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Abstract
This paper describes the practice-research engagement (PRE) that occurred during an action research project conducted in three hospitals in Jordan. The project aimed to develop and test the feasibility of an improved clinical record keeping system. This paper focuses on how relationships were built and evolved over time with national and local leaders and practitioners to facilitate the study, and how this led to a process of health system improvement. The paper draws on outcomes and analyses from data collected in field notes, recorded interviews and focus groups. Results showed that the PRE approach assisted people to change as they undertook a process of clinical improvement and health systems development.

Key words: action research, clinical improvement, system development, practitioners-researchers engagement, partnerships
Background
This paper describes the details of the practitioner researcher engagement process, undertaken by the first author and field researcher (Khresheh), to implement a shared, consolidated clinical record (the Jordanian Consolidated Birth Record [JCBR]) within three hospitals in Jordan. We took a pragmatic quality-improvement approach to the research. In the paper we describe how practice-research engagement was employed within a number of action research cycles to contribute to health service improvement. The JCBR was tested in three different hospitals in Jordan with the new record being completed by staff in addition to the normal records for the duration of the study. In particular, we analyse the importance and complexity of engaging project participants and building relationships, which deepened as staff and researcher worked together towards the ultimate success of the project. Himmelman’s (2001) framework is used to analyze the researcher-managed process of engagement. Change processes within action research cycles (Brown, 2001), were undertaken jointly by the field researcher and practitioners to achieve mutual goals around practical system improvement (Batliwala, 2003; Brown, Bammer, Batliwala et al., 2003; Reason & McArdle, 2006).

Problem identification and need for change

Jordan is a small developing country, located in the Middle East. The Jordanian population is approximately 5.5 million with a birth rate of 29/1000, a death rate of 5/1000 and a fertility rate of 3.7 (Department of Statistics, 2004). The Maternal Mortality Rate (MMR) in Jordan is 41/100,000 live births with 82% of these identified as being preventable (Nsheiwat & Al-Khalidi, 1997). Preliminary research suggested improvements could be made in maternal and child health data systems. Initial field visits to Jordan by both authors and their meetings with key stakeholders in the Ministry of Health in October 2003 confirmed the need to improve maternity care records and to develop ways of monitoring performance.

The research reported in this paper was part of a larger study aimed at testing the introduction of a new clinical record in Jordan. This was designed to inform planning, and demonstrate accountability from the local level to a national system of monitoring perinatal mortality and morbidity, as well as improve clinical outcomes and organizational efficiency. The study was conceived and planned by both authors in conjunction with Jordanian health leaders, with the field research carried out by the first author who is a Jordanian national. Other publications are in preparation including a paper describing the process of implementation of the new record as a first step toward system improvement and a second paper reporting on the testing of the new standardized record to provide regular and reliable data around birth services and allow comparison with evidence-based practice.

There are two information systems for birthing women in Jordan held in two parallel national records. The antenatal and postnatal records are held in the Maternal Child Health clinics in the community where care is provided by obstetricians, midwives and nurses. Labour and birth records are held in the hospital where other obstetricians, midwives and nurses provide care. Currently in Jordan there is no opportunity for women to retain copies of these records in the form of hand-held records. As a result clinicians work without vital information and there are no opportunities to ‘benchmark’ performance of clinicians, or by one hospital against
another hospital, or to compare Jordanian outcomes of maternity care with international standards.

The study

The study used an action research process underpinned by Practice Research Engagement (PRE) (Brown, 2001). Brown describes PRE processes as: working on a problem that requires the resources of both practitioners and researchers; recruiting participants appropriate to the problem and the PRE process; establishing shared values, goals and expectations for joint work and diagnosing institutional arrangements that support or retard PRE, organizing the engagement process to use participants’ resources effectively and learning from the process about the issues and PRE. These principles were integrated into each action research cycle and influenced the relationships built with participants. The action research was also guided by literature that acknowledges that research aimed at practical systems change cannot generate knowledge or improvement without engaging with practitioners (Batliwala, 2003; Brown, Bammer, Batliwala et al., 2003; Lindsey, Sheilds, & Stajduhar, 1999, Reason & McArdle, 2006).

