

# General Practice (GP) emergency preparedness: a pilot needs analysis using medium fidelity patient simulators

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## Introduction

Family doctors and their practice staff are on the front lines of healthcare and can be required to manage emergencies. Little research exists on the risk profile of GP practices. Most primary care practices report at least one emergency presentation per year<sup>1-3</sup>. Reports indicate that the most common adult and childhood emergencies are asthma, anaphylaxis, shock, seizures, and cardiac arrest<sup>4-5</sup>. Most studies are in Paediatrics and Dental care<sup>6-11</sup>. The few studies which assess preparedness for emergencies in GP primary care settings report that most practices are not fully prepared for acute medical emergencies<sup>12-14</sup>. We found no studies evaluating impact of longitudinal training directed at clinical *and* non clinical staff as members of an emergency response team or system improvements. Nor did we find models of evidence-based programme success criteria to shape such interventions.

## Aims

1. To conduct a pilot needs analysis using simulations to probe emergency preparedness of GP practices to manage 'common' acute care emergencies.
2. To develop a training model based on the pilot needs analysis.
3. To define evidence-based 'success criteria' for the training model.

## Study Design

Participatory Action Research (PAR)<sup>17</sup>

## Participants & Setting

Staff representing 25 General Practices in South London serving a combined population of over 150,000 patients participated. These included:

- 36 GP's
- 17 Practice Nurses
- 25 Non Clinical (Receptionist / Practice Managers)

## Methods

### 1. Theoretical approach:

Participatory Action Research (PAR) represents a theory of change which involves participants engaging in repeated cycles of *needs analysis, planning, implementing actions and evaluation*. It is a highly cyclic process (Fig 2). Using simulation to probe current emergency preparedness participants *discuss outcomes and define new steps for action (e.g. SMART plans: specific measurable, achievable, resources, time bound) to achieve a 'desired' state of improvement*. Participants become part of a collaborative programme design team. The assumption is that this leads to a system continuously learning from experience, learning to learn, and creating conditions (structures, processes, culture) that support and foster learning<sup>15</sup>.

### 2. Needs analysis and training activities

Practices attended a one-day hospital based simulation training day followed by 2 half-day GP practice based sessions over 8-months. We combined teamwork and human factor discussions with medium fidelity simulation based training (SBT) around common emergencies. Video playback in facilitated debriefings focused on clinical knowledge & management plans, procedural skills, non technical skills (NTS), system responses and ergonomics. After each cycle a SMART plan was negotiated for follow up *in-house* staff training and system improvements.



Probing 'emergency preparedness in GP practices in South London (UK)

