replicability of Matlab.

The Extension Project thus arose out of a series of negotiations relating to the preservation of Matlab rather than a commitment, either from the Government or ICDDR,B to engage in organization development activities. As a project with a formidable research and implementation agenda, but a weak institutional footing, the Matlab operational model and the continuing operation of the Matlab project, was critical to the implementation of the Extension Project. As a motivating model, the Matlab success became the basis for exchanges and negotiations at all stages in the course of the implementation of the Extension Project.

Although a review of operations does not naturally arise in non-functioning bureaucratic systems, the obvious contrasts between Matlab and the government system made it possible for the project to stimulate discussions at various levels about what could be changed, given the limitations of the Government system, and how to proceed with the institution of operational improvements.

The experimental design. Research is conducted in the MCH/FP Extension Project within the framework of an experimental design. Panel data from a representative sample of the population monitor the intensity of service outreach and the adoption of health and contraceptive practices. The systematic study of the government programme and the manner in which it changes during the experimental interventions functions together with other components of the research system to form a unified approach in which each component compliments other parts of the research system. Each component is reviewed in turn.

The treatment design has three cells, each with sample demographic surveillance data about fertility, mortality or morbidity and contraceptive practice. Unlike Matlab where cells measure the impact of interventions, in the Extension Project two cells have the same interventions, but contrasting processes of introducing change in the public-sector system. The design is thus "process oriented,"

with the aim of generating variance in the way the system is changed so that barriers to the transfer of Matlab strategies are elucidated.

The two treatment cells vary the intensity of ICDDR,B field involvement in the transfer process – a "counterpart-support" cell tests whether change can be introduced by ICDDR,B field staff working with the staff of the Ministry for 90 days of joint implementation of work routines, and a "training only" cell tests whether technical training alone is sufficient to introduce change.

The third cell, located in contiguous areas external to experimental districts has a research only focus, and permits evaluation of treatment area impact.

To avoid the limitations of generating a special administrative zone that becomes atypical of the larger system, two subdistricts in different geographical areas were identified for the study, each with a full compliment of treatments, interventions and research activities. Within these areas, nine treatment unions were randomly chosen; in contiguous subdistricts, four comparison unions were chosen.

Longitudinal observation of households. The analysis of the project's impact is achieved through a longitudinal household-based data system that provides information on social, economic and demographic characteristics of households and the individuals within them; on vital events including fertility and mortality; on service delivery interventions including family planning and maternal/child health interventions; on contraceptive use; and on utilization of health services by household members. The principal use of this system has been to study the relationship between project interventions and the quantity of household visitation, and the relationship between visitation and the dynamics of contraceptive use.[19]

Organizational analysis. Based on the premise that human service programmes are shaped by the larger social, economic, political, cultural and bureaucratic forces in society, the organizational systems analysis investigates the "interconnectedness" and mutual causality of programme elements and the larger context within which they function. Particular emphasis has been addressed to questions about the nature, quantity and quality of the exchanges that take place between service providers and clientele. This critical interface represents the proximate operational determinant of reproductive behaviour, and observation of motivational strategies, client-worker relationships (extent of rapport, trust, hostility, conflict) and worker-community relations are key indicators of service quality and performance.

The public sector system is also the focus of analysis. Resources, legitimacy and support for its activities in the larger environment are analyzed, as well

as systems-support capabilities (logistics, personnel systems and mechanisms for establishing supervisory, community and policital support).

The sociology of work is the subject of observation: decision-making, conflicts, peer support and leadership. Lines of communication and authority are studied to ascertain ways in which information can be collected, compiled and used to develop cohesion.

The aforementioned organizational diagnostic activities guide the development of the Extension Project intervention strategy. Panel data are collected to analyze the process of change in the Ministry system and to permit rigorous statistical analyses. More important, however, is the role of research in the implementation strategy. Lessons learned regarding the structure and functioning of the Ministry system are shared with project participants to stimulate change and organization development within project areas and to foster change in the national delivery system.

The mixed research paradigm. The Extension Project utilizes four types of research activities. Each has a unique contribution to the policy development process:

- The Extension Project is undertaking activities initiated by senior Government officials and implemented by subdistrict officers with project staff playing a facilitating and co-ordinating role;
- Case studies, written by experienced Ministry officers at the district and subdistrict level, aim to stimulate high-level analysis of the programme based on practical field experience with implementation;
- Technical studies are conducted on such issues as staff composition and density, the determinants of worker performance, the efficacy of clinical services and other operational issues. Such research aims to identify sources of problems and the prospects for improving programme performance; and
- Basic demographic research is conducted in the "controlled" environment of Matlab on broader policy and demographic issues, including the health and mortality impact of selected MCH interventions.