The Ministry of Health gave approval to conduct the study in three selected hospitals in three different areas of the country. The Ethics Committee of the University of Technology, Sydney (UTS), also provided ethical clearance for the research to be undertaken.

Prior to commencement of the project we conducted a base line audit that investigated the quality of the data kept in the regular clinical record. We then engaged policy makers and clinicians in the design and then the implementation of the JCBR (Brown, Bammer, Batliwala, & Kunreuther, 2003). In this process, which is described below, we applied change theories within action research cycles during the planning, implementation and evaluation of the new clinical record (Brown, 2001).

The audit of 180 medical records of mothers from the three participating hospitals confirmed the poor quality of the data collected in hospitals. Only 50% of these records were adequately completed with documentation occurring in 18 different places throughout the record. It took an average of 90 minutes to complete the full record for each woman. Further, the records were often completed retrospectively by a person who had not provided the care that was described as clinicians would complete the information when they had time or leave this task to their senior colleagues to complete (Khresheh, 2006, p.206).

In keeping with the first principle of PRE (Brown 2001) the record audit data were presented at preliminary meetings with practitioners in the field. Health leaders in the Ministry of Health, managers of the three hospitals, and health professionals working in the maternity departments in participating hospitals all agreed that high quality clinical data for the care of mothers should be a priority and that the current poor records needed to be improved. The new consolidated and linked birth record, the JCBR, was considered to be a solution that could improve the quality of record keeping systems around birth, inform planning, and demonstrate accountability from the local level to a national level through monitoring perinatal mortality and morbidity. It was believed the record would improve clinical outcomes and
This high level of agreement around the new record as a solution to the problem of poor clinical records supported the rationale for the study. Participants were enthusiastic about the potential for an integrated better-designed, shared record to assist clinicians, managers and policy makers to improve a range of outcomes for which they were responsible: the clinicians for improved care of individual women, the managers for more accountable performance in their hospital and the policy makers for a system that reviewed services and worked to improve health care. In exchange for the assistance of the researchers in designing, implementing and evaluating the new record, participants agreed to facilitate and contribute to finding solutions and to generate the data needed to investigate and understand the quality improvement process.

Initial interviews and focus groups were undertaken with 36 people. These included staff in medical records departments (n=3), nurses and midwives (n=15), medical directors and senior staff in hospitals (n=12) and Ministry of Health officials (n= 6). These initial interactions with participants in the interviews and focus groups at national and hospital level helped identify the practitioners in the various departments who were able to work with researchers to improve the quality of records and manage the change process. The formation of ‘communicative spaces’ through focus groups (Reason, 2004) encouraged interaction that led to active participation. New forms of communication also developed among participants from different disciplines, for example nursing, medical and midwifery professionals came together for the first time, with the research providing them with the opportunity for mutual understanding and a means to reach a shared agreement about actions (Reason, 2004). These discussions raised the practitioners’ awareness of the problem by presenting them with an analysis of their own baseline data. This helped to build motivation for change as they realised their own data was of poor quality.

Once the strategy for improvement was identified and agreed with health leaders and hospital staff, practice-research engagement groups were established at different levels of the health system and in the three different hospital settings. These were entitled the ‘National Steering Group’, with separate groups, the ‘Local Leadership Group’ and ‘Local Action Group’. The National Steering Group was comprised of experts from the Ministry of Health and included those responsible for maternal and child health, quality assurance and nursing leadership. The National Steering Group provided the field researcher with the authority to conduct her work, assistance in planning, guidance, and made recommendations that were helpful to the study. The Local Leadership Groups consisted of the managers of the three selected hospitals, directors of nursing, medicine and medical records departments. The Local Leadership Groups provided the researcher with the authority to work with their staff, guided and assisted in her work and were linked at a policy and professional level with the national steering group. The Local Action Groups consisted of the health professionals who were working in the maternity departments of the selected hospitals, including obstetricians, resident doctors, midwives and nurses, and included medical records department workers. The Local Action Groups were supported and guided by their directors in their work with the researcher in the implementation of the JCBR. The process of practitioners-researcher engagement in this study and the organizational efficiency. This new record was based on a similar record used in the Australian health system (NSW Department of Health, 2004).
The role of the researcher in relation to the National Steering Group, Local Leadership Groups and Local Action Groups is described in Figure 1.

