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Title: An action research approach to practice, service and legislative change

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SUMMARY

The diminishing medical workforce across rural Victoria (Australia) captured the Victorian state government's attention when this phenomenon threatened the sustainability of emergency care services in rural and remote hospitals in 2006. In response, the Victorian state government funded the Collaborative Practice Model Pilot between 2006 and 2008, to develop and test an alternative model of emergency care service. This paper describes the action research approach supported by the Department of Health to engage a multidisciplinary group of health professionals and managers from five rural health services in redesigning their emergency care services, and informing legislative change. The critical success factors owing to action research are presented.

INTRODUCTION

The gap between demand and supply for health professionals is growing at an accelerated rate in Australia as the population ages and the available workforce contracts (RWAV, 2006). Rural hospitals across Victoria (Australia) have experienced this trend most acutely as they struggle to maintain 24-hour emergency care services where they rely on a diminishing medical workforce to attend emergency presentations (Fowles, 2006a, 2006b, 2006c; Schmeiszl, 2006; Scopelianos, 2006). In order to address the problem, the

Victorian government funded the Collaborative Practice Model Pilot. This project aimed to engage a multidisciplinary group of health professionals from four rural health services and one bush nursing centre to develop and test an alternative model of emergency care service provision which would over come the reliance on a medical practitioner. The alternative model was based on Queensland Health's Rural and Isolated Practice Endorsed Registered Nursing (RIPRN) model (Timmings, 2006). RIPRN is an advanced nursing practice model in which registered nurses are enabled through further education and legislation to operate relatively autonomously, within a collaborative practice framework (Queensland Government and the Royal Flying Doctor Service, 2011). The primary aim of the Collaborative Practice Model Pilot was to enable nurses to practice more autonomously decreasing the need to call in the local doctor to attend to emergency presentations.

Using an action research approach, the Pilot achieved its outcome of reducing the call on the local general practitioner and increasing the nursing participants' autonomy and therefore the number of patients seen only by the nurse. The strategies used to achieve this end-point included advanced nursing training, organisational policy change and legislative amendments. While the details of this project are reported elsewhere, this paper presents the action research approach used in this study. The paper will briefly discuss the action research methodology underpinning the study, and then describe the various methods used to engage participants in understanding their situation, developing and reviewing actions to create a more sustainable emergency care service model. Finally, the key success factors of the action

research approach to changing practice, health services and legislation are discussed.

ACTION RESEARCH METHODOLOGY

Action research is a research methodology that sits within the critical paradigm and is designed to engage people meaningfully in change processes that impact upon them, and empower them to shape the changes that are made (Roberts & Taylor, 2002). The participants (or co-researchers as they are sometimes referred to in action research) define the problem, data collection methods and interpret the results (Holter & Schwartz-Barcott, 1993; Kenny & Duckett, 2004; Popay, Rogers, & Williams, 1998).

As well as implementing change, action research aims to generate evidence and develop theory (Holter & Schwartz-Barcott, 1993). It is this latter aim that is said to distinguish action research from other approaches to change management such as quality circles (Greenwood, 1994).

Action research generally involves repeated cycles of assessing the situation, planning and implementing action and reassessing the situation to measure the impact of action and refine subsequent action (Stringer, 1999). These steps are variously called 'look, think, act' (Stringer, 1999); 'plan, act, observe, reflect' (Grundy, 1982; Kemmis & McTaggart, 1988); and 'plan, do, study, act'. This cyclic process can permeate every aspect of the research process from overall research design to the critical self-reflection undertaken by the researcher and participants with respect to their individual actions and

interactions (Bob Dick, 2005b). The action cycles support reflective practice and continuous improvement (see Figure 1).

Figure 1: The cyclic process of action research(Adapted from Susman & Evered, 1978)

In order to reduce any power differentials between the researcher and participants, the researcher is called a research facilitator, and in some action research projects the participants are referred to as 'co-researchers'(Roberts & Taylor, 2002). However, in this study, participants were not referred to as co-researchers as it was decided by the participants that this term could raise unrealistic expectations and confusion as to the authorship of the papers produced during the study and their research

expertise. Action research methods encourage divergent points of view as a means of gaining deeper understanding and synergies (B. Dick, 1998; Holter & Schwartz-Barcott, 1993).