All four types of research have had policy impact, the first because initiatives from the Government are central to strategic planning; the second because the insights of government field officers can provide a form of communication from the field to central authorities that is otherwise lacking; the third because key operational issues not readily identified by administrators can be articulated and communicated to policy makers; and the fourth because assumptions that underlie general policy are often untested by systematic research. Throughout

this process social learning takes place, affecting researchers and administrators alike, and informing key policy makers about the functioning of the Ministry's programme in a way that would not otherwise take place. These four types of research are used as basic tools in a co-ordinated programme to facilitate policy development and management improvement.

Intervention strategy

Project interventions are inseparable from the research design, and are designed to compliment the contribution of research to policy development. Four strategies are particularly noteworthy:

Collaborative problem solving. A mechanism for translating research into administrative action, i.e. project implementation committees, were constituted to direct field activities and to provide feedback on results to senior programme managers. In a successful intervention, these committees function as focus groups at each level of the organization to synthesize lessons and communicate research findings within the bureaucracy through established channels. The idea of the approach is to focus the attention of managers on the problems of a small segment of the organization, so that dysfunctions there can be readily diagnosed and dealt with without major prior commitments to structural change. By feeding research outcomes, deliberations and directives upwards and downwards, all levels of the organizational hierarchy are the subject of analysis and collaborative problem solving. ICDDR,B change agents attempt to facilitate change through participation in these committees in close liaison with workers at all levels. While the ICDDR,B has no formal authority over the work system or the implementation of the project, its informal influence is extensive.

The critical, initial point of collaboration in the project took place at the subdistrict level, the primary unit of organization of health services in rural Bangladesh. Subdistricts typically have a population of about 300,000, an elected government council, an administrative headquarters with basic government facilities, including a health complex staffed by resident physicians and paramedics. The health complex is a rural health facility that provides curative services and also functions as the major administrative level for rural health, MCH and family planning field activities. A physician from the Health Division of the Ministry of Health and Family Planning, the subdistrict health administrator, is the chief administrative officer at the health complex. He is supported by a staff of medical officers for clinical services, one medical officer for providing technical supervision of rural family planning and MCH services, and two administrators, one for the supervision of family planning and MCH, the other for health activities. Below the subdistrict are 10 to 12 "unions," each governed by an elected council. Roughly a third of the unions in Bangladesh have standing government clinics with a resident paramedic.

In the initial period of the project, joint planning and decision-making meetings involving ICDDR,B staff and subdistrict health officials were launched under a special government order constituting the project. The subdistrict health administrator, medical officer, family planning officer and health inspector were instructed in the original order to be the key field-level collaborators in the project. By working with these officials, ICDDR,B field officers seek to strengthen field orientation, technical competence and planning capabilities at this mid-management level to ensure greater control and support capabilities for programme implementation in the villages.

The use of replicable resources. The process of transferring the Matlab operations to the Government's system in areas under the Extension Project was deliberately constrained: special operational inputs were disallowed, staffing was provided by the Government and patterns of supervision and supplies were unchanged. The areas retained their ministerial character so that the project would not take on a special quality that would dilute its relevance to policy. The assumption underlying the project is that ICDDR,B has technical skills that can be transferred to the Ministry's system through training and counterpart support, without introducing incremental resources or major structural change. The training programme focused on technical deficiencies and counterpart support focused on transferring certain aspects of the Matlab field management system.

Maintaining a systemic focus. In keeping with the observation that systemic diagnosis is more likely to lead to sustained change than activities in a few localities or a series of small-scale ad hoc studies, the project aimed to develop a co-ordinated strategic plan over a sustained period of time, tested and refined in limited areas, but developed in concert with national authorities and donors, with a view towards wider implementation. This process has yet to mature in Bangladesh, but efforts to develop the Extension Project are guided by this systems perspective.

Introducing the project as a transfer of Matlab innovations. Initial efforts to establish project operations were unfocused, with government participation more characteristically being passive compliance with ICDDR,B requests than meaningful collaboration on field activities. In the early months of establishing collaborative mechanisms with the Matlab model, questions of transferability and prospects for testing strategies in the field provided a focus to discussions and concrete objectives to pursue.