**The Action Research Cycles**

*Planning*

Overlapping cycles of action research, diagnosing, planning, implementing and evaluating activities were used in each setting and guided the researcher's interactions with participants (Davison, Martinsons, & Kock, 2004; Meyer, 1993). Interviews and focus groups conducted with staff from three Maternal Child Health clinics linked to the participating hospitals allowed additional data to be collected to investigate the changed record system and its impact outside hospitals and were also fed back into research cycles and conclusions.

Health policy leaders, hospital managers, clinical and medical directors and clinicians were all included in planning to ensure their cooperation and commitment in achieving the aims of the study (Brown, 2001; Brown et al., 2003; Evans, 2003; Larrabee, 2004). Open communication and cooperative interactions between researcher and practitioners on each level produced valuable feedback on the final draft of the JCBR and the process of its implementation in the field. This included modifications of the items in the record, adding new items, specifying who should complete the JCBR, the training of the health professionals in the use of the JCBR and the process of its implementation. The items, the design of the record, and identifying who should complete the form were decided and agreed. The draft JCBR was reviewed, discussed and revised many times during group meetings. All groups from the national to local levels were then invited to provide feedback on the final draft of the JCBR before this was implemented.

‘Training’ sessions that were conducted to enable practitioners to use the new JCBR were also motivating, engaging and consultative in the PRE sense (Brown, L.D., Bammer, G., Batliwala, S., & Kunreuther, F. (2003). They were planned jointly by the first researcher and the action research groups and conducted based on their recommendations. This included the number of training sessions to be conducted in each hospital, the knowledge and practice that needed to be provided to health professionals and the best time for conducting training sessions.

*Implementation*

The National Steering Group led the study, with members identifying participating hospitals, providing formal approval for the study and encouraging hospitals to participate. Local Leadership Groups supported the implementation of the JCBR in the three hospitals, facilitating the involvement of their staff in the process of the implementation. The Local Action Groups working in the maternity departments at the three hospitals were involved in the implementation of the JCBR. The staff of the registration office, admission unit, labour room and postnatal department in the three hospitals shared this responsibility with the researcher. The local director encouraged staff to become actively involved in the implementation process. This helped increase the staff’s commitment to the implementation process and enabled continuous feedback to be included in the evolving, shared process of the study.

The flexibility of the PRE approach and the overlapping action research cycles assisted the researcher and practitioners in dealing with problems that arose during the implementation of the JCBR. The frequent interaction between the researcher and
staff during the fieldwork and the cooperative relationship that shaped this interaction created opportunities for the researchers and whole team to reflect, analyse and make change during the implementation process. This resulted in rapid problem solving and was used to keep staff informed and provide supportive feedback to them. For example, the researcher found during earlier field visits that some health professionals did not complete their sections in the record as had been agreed. The researcher, with the cooperation of the director of each department, conducted additional meetings with staff providing more explanation and clarification of the process, resulting in improved compliance in record keeping.

The engagement between the support groups, practitioners and researcher was organized, managed and sustained by the field researcher, balancing the different values, goals, perspectives and capacities of the researcher and practitioners. This helped limit any negative impact of unequal levels of participation, and maintained the cooperative relationship between researcher and practitioners (Brown, 2001; Brown et al., 2003). The organization of the practice research engagement process into national and local action groups helped solve the problems of power differences that would have arisen if these groups had been integrated (Brown, 2001; Brown et al., 2003). This enabled open and frank exchanges within each group unhampered by issues of status and power as groupings included similar levels of authority, experience and participation. Action research groups at each level were provided with different types of support to manage the change processes of the project ranging from the use of authority and guidance to the personal involvement by clinicians as staff used the new record on a daily basis.