ACTION RESEARCH METHODS

Ethics clearance

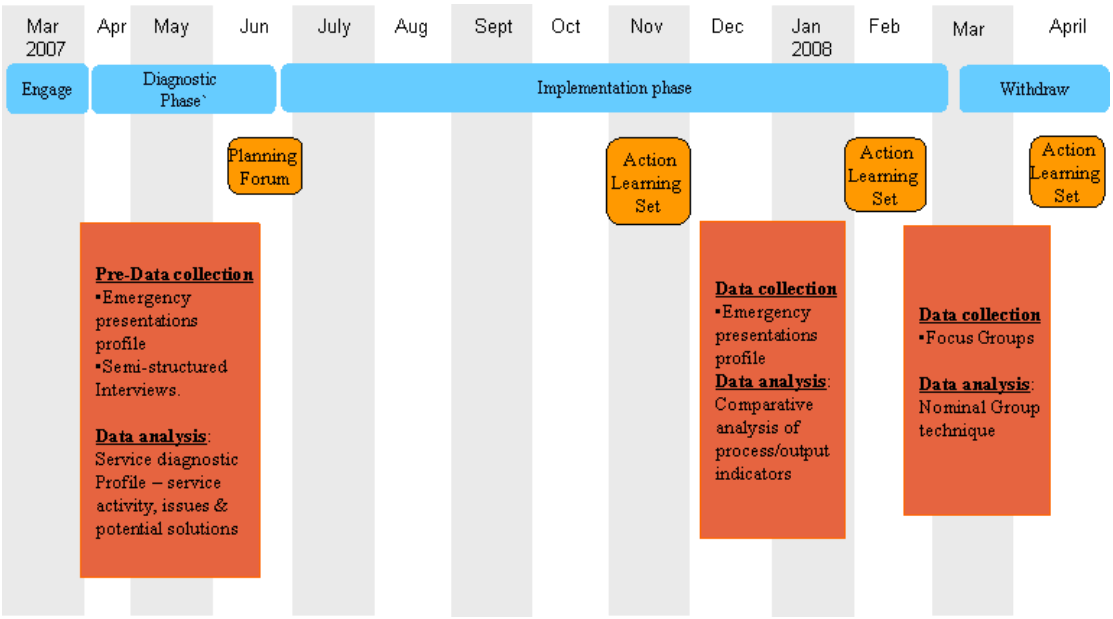
The Victorian Department of Health's (formerly the Department of Human Services) Human Research Ethics Committee and the University of Queensland Behaviour and Social Sciences Ethical Review Committee granted ethics approval for the original proposal in November 2006 and for a subsequent amendment to the project design in March 2007. It is in the nature of action research that the project design may change and evolve as participants are recruited and contribute to its development. Ethical approval is required for changes as they emerge.

The project plan

In this study, there were four action cycles commencing with the engagement of the health service executives in late 2006. The remaining participants were engaged between March and May 2007. Figure 2 illustrates the planning forum and action learning sets, data collection and analysis across the project time line. The action cycles are bounded by the action planning forum and subsequent action learning sets.

All participants were invited to attend a two-day planning forum at the start of the project and the three one-day action learning sets held at regular intervals during the project.

Figure 2: Study action cycles, data collection and analysis



Participant selection strategy

This study used convenience sampling at two levels: health services and staff including nurses, doctors and pharmacists employed within the selected health services and bush nursing centre (participants).

The participant selection strategy aimed to include staff that could provide "the most relevant and richest forms of information" (Kenny & Duckett, 2004

p.1061; Popay et al., 1998), as well as the broadest range of perspectives possible (Bob Dick, 2005a). This was achieved in this study by targeting health service executives and managers, doctors, nurses and pharmacists in participating health services that had a direct interest in the provision of emergency care.