Improving field activities in health and family planning and communicating mechanisms for change to senior officials was a long-term aim, but initial efforts focused on government primary service workers affiliated with the health and family planning divisions of the Ministry. Male workers from the

health division have traditionally been responsible for health education and the control of communicable disease, while female field and paramedical staff, supervised by a male family planning worker, have been in charge of MCH and family planning work. Key objectives of the Extension Project intervention strategy at this level were to remedy deficiencies in technical knowledge, to redirect field methods towards client-oriented approaches, and to introduce a more effective management control and support system. A series of training courses each four weeks long was organized for groups of 20 workers. Three key components of the Matlab training programme were covered, namely, family planning, oral rehydration therapy, tetanus immunization and other health subjects assigned to these workers by government policy. Priority was given to practical demonstration of field methods: household visiting patterns, motivational techniques, community relations, referral and record keeping.

Following a month of formal training, emphasis was placed on establishing the rudiments of the Matlab system in the field: calendar-based work routines in "door-step" family planning and MCH services, systematic follow-up, regular meetings for problem solving, supervision and support. A simple household record book was introduced that permits workers to keep track of their clientele and monitor their own performance. Major change agents for this activity were Matlab community health workers and supervisors who had five years of experience in the Matlab system. They provided counterpart support to government field staff and their immediate supervisors as agents of planned change for a period of three months following training.

At the national level a formally constituted co-ordinating committee, consisting of senior officials from the Ministry and relevant research organizations, reviews findings from the subdistrict and field level. This committee receives reports from the subdistrict committees, reviews progress and assists in overcoming operational barriers to project implementation. Through this process, the project aims to communicate operational problems, and means of solving them, to key decision makers who can subsequently utilize project findings for large-scale policy planning.

Policy response to the Extension Project

The Matlab and Extension projects have neither transformed population policies in Bangladesh nor radically redesigned the service programme. What has been developed, however, is a new paradigm of research-informed planning, leading to significant changes in the staffing pattern, training system and management system that would not have occurred without the collaboration of the ICDDR,B and the Ministry on the Extension Project. As previously mentioned, key elements of the Matlab success are related to the project's sociology of supply – its capacity to establish client-oriented services, internal cohesion in the work-force, task accountability and appropriate mechanisms of community relations. Although the attempts to develop these elements in the government programme were associated with corresponding obstacles, considerable success has been realized by adapting each Matlab project strategy to the public-sector system rather than replication *per se*. Some examples of this adaptive process are as follows:

Developing client-oriented services. In government service areas, three female village workers are responsible for 20 villages – a work area assigned to 20 such workers in Matlab. Where Matlab has one male worker in charge of a union, the Government has four, and little structural clarity about how they relate to one another or to the female workers. Other aspects of the Matlab sociology of work are also missing in the public sector programme, but none represents a more formidable constraint to transferring the Matlab experience than the shortage of female village workers. From statistical studies, participant observation and other research, it was soon obvious that the Extension Project could not replicate Matlab, or even part of the Matlab system, until this fundamental problem of staff composition was resolved: in the absence of female service providers, the programme cannot reach women with services. No amount of training, staff development or management system improvement would overcome this fundamental problem.

It could be argued that this insight could arise from a variety of research

The hiring of more women to provide family planning services in rural areas was one of the keys to enable the success of the Matlab project to be replicated elsewhere in Bangladesh.

sources – that something so complex as the Matlab and Extension projects is unnecessary for so basic a research finding. However, in the absence of the Extension Project, it is unlikely that the response to this finding would have been as comprehensive and systematic as has been the case with the contribution of the project to the Third Plan. More than a statistical result, the finding generated reports, memoranda and minutes emanating from within the Ministry of Health and Family Planning, written about ministerial operations in partnership with ministry personnel. As a finding that was developed and owned by those who were using the results, the decision to change the staffing pattern was a natural outcome of research.

In a 1984 response to project findings, the Government of Bangladesh ordered an expansion of the female work force by 10,000 women. That decision, in turn, led to project-based field testing of the hiring process, which generated guidelines for the national hiring process. This, in turn, has led to revisions in personnel hiring procedures, training, supervision and other aspects of the field operation that could not have been developed as piecemeal ad hoc outcomes of operations research. For so extensive a change to occur, a systemic research design is required: a sequential development of policy in response to implementation experience in the Extension Project areas, and internal ministerial review of progress at critical stages in the implementation process.