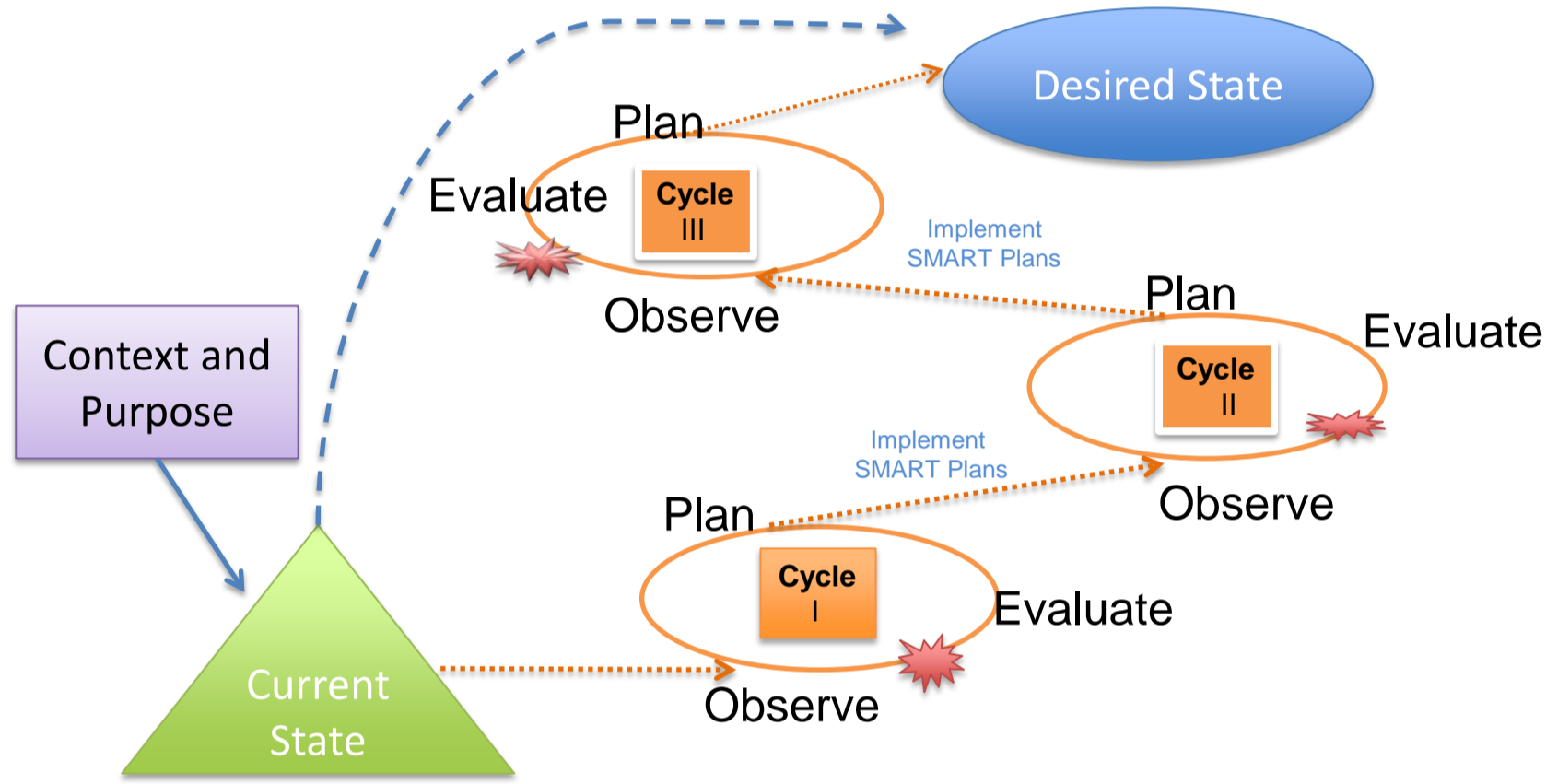


Fig 1 Planned action change: Implementation cycles in PAR

Focus	Need to be able to	GP	N	R	M
<b>Knowledge</b>	Describe signs & symptoms of anaphylaxis and treatment protocols (drugs, doses, delivery methods)	✓	✓		
<b>Procedural Skills</b>	Recognize need for resuscitation and when to begin (e.g. patient stops breathing)	✓	✓	✓	✓
	Administer intravenous drug infusions safely (adrenalin, hydrocortisone at appropriate time (Resuscitation council basic & advanced guidelines)	✓	✓		
	Demonstrate safe use of bag valve masks and oxygen	✓	✓	✓	✓
<b>NTS</b>	Demonstrate ability to find & measure vital signs (e.g. pulse, respiratory rate)	✓	✓	✓	✓
	Make a structured handover to ambulance paramedics	✓	✓	✓	✓
	Use close loop communication: acknowledge read back instructions	✓	✓	✓	✓
<b>Ergonomics</b>	List & identify contents of emergency grab bag. (Identify drugs quickly)	✓	✓	✓	✓
	Recognize different types of masks and how to attach them to pt and oxygen cylinder	✓	✓	✓	✓

Table 1: At each cycle GP practice staff identified roles and skill sets for better emergency preparedness to address in SMART plans. This example illustrates consensus in 8 practices about roles following an anaphylaxis scenario. GP= doctor N= nurse; R= receptionist; M = manager.

Emergency management plans for all staff

Fig 2: Identified Needs & Training focus

Identified Needs	Success Criteria	Evidence	Time
<b>Team training</b>	Changes in Staff perception of team effectiveness and safety in acute emergency	AHRQ pre post questionnaire <sup>18</sup>	8 months
	≥75% practice staff can describe emergency management plans and role responsibilities	AHRQ questionnaire Case based discussion	6 months
	> 75% staff can apply knowledge of team skills in simulation exercises and debriefs	SBT exercises & video	2 months
<b>Medical Management</b>	≥ 60% lay staff have BLS certification	BLS Certificates	8 months
	≥ 90% clinical staff demonstrate effective triage, management and compliance with Resuscitation council protocols	SBT observation	6 months
	≥ 70% GPs & nurses have ALS/APLS updates	ALS Certificates	9 mths
	100% clinical staff can describe management of respiratory and cardiac arrest emergencies	Telephone interview/site visit	3 month
<b>System &amp; Ergonomics</b>	≥ 90% GP practices have complete set of basic resuscitation items including paed/adult masks, AED defibrillators) in emergency Grab bag	Site visit	6 months
	> 90 % GP practices display media with emergency response plans, guidelines, protocols which are easily accessible by all staff	Site visit	8 months
	≥70% participating practices action SMART plans for in house training	GP training audit	3 months
	≥ 75% staff can safely assemble and deliver oxygen, nebulisers, defibrillators	SBT exercises	6 months

Table 2 – Evidence-Based Success Criteria

## Results

Eight of 25 practices completed 2 cycles and 2 of 25 practices completed 3 cycles.

- (a) **Emergency preparedness.** Non optimal levels of emergency preparedness were recognised by all practices in the PAR process. For each common acute scenario practice staff identified the skills sets needed by clinical *and* non clinical staff to build capacity in an emergency response. Table 1 identifies these for anaphylaxis.
- (b) **Training Needs:** Collated SMART plans in the PAR cycles contributed to a training needs development model (Fig 2) and evaluation framework (Table 2)
- (c) **Evidence-based success criteria:** A sustainable evidence-based evaluation model was developed from (a) and (b) and through discussions with participants for a future training programme (Table 2)

## Conclusions

In this small pilot project simulation based technology proved to be highly effective to explore areas for improvement in emergency preparedness in GP practices. Although participation in the pilot by all practices through 3 cycles was very limited, findings from observations of a small number of large practices seem to confirm reports in the literature that emergency preparedness is sub optimal. Importantly, we piloted a cyclical approach to building capacities by iteratively planning with participants strategies for future learning. From the PAR approach emerged a collaborative needs analysis encompassing individual, team and system components of emergency preparedness. This included an evidence-based evaluation model for a future larger scale training programme in South London.

## Take Home Message

- The PAR model using simulation was very useful to probe emergency preparedness. Importantly, it revealed needs while also focusing on *how* practices might 'come to be best prepared. As such, it is useful to build capacity.

Collaboratively developed programme models (Fig 2, Fig 3) contribute to capacity building by ensuring 'buy in' and also by making explicit to participants short term and longer term outcomes and ways to achieve and measure them

Emergency preparedness is multifaceted. Programme models are an agile heuristic in situations of complexity that can be revised and combined repeatedly over time to reach desired outcomes with different participant groups.

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