Pilot sites

The pilot sites were selected purposively (Roberts & Taylor, 2002) on the basis that each of the five Victorian rural regions were represented (Barwon South Western; Grampians; Loddon Mallee; Hume and Gippsland), and they were experiencing difficulties sustaining their emergency are services.

The pilot sites were characterised by having:

- A variable reliance on visiting medical officers for medical support. For example, at one end of the continuum, the Bush Nursing Centre accessed medical support primarily by telephone. The doctor attended the BNC once a week or fortnight from the neighbouring town. Whereas, at the other end of the continuum, one of the larger hospitals had doctors on their staff and on-site 24 hours of the day, 7 days a week.
- A variation in the number of emergency patient presentations per annum.
- Either of the two staffing arrangements determined by the Victorian public nurses' enterprise bargaining agreement (current at that time until September 2007). Participants from a) hospitals with emergency

presentations above 5,000 who employed nurses within the ED; and b) hospitals that relied on the ward nurses attending to patients who presented in the emergency area (Table 1).

Table 1: Sample design

Rural Health Service Pilot Site	**A** Designated nurses >5,000 presentations	**B** No designated nurses >2,500 presentations	**C** No designated nurses <2,500 presentations	**D** No designated nurses <1000 presentations	**E** Remote area nurse (RAN) 867 presentations	**Total**
Registered Nurse Division 1	4	3	4	2	1	14
Visiting Medical Officer	0	1	1	1	0	3
Pharmacist	1	1	1	0	0	3
CEO	1	1	1	1	0	4
Director of Nursing (DoN)	1	1	1	1	0	4
Paramedic	0	0	0	1	0	1
Total	7	7	8	6	1	29

Planning Forum and Action Learning Sets

At commencement of the study, one two-day Planning Forum was held followed by three one-day Action Learning Sets were held at intervals across the project period. The research facilitator facilitated the forums. The aims of the Planning Forum and the Action Learning Sets are listed below.

The Planning Forum aims to:

- Provide a detailed understanding of the Pilot and how it fits into the State picture and what commitment is required for it to succeed.
- Provide an opportunity to network and form working relationships within and across Pilot sites.
- Provide opportunities to learn from other participants and challenge assumptions that may get in the way of improvement.

- Provide an understanding the boundaries to practice improvement, including the medico-legal boundaries, and enablers, as well as the practice boundaries relating to the nurse-training program.
- Develop achievable plans of action to improve the emergency care service and practice.
- Identify the synergies and action that is best pursued across the pilot sites or at Government level.

The Action Learning Sets (ALS) aims to:

- Provide opportunities for critical appraisal and discussion about issues that get in the way of delivering effective emergency care tapping into the wide variety of perspectives and experiences present at the ALS.
- Develop strategies, processes and attitudes that enable effective change management.
- Create opportunities to network and form working relationships within and across Pilot sites.
- Provide opportunities to learn from others and challenge assumptions that may get in the way of improvement.
- Review achievements so far and what blocked and enabled progress.
- Refine action plans and decide on the next steps for the Pilot.

At the end of the planning forum and the action learning sets participants completed an evaluated survey and the detailed results are reported elsewhere. In summary, participants generally agreed that the aims of the planning forum and action learning sets were achieved. Additionally, the agenda of each of the planning sets were generated from the participants, thus ensuring maximum participation and ownership of the process.

Data collection and analysis

The knowledge produced by action research relates to the diagnosis of the situation before and after actions as well as a careful description of the action that produces the desired (and undesired) changes (Lewin, 1947). The purpose of the data collection is primarily to provide participants with a profile of their situation so they can identify what change is needed and allow them to monitor if the desired change occurred. To this end,

participants determined the approach taken to collecting the data and were involved in developing the data collection tools. Figure 2 shows at which points in the study data were collected.

Quantitative and qualitative data were collected and analysed in this study and will now be discussed.

Quantitative data collection and analysis

The quantitative data collected and analysed in this study were drawn prospectively from the patient records. To collect data from each participating site, a minimum data set (MDS) was developed in Excel by the Minimum Data Set Working Group (Table 2).