Developing internal cohesion. Staff cohesion and lines of authority are poorly developed in the government health and family planning system. Workers rarely meet to discuss work, set goals or solve problems. In project areas, progress has been in transferring the Matlab information system, establishing regular meetings and developing the rudiments of team-work. Visitation is more regular and intensive as a consequence and prevalence has increased.

The project has not yet had a corresponding impact on the work system at the national level, however, because changes in the management information system, supervisory training system and the pattern of work will require several years of effort and additional experience with scaling-up innovations developed to date.

Developing task accountability. Worker accountability cannot be readily imposed in the public sector. Targets are routinely set, but rarely achieved. Schemes designed to motivate workers to work through incentives, sanctions, travel compensation and the like inevitably fail because support mechanisms are so weak that workers cannot successfully respond to "motivational gimmicks." Success soon creates a need for supplies when the supply system is unreliable, accumulates clients in need of paramedical support when clinics do not function, and generates users when capacities to follow up existing clientele are already overstretched. The more a worker succeeds, the greater the need

for supervisory support. Consequently, individual achievement strains work relationships.

Social and economic pressures on the work force exacerbate this operational malaise. Female worker familial roles require women to stay close to home, since domestic responsibilities persists when women are employed. Owing to the low pay in the public sector, male workers are increasingly pressed to pursue economic roles that compete with time available for their formal job. Routine compliance with work regimens thus threaten a worker's welfare. While workers are neither lazy nor unproductive in the pursuit of family welfare, non-performance on the job is a systemic necessity.

In response to these barriers to instituting accountability, the Extension Project, through training and counterpart support, attempted to adapt the Matlab system to the government system in project areas. Work routines were defined, meetings established, information systems were developed, supervisory field visitation was imposed and other aspects of the work system were improved. Matlab was the operational model, but its imposition was the source of constant negotiation, trial, adaptation and tension. To the extent possible, problems, barriers and difficulties were communicated to central authorities and become a source of social learning at the policy level and operational change in project areas.

Developing community relations. As an externally funded effort, resources for the Bangladesh population programme are centrally allocated, according to rigid rules and regulations that obviate the need for community resources or relations. Clinic construction lags owing to procedural delays, and all implementation of clinical services lags as a consequence. The Matlab system of staff interchange, paramedical support and community relations could not be replicated as a consequence of the absence of clinic facilities.

In response to field reports addressed to this issue, project committees were ordered to implement Matlab-like clinics, where facilities are community donated but continuing operations are project provided. After successful demonstration of this scheme in eight project unions, a national policy of implementation of community-donated facilities was promulgated during the Third Plan.

While this successful introduction of policy change represents a possible contribution to programme impact, key elements of the Matlab system of community relations are not yet developed in project areas, most notably the support system of male workers' liaison with elites on work-related issues.

In sum, key revisions in national policy and implementation have been initiated and sustained in response to Extension Project activities. What has

emerged is an operational model that is neither the Matlab system nor the Ministry's system, but something new and unique to project areas that must be scaled up into national operational planning. Some 20 districts, comprising about a third of the country, are currently engaged in a programme development exercise, with procedures that are informed by project experience. Whether the national system of work is ultimately affected remains to be determined, but key objectives of the organizational development exercise are consistent with project findings: staff density will be increased so that specified work routines become more realistic. Recruitment, training and posting procedures are to be developed along the lines of the Extension Project model. These changes, together with improvements in logistics and information systems, make it possible to improve the national climate of worker accountability on the Extension Project model. Thus, the adaptation of the Matlab model to the public sector has produced a new model for services in project areas that differs from both the pre-project government system and the Matlab system. Although this new model, when developed on a national scale, may not represent a systemic change of the sort attempted by the project paradigm, changes have been substantial and may ultimately improve the national system of contraceptive care.

Conclusion

This article has reviewed the design and accomplishments of two field research projects that are conceptually interlinked and yet operationally distinct. The Matlab Project is a demographic success that had little practical impact on government policy until the Extension Project researched the policy development process. Matlab nevertheless demonstrated that an appropriate system of supply can have a sustained impact on contraceptive behaviour and fertility trends in an unfavourable social, institutional and economic context. The MCH/FP Extension Project has begun to demonstrate that systemic diagnosis of service delivery problems and a continuous research programme tailored to the needs and interest of programme managers can lead to improved policy development and programme performance in an unfavourable bureaucratic context.