**Evaluation**

The evaluation of the implementation of the JCBR in the three participating hospitals began at a local level in September 2004 and finished nationally with a meeting of leaders in May 2005. Immediate outcomes as well as longer-term evaluations were assessed using record audits, interviews and focus groups. The data obtained were analyzed into themes on the basis of frequency and strength of responses. Findings from the evaluation of the JCBR were fed back to groups at each level and discussed in meetings. Initially findings were also shared with the Local Action Groups in the three hospitals at meetings held during field visits to each hospital. These findings and the staff reflections were then shared with Local Leadership Groups in each hospital. Finally the findings and the reflections of both these groups were reported to the National Steering Group in the Ministry of Health. The ultimate results of the project were presented, by invitation, at a national public forum hosted by the National Steering Group. This inclusive process allowed the project to become the jointly owned work of the Ministry of Health and the researcher and indicated the ultimate success of the practice-research engagement process (Brown, 2001).

The engagement between the researcher and the practitioners challenged current practices, identified effective improvements and developed a tool, the JCBR, that was based on both research and practice (Brown, 2001). The members of all the action research groups and the researchers found the results of the study important and promising. Relationships had been built between the research team and the action research groups that have evolved into long-term collaborations on national and local levels. These have been sustained subsequent to the research being completed. One of us, the first author, has been invited to help in a new project for the Ministry of Health.
that aims to improve the quality of records in maternity care in all the hospitals in Jordan. Additionally practitioners originally involved in the research are still collecting data on the JCBR and sending this to the first author for analysis.

Outcomes and Analysis

The outcomes of this study are on multiple levels and exist in the real world as the Jordanian maternal child health system continues to evolve informed by our work. The learning that we experienced as researchers during the study is explicated below, as we believe it is valuable to share.

Formation of the practice-research engagement groups

The PRE group formation phase started in January 2004 and continued until June 2004 during the diagnosing, or planning phase of the early action research cycles. It was important to have a co-operative inquiry group that consisted of people who shared a common concern for developing understanding and practice in a specific field. It was the field researcher’s role to create the conditions for democratic dialogue among participants within each group (Reason & Mc Ardle, 2006). Data generated during interviews and focus groups was also fed back into the system and informed and stimulated representatives of the whole system in thinking through and planning change.

Key people were identified and engaged in the process during the initial interviews and discussions and continued to participate throughout the project. The researcher targeted her efforts to establish, build and strengthen relationships with the partners in the study and used networking to maximum effect in the early stages (Himmelman, 2001). One health leader in the Ministry of Health, for example, directed the researcher to other key people, who could help; this ‘snowballing’ technique of recruitment became the starting point for building action research teams. Frequent, informal meetings and discussions with key people identified their interests and capacity to engage in the research process. Focus groups helped identify other appropriate people for the practice-research engagement at the local level who were then invited to participate in the project subject to completion of normal formal consent processes (Brown, 2001).

The nature and level of the working relationship that developed between the field researcher and her colleagues in each setting became clearer over the duration of the project and differed according to the nature of tasks undertaken together. Different strategies for engagement were also used with different groups and with individuals. These were influenced by the Jordanian culture, gender and professional role and type of involvement. This was of particular importance when applied to the relationship between the field based researcher and participants who were doctors, nurses and midwives. This became played out very overtly because the field researcher was a woman and a nurse, making it challenging in the early stages for her to achieve a collegial or leadership role with male medical directors who were of higher gender and professional status within this culture. For example, in one of the participating hospitals, the director of the medical department, a doctor, initially completely refused to cooperate. While there were other complicating factors also operating, relating to hierarchical disputes within the hospital, additional efforts were required to gain his
cooperation in the research. The researcher took advice from other health professionals working in the hospital on the best way to get the cooperation of the hospital directors, and was ultimately successful in developing a personal and friendly relationship with each separately, and over time earning their respect as a researcher.

Establishing shared goals and objectives
The researchers and action research groups all shared a common goal of improving the quality of care provided to birthing women and increasing the accountability for services by the health professionals. However, another unpredicted level of goal sharing and team work developed through this study. Training sessions, focus groups and meetings helped doctors, nurses and midwives in the three hospitals to interact positively, find common interests and begin to work in teams focused on this project’s goal rather than as different status individuals (Reason, 2004). Shared objectives and frameworks developed as the content of the JCBR was renegotiated, tested and modified based on group suggestions during discussions in meetings (Brown, 2001). These negotiations resulted in the strategies and methods suitable for the implementation of the JCBR within the Jordanian health system and its hospitals. Further discussions and negotiations resulted in agreement on the level and degree of commitment of participants and how their own interests would be served by their participation in the research (Batliwala, 2003; Brown, 2001; Brown et al., 2003; Lindsey et al., 1999).