Table 2: MDS data fields and definitions

Field	Definitions
Record No.	annn; Alphanumeric made up of health service first initial followed by number of cell (eg. B001; P002; O003; S004)
Date of birth	dd/mm/yy
Age	Age of patient Automatic calculation in years - drag formula down to end of record
Presentation date	dd/mm/yy: Date that person presents to the emergency area
Presentation time	hh:mm - Time that the person presents to the emergency area
Triage date	dd/mm/yy - Leave blank if it is the same as the date of the presentation.
Triage time	hh:mm 24 hour clock - Leave blank if it the same as the presentation time.
Triage nurse code	Code of the nurse that performed the triage and assessment. Code will be made up by the Pilot site managers - Alpha numeric eg: BN01; SN02; ON03;CVN04;MN01
Presenting complaint	Specify the problem the patient complains of or as described by the accompanying person/paramedic.

ATS category	Drop down list - Final triage category of patient (if patient triage category changed during presentation episode) ATS category for waiting time for treatment: 1 – immediate 2 – 10 minutes 3 – 30 minutes 4 – 60 minutes 5 – 120 minutes 6 - dead on arrival.
Intervention date	dd/mm/yy - Leave blank if it is the same as the presentation date.
Intervention Time	hh:mm- Time investigation and/or treatment initiated. (To distinguish the intervention from the triage/assessment date and time.)
Intervention Nurse code	Nurses' identification code. If a nurse initiates additional diagnostics and/or treatment - other wise insert 'NA'. (This will enable Pilot to measure a change in the capacity for nurse participants to initiate diagnostics and intervene actively in delivering care/treatment without medical support).
Nurse pilot participant	Y or N - Nurse has signed a consent form to participate in the Pilot and is undertaking training.
Doctor contacted date	dd/mm/yy - Leave blank if it is the same as the presentation date.
Doctor contacted code	Code of the doctor contacted.Code will be made up by the Pilot site managers - Alpha numeric eg: BD01; SD02; OD03;SD04; MD01; CVD01
Doctor provided phone advice only	Y or N - Doctor provides clinical advice over the phone to the nurse to assist in managing the presentation without attending.
Doctor attended date	dd/mm/yy - Leave blank if it is the same as the presentation date.
Doctor attended code	Code of the doctor who attended.
Diagnosis	Code - is the number next to the diagnosis in the attached list –This number coincides with the clinical guidelines contained n the 5th Edition of the Queensland Health Primary Clinical Care Manual (PCCM). This specifies primary provisional, differential or definitive (if this was determined during the presentation) diagnosis identified by the conclusion of the presentation episode. 'Other' is for diagnoses that do not appear in the list. Code 6 needs to be included as well as specifying the diagnosis it relates to. 'Assessment' - Code 7 is for presentations that only result in an assessment but no problem identified or treatment initiated.
PCCM used	Was a guidelines from the PCCM used - Y or N
Medicine name (3 fields for this)	Medication code from the list of PCCM medications except if 'other' - in this case name medication.

1 Medication code (3 fields for this)	Drop down list indicating how medicine was ordered and whether it was prescribed, administered and/or supplied. - Nurse initiated - Administered on doctor's phone order (One dose administered to the patient in accordance with the doctor's verbal order over the phone.) - Administered on standing order (One dose administered to the patient in accordance with a hospital standing order.) - Administered on doctor's written order (One dose administered to the patient in accordance with the doctor's written medication order.) - Supplied only (More than one dose supplied for patient to self administer later) - Administered and supplied (The first dose administered with more than one dose supplied for patient to self administer later) - Administered and prescribed (One does administered and a prescription for medication provided only) - Administered, supplied and prescribed (One dose administered, medication for future doses supplied, and a prescription provided.)
Disposition type	Drop down list - Admitted, transferred, discharged home, death, discharge at own risk (Has been assessed but has made a conscious decision not to follow the advice given regarding treatment and has left), left without waiting (Triaged but not stayed for further assessment or advice/treatment)
Transferred to	Drop down list - Neighbouring hospital, regional hospital, metro hospital, blank if not transferred.
Disposition date	dd/mm/yy - Leave blank if it is the same as the presentation date.
Disposition time	
1 Referred to (2 fields for this)	Drop down list - GP, AH, HACC, Community health, maternity and child health, mental health services, pharmacy, other

The Minimum Data Set Working Group was convened with representatives from three of the hospital pilot sites. The data fields and definitions were determined on the basis of the outcomes the participants aimed to achieve in this project and the capacity of the clinicians and existing data systems. This tool was then piloted by the same three sites and amended according to the feedback provided.