Lessons from the research strategy

To date; four implications may be derived from the Matlab and Extension Project research experience:

- *Where programmes do not work, the development of an operational model is a necessity.* An important practical outcome of the rigorous Matlab studies was that they established the scientific credibility of the Matlab system and ICDDR,B staff in the eyes of the Ministry and interested donors. This scientific credibility was an essential aspect of the Ministry's willingness to collaborate with ICDDR,B staff and of the donor agency's willingness to provide support for the research effort. The model that Matlab represents was crucial to establishing mechanisms for diagnosis of barriers to implementing the national programme.

- *Demonstrating the demographic impact of pilot projects is not enough. Underlying operational issues and strategies must also be studied and understood.* Simply demonstrating that something works has no policy impact, unless the operational implications of the successful strategy are clearly understood by key decision-makers. Careful study of project implementation and the processes by which policies and implementation strategies change and develop should therefore be incorporated in programme research designs. This emphasis on process research, in addition to demographic impact research, is a critical distinction between the Extension Project design and the Matlab Project on which it is based.

- *Research project decision-making should be collaborative at all levels.* Only when the management approaches used in Matlab were tested by the Ministry of Health and Family Planning using its own workers (within government resource constraints) were operational lessons from the field readily discussed and reviewed for their national implications. Only then did Matlab receive the careful scrutiny from policy makers that it deserved. This process of transferring "ownership" of the Extension Project from an outside research institution to the Ministry was facilitated by the establishment of committees of researchers and programme managers at each organizational level to collaborate in setting objectives, diagnosing problems, developing plans and reviewing policy and management implications of study findings. Programme research thereby becomes a management tool undertaken in response to the needs of policy development and management improvement, rather than a series of ad hoc activities.

- *Research and intervention should follow a systemic design.* Programme operations and management cannot be isolated from the organizational and societal contexts in which they occur. Hence a systemic approach to problem identification and problem solving is necessary. In this approach, research addresses the broader context of operational problems and the interconnected barriers to improving performance. Proposed changes anticipate the complexity of bureaucratic malaise and the need to intervene on a range of issues that interact to impede programme success.

Lessons from the operational design

What has been learned from the Matlab and Extension Project intervention strategies that could inform policy development elsewhere? It should be noted that no generalized package of service approaches has been identified, or ever will be identified, that will work everywhere. What has succeeded in Bangladesh merits consideration, testing and development elsewhere, but specific operational approaches developed in one setting, to succeed elsewhere, must be adapted and modified for the host environment. Nonetheless, it may by argued that the paradigm for policy development which the Bangladesh projects represent is broadly relevant to other settings, even if the specific elements of the operational design are not. Four phases in this process are critical to informed programme development:

- *Where demand for contraception is fragile, programmatic research must be grounded in careful social research, diagnosing constraints to demand for contraception.* It is unlikely that any configuration of interventions will succeed unless strategies are informed by a thorough understanding of the societal constraints to fertility change and addapted to those institutional realities. One could argue that the search for appropriate interventions in Matlab, represented by the CDP two-year trial-by-error approach, would have been more efficiently pursued by microstudies, focus group review of proposed operations or other established social research methods for identifying socially promising operational strategies. Nonetheless, while the research techniques to be used and the operational outcomes proposed will differ from setting to setting, the role of diagnosis in the design of the sociology of supply will be particularly crucial to success wherever supply-oriented strategies are pursued in settings where the demand for contraception is weak.

- *Pilot testing of the system of interventions is critical to the successful development of policy in settings where no known operational model for success exists.* In settings such as Bangladesh, no amount of social diagnostic research will definitively answer the question of what works, or obviate the need for rigorous controlled trials of the Matlab variety. Field experiments not only test hypotheses, they also develop a credible operational model for success that can inform the development of policy. As Matlab illustrates, pilot success can demonstrate a vastly more appropriate operational design than the established public sector programme. To facilitate the process of developing the most sociologically appropriate operational design possible, pilot projects should be developed in a bureaucratic vacuum — isolated from existing programmes, and structured to address social rather than public-sector bureaucratic constraints.

- *Bureaucratic systems diagnosis and experimental change is crucial to the utilization of pilot projects.* With the development of an operational model that works, given the climate of demand for services, the new challenge is developing a model for organizational change that will work, given the established public-sector system of supply. It may be argued that policy research must address the problem that the appropriate operational model may differ from existing designs, and that public bureaucracies have rules, structures and traditions that resist change.