The field researcher actively applied the principle of reciprocation confirming the notion that in PRE, research does not just ‘take’ but also contributes (Redelmeier & Cialdini, 2002). She found that she could meet the needs of some participants in ways that enhanced their working relationship. For example, one hospital director was interested in becoming more up-to-date with normal birth and evidence-based practice, and needed a source for this information. The researcher provided her with copies of articles about evidence-based practice and normal delivery and also recommended a contact person within the WHO office in Jordan.

The changing nature of the partnership in Practice Research Engagement

While the commitment to developing partnerships between the researcher and practitioners in this study, was based on PRE principles (Brown, 2001) it can also be explained using the definitions of networking, coordination, cooperation and collaboration strategies identified by Himmelman (2001). These definitions, describe the transformation of power relations necessary to achieve coalitions between organizations to solve problems. They can be usefully applied in relation to the different levels of PRE achieved over the duration of the study and the ever developing relationships in this project.

Networking involves the exchange of information for mutual benefit. It initiated the relationship and began to build trust between researcher and practitioners (Himmelman, 2001). Coordinating involves the exchange of information for mutual benefit and altering activities for a common purpose. This requires time to develop. In this study the establishment of trust between researcher and practitioners was demonstrated for example in the relationship built between the researcher and the hospitals’ managers leading to joint planning of the study and implementation of the training program. Cooperating involves the exchange of information, altering
activities, and sharing resources for mutual benefit and a common purpose (Himmelman, 2001). This also requires significant amounts of time, high levels of trust, and a significant sharing of ‘turf’. This took at least ten months to develop and considerable targeted effort by the field researcher and shaped, for example, the relationship between the researcher and the National Steering Group. This cooperation resulted in letters authorising the research being sent to hospitals and generated the cooperation, guidance and support of Local Leadership Groups and department directors in facilitating their staff’s involvement in the study. The cooperation of the directors of departments was not only logistically desirable, but also increased the motivation of their staff to attend the two hour training sessions. Directors informed the participants about the activities of the training sessions and some promised the nurses and midwives on their staff a day ‘off’ if they attended the training sessions. The field researcher also provided small incentives during the training sessions, such as food, drinks and small gifts in keeping with local Jordanian customs.

A collaborative strategy operates at the peak level of Himmelman's hierarchy. It involves exchange of information, altering activities, sharing resources and enhancing the capacity of practitioners for mutual benefits and a common goal (Himmelman, 2001). Again this requires the highest level of trust, considerable amounts of time, and extensive sharing undertaken for the good of the research and its potential outcomes. The shared goals of improving the health care for mothers and babies and the maternal and child health system in Jordan guided the researcher and practitioners in their joint work and created commitment for the considerable effort needed for the research to succeed. For example, involvement of health care professionals (Local Action Groups) in the implementation of the birth record over a period of time, and their willingness to contribute to the improvement of the quality of care in their health systems, required them to complete two sets of records for the duration of the study. Figure 2 describes the nature and the level of partnership development with the three action research groups.

**Institutional arrangements**

Institutional arrangements may affect the practice-research engagement work and, as Brown (2001) describes, researchers need to learn how to interact within institutional requirements. The first step was obtaining permission from leaders in the Jordanian health systems for the study. The Ministry of Health’s interest and subsequent permission for the study helped provide managers of the hospitals with the flexibility to engage in the research and to use their own authority to facilitate the implementation process. This high level approval enabled the engagement of practitioners throughout the health system and reduced institutional constraints regarding their participation. It also helped the researcher to interact with practitioners in the field in a flexible and authoritative manner.

The second level of institutional participation was required at the hospital level. The manager’s permission for the research allowed directors of each department (medical, nursing, registration) to engage in the process and use their authority similarly with their staff to facilitate the research process. This provided doctors, nurses, midwives and other workers, who implemented and used the JCBR, with the
flexibility to participate and reflect on the process of the implementation with the researcher.