Data were collected on emergency patients for a period of 4 to 6 weeks at the commencement of the project and again for the same time period prior to the final action learning set. The first data collection and analysis was presented as part of the pilot site's organisational diagnostic profiles using frequencies (for example, 'proportion of patients seen by nurse') and cross tabulations (for example, 'proportion of patient seen by a nurse by triage category'). The second data collection prior to the third action learning set enabled comparative analysis to measure the impact of action on key indicators such as the 'number of presentations managed by nurses without doctors'. The results of the data analysis are not included in this paper.

Qualitative data collection and analysis

Qualitative data were gathered from semi-structured interviews, the planning forum, action learning sets and focus groups.

Convergent interviewing

The research facilitator engaged participants in semi-structured interviews of approximately one hour's length using the convergent interviewing technique described by Dick (2005) to simultaneously gather and analyse the data (Bob Dick, 2005b). Convergent interviewing is particularly suited to action research because: it allows the "process to be driven by the (participants) and the data they provide" (Bob Dick, 2005b p.157); it enables the researcher to interpret the information as participants are being interviewed; the interpretations and theory that evolve from the interviews reflects the participants' reality (McDowell, Hine, & Bakker, No date provided); and the analysis and results are constantly validated or

challenged by subsequent interviews. Convergent interviewing also follows the action research cycles by allowing the interviewer to adjust their interviewing style, the questions and even the participants following reflection about previous interviews (Bob Dick, 2005b). For example, a paramedic was invited to participate in the project after previously interviewed participants identified her role as important in the emergency service.

Every interview commenced with questions about the participant's background and role in the emergency service. An open-ended question followed that encouraged the participant to provide their perspective on how the emergency service operated, identify areas of strength and opportunities for improvement. This gave the participants an opportunity to present their individual views on the subject. The data analysis involved identifying and analysing issues that emerged from each interview. Dick suggests that where there is agreement between interviewees on issues, the probe question for the subsequent interview should be devised "to find the exception" (Bob Dick, 2005b p.162). Questioning became more specific in subsequent interviews focusing on the themes that emerged in previous interviews in an attempt to understand the different perspectives (Bob Dick, 2005b).

Data and analysis from the Planning Forum and Action Learning Sets

A significant amount of data were gathered and interpreted by participants working together in the action learning sets. Others have described action learning sets as 'communities of inquiry' (Dewar & Sharp, 2006) or 'self-critical communities' (McTaggart, 1991).

The data gathered from these forums were:

- project outcomes agreed by the participants,
- action plans developed and refined in these sessions,
- progress assessments of strategies, factors that enabled or obstructed progress, and
- participant evaluation of the planning forum and action learning sets

Focus groups – Nominal Group Technique

Prior to the last action learning set, a focus group was held at each pilot site of two to two and three-quarter hours length [except for the Bush Nursing Centre in which the nurse [sole employee] was interviewed]. The purpose of these final focus groups was to identify emerging issues and areas for improvement, strategies to address these and processes to sustain this continuous improvement process.

Nominal Group Technique (NGT), developed by Delbecq and Van de Ven (1974), was used to facilitate the focus groups. NGT is a group decision-making approach that is best suited to complex problems of interest to a wide range of stakeholders who hold different perspectives on what represents the solution (Van de Ven & Delbecq, 1974). NGT is structured so that a diversity of individuals work predominantly along-side each other rather than interacting, considering and generating their individual ideas which are then ranked and discussed by the group in order to reach a group decision (Delbecq & Van de Ven, 1971; Van de Ven & Delbecq, 1974).