  Just as the search for selected service interventions must be informed by an understanding of the cultural setting, the search for feasible operational alternatives must be informed by an understanding of the bureaucratic culture. This search is appropriately pursued in a systemic research design, employing a variety of instruments and methods, with a transfer experiment of the Extension Project variety at its core. Extension represents a vital intermediate step that can bridge the gap between a small-scale pilot project and large-scale operations in the effort to translate research into policy.

- *Mechanisms for scaling up operations should be incorporated into experimental designs.* The utilization of results was a natural outcome of the findings and the decision-making system that the Extension Project represents. Moreover, the promulgation of policy is not the end product of the paradigm. Decisions to utilize research at each stage have generated new questions about what will work, how to develop policy further and how to guide the implementation process. Project staff, formerly confined to two subdistricts, are currently working throughout Bangladesh to monitor implementation and to assist senior officials with linking problems in the larger system back to the decision-making resources in the more controlled and administratively digestible environment of the Extension Project.

In sum, the Bangladesh studies are potentially instructive to policy development efforts elsewhere. In contrast to the Matlab Project, which was launched to determine whether services could succeed despite societal constraints to contraceptive practice, the Extension Project was launched to determine if organization development in the public sector is possible despite bureaucratic constraints to operational change. Just as the Matlab Project has shown that reproductive change can be induced with the appropriate sociology of supply, the Extension Project has shown that a system for research and decision-making pilot projects can induce organizational change even in bureaucratic contexts that are not conducive to sustained organizational development.

Footnotes

1. A review of relevant literature appears in Glaser *et al.*, 1983.
2. See Phillips *et al.*, 1984.
3. Prevalence estimates of Mitra and Associates, 1983 and 1985.
4. For a review of the institutional constraints to fertility regulation in Bangladesh, see Arthur and McNicoll, 1978. The implications of these constraints for supply-oriented policies are reviewed by Demeny, 1975, and by Phillips *et al.*, 1985 and 1987.
5. By most assessments, the operational limitations of the programme cited in the Second Five Year Plan (Ministry of Planning, 1983, p. 349; and 1985) persist into the period of the Third Five Year Plan. See, for example, Koblinsky *et al.*, 1984.
6. A useful review of the structure and design of the Ministry of Health and Family Planning appears in MOHFP, 1985. The policy changes over the post-independence era have been reviewed by Duza, 1985.
7. A history of organizational change in the Bangladesh population programme is in Duza, 1985, *op. cit.*
8. See Phillips *et al.*, 1986 and Simmons *et al.*, 1987.
9. Overviews of this research paradigm appear in Simmons *et al.*, 1987, *op. cit.* and Phillips *et al.*, 1984 and 1985, *op. cit.* Efforts to develop this paradigm in the Extension Project have encountered considerable difficulties. Rather than review these lapses, which are uninformative in this context, an overview of the design and a synopsis of elements that worked are presented. For a discussion of the limitations of the organization development approach in constrained institutional environments, see Koblinsky *et al.*, 1987a and 1987b; Yunus *et al.*, 1984.
10. Stinson *et al.*, 1982.
11. For a discussion of the CDP design, see Rahman *et al.*, 1980.
12. Rahman *et al.*, 1980; *op. cit.* review lessons from the Matlab CDP and the contribution of CDP to subsequent project design is in Phillips *et al.*, 1986. Simmons *et al.*, 1987 review the implications of the Matlab Project for the sociology of supply. See also the review of the determinants of the impact of the Matlab Project in Phillips *et al.*, 1982 and 1987, *op. cit.*
13. See the discussion of the design of the Matlab Project in Bhatia *et al.*, 1980 and Rahman, 1986.
14. See discussions of the sociology of supply in Simmons *et al.*, 1987, *op. cit.* and Phillips *et al.*, 1986, *op. cit.*
15. See Hartman and Boyce, 1983.
16. Research has shown, for example, that the probability of use is a function of the distance to workers' homes. Distance, in turn, influences the contact rate, and contact affects the odds of contraception and the choices that are made. In this way, modelling of data shows the relationship between service dynamics and contraceptive use dynamics (Phillips *et al.*, 1986). See also qualitative research on the client relations issue in Simmons *et al.*, 1984, 1986 and 1987.
17. See Phillips *et al.*, 1982.
18. See French and Bell, 1987.
19. Koblinsky *et al.*, 1987b; and Phillips *et al.*, 1986, *op. cit.*

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