Frequent discussions between the researcher and practitioners helped identify the challenges and/or constraints that an institution might impose on the practice-research engagement within the field. These challenges and constraints were documented during fieldwork and discussed in PRE meetings. We found, as have others, that organizational development and action research can be strongly emancipatory, creating processes and structures for collaborative inquiry (Reason & McArdle, 2006). These processes encourage values of inquiry and learning and mutual respect for other people (Reason & Bradbury, 2001; Reason & McArdle, 2006).

**Conclusion.**

Practice-research engagement was effective in merging the insights of practice with the analytic tools of research to generate new knowledge and improvement in practice. It also helped us learn about managing a process of change that ultimately could improve a health system (Brown, 2001)

Good communication skills, skilful listening, flexibility and respect are some of the strategies the change agent should use to build trust and close relationships with key persons (Buonocore, 2004). The field researcher attempted to model these characteristics and apply them with leaders in the system and appeared to be highly successful in doing so.

Baseline data from interviews and focus groups showed that the time for training, shortage of staff and workload, and resistance to change, were potential barriers to the implementation of the JCBR and constituted risks to the study. Strategies to overcome these were identified early and key people at national and local levels assisted us implement these strategies. We found the work of Reason and McArdle (2006) stating how action research can contribute to organizational development through more effective work practices and better understanding of processes of organizational change to hold strongly in this study. Information collection and feedback to staff led to joint problem solving so that organizational development became not only a process of organizational improvement but also a process of mutual and liberating inquiry. In this study, for example, practitioners learned together that each discipline needed to improve their record keeping behaviors and work together as a team to improve care for women.

The researchers identified resistance to change by health professionals as one of the barriers to the implementation of the JCBR. Most resistance to change occurs due to lack of knowledge about the change and fear of the unknown. Understanding the key areas of change management and how to avoid obstacles are critical to project success. Professionals may feel threatened, especially if there is no clear positive benefit of change apparent to them immediately. They will assume negative consequences and act accordingly to stop or delay the change process (Handly, Grubb, & Keeffe, 2003; Howardell 2006; Linton, 2002). In this study health professionals working in the maternity departments in the three hospitals were involved in the implementation process of the JCBR. In addition, key persons at national and local levels actively assisted and were actively engaged. Effective
communication, clear and shared goals and establishment of joint involvement and shared ownership proved effective strategies that were adopted to enhance change and were successful in preventing resistance.

Cooperation from health professionals was essential for the implementation of the JCBR. One of the participating hospitals was an institution where the field researcher had previously worked. She was well known in this hospital with most of the staff having previously been colleagues and they readily accepted and cooperated with her. While creating some bias, this confirmed the importance of close relationships between researcher and practitioners in the process of implementing the required change. She worked hard to build this type of relationship in the other two hospitals, where she was not known initially, and while not achieving the same depth or duration of relationship, she was ultimately successful.

Our research verified findings reported in the literature that that careful structured planning of the change process helps overcome barriers to change (Buonocore, 2004), and that preventing resistance to change is better than overcoming it with involvement and communication being the best strategies to prevent resistance to change (Szocska, Rethelyi, & Normand, 2005). Achieving change in a public-sector organisation requires more than minimising resistance however and is difficult because the complexity is overwhelming. Success depends on the quality of the implementation, on the sensitivity to different points of view, the degree of support from key persons in the organization and the reliability of the principles of the change approach adopted (Byram, 2000; Iles & Sutherland, 2001; Winkelman, 2003).

We found that developing effective practice-research engagement and using action research at different levels of the system concurrently enabled us to achieve substantial health system change. Our work has confirmed that a PRE approach can facilitate complex health system change associated with quality improvement.
REFERENCES


Figure 1. A description of the practitioners-researcher engagement process used in this study
Figure 2: Describes the nature and the level of partnerships development with the three action research groups the National Steering Group (NSG), Local leadership groups (LLG) and Local Action Groups (LAG) over the duration of the study and how these changed against Himmelman's hierarchy.