ACTION RESEARCH SUCCESS FACTORS

While action research has been used to facilitate change in education(Ye, Kretschmer, & Hartman, 2010), health care(Elsey.H & Lathlean.J, 2006), aged care(Dewar & Sharp, 2006; Lindeman. M.A et al., 2003), and child and family support services(Crane & Richardson, 2000), this study is possibly the only published account of action research being used as a collaborative strategy by government to drive service delivery and legislative change. The authors believe that the success of this study in achieving change in practice, service and legislation was attributed to the action research approach which:

1. Provided a politically safe approach to service, policy and legislative change.
2. Ensured collaboration permeated the endeavor.
3. Shifted the focus from technical to emancipatory.

Each of these success factors will now be discussed.

1. A politically safe approach to service system and legislative change

In the past, attempts to advance nursing and increase nurses' ability to practice more autonomously have been met with significant resistance from the medical profession (Ball & Cox, 2004; Bryant-Lukosius, DiCenso, Browne, & Pinelli, 2004; Lindeke & Jukkala, 2005; Willis, 1990). Given that this project was focusing on potentially contested ground between medicine and nursing,

action research was considered the most politically safe approach. Action research was considered politically safe because it actively engaged people from both medicine and nursing, tested their tolerance for the new model and involved doctors actively in implementing the new model. Further, this action research project facilitated incremental change, which gave participants an assurance that changes could easily be reversed if, on reflection, the change was not effective or caused untoward stakeholder reactions. The evidence and stakeholder support generated by the study contributed to a successful case to change the Victorian Drugs, Poisons and Controlled Substances Act (1981) to enable nurses to supply medicines under specific circumstances without a doctor's order.

2. Collaboration permeated the endeavor

True to it's name, the Collaborative Practice Model Pilot used the action research principles and processes to establish genuine collaboration between participants at every stage of the project, from design to delivery. This meant that the forums and action learning sets encouraged collaboration between members of the health disciplines, between clinicians and managers, between clinicians and government, and between health services. There is an abundance of evidence that stakeholder engagement and collaboration is key to successful change (Kotter & Schlesigner, 1979).

3. Shifting from a technical to emancipatory approach to facilitation

The degree of 'participation' of participants is said to depend on the facilitator's technical versus emancipatory orientation to the research or practice development (Grundy, 1982; Manley & McCormack, 2003). The key difference between technical and emancipatory orientations to facilitation is that the former places the facilitator as the expert authority on the 'technique', providing participants with a topic to research, direction and expertise. The facilitator who adopts an emancipatory orientation creates the conditions for open, critical, and reflective discussion by all participants, and the development of ideas and motivation for action. The participants retain the power and responsibility for change (Grundy, 1982; Manley & McCormack, 2003).

It was found in this study that the facilitator's orientation can shift over the course of the project as the participants engaged and developed their understanding of the project methods and aims. This study started in the mode of technical action research and progressed to emancipatory action research. Initially, it was the researchers' critical intent to create a 'negotiated division of labour' between nurses and doctors as defined by Freidson (Freidson, 1976). However, in order to test this theory, the health services and clinicians involved had to be willing and enabled to question their current practice and systems. The 'technical expertise' on the public policy process, the rural and remote nursing model that was piloted and action research methodology provided by the researcher informed the initial project proposal around which participants subsequently engaged and refined. From the point that the participants were recruited, it may be said

that the project became emancipatory action research, as it was the participants' critical intent as much as the researcher's that drove the project.

CONCLUSION

The Victorian Department of Health funded an action research project to engage a selection of rural health services and a bush nursing centre in developing and testing a new, more sustainable approach to emergency care service provision. The action research approach was key to the success achieved by the participants in changing clinical practice, service delivery and the Drugs Poisons and Controlled Substances Act (1981). The factors that make action research ideally suited to driving service, policy and legislative reform are its incremental-cyclic nature, engaging stakeholders and empowering participants to drive the change.

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