Introducing a post-registration interprofessional learning programme for healthcare teams

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Abstract

Introduction: Few studies have evaluated interprofessional learning (IPL) and teamworking in active clinical teams. The aim of this study was to evaluate an IPL programme offered to established clinical teams by assessing team climate before, during and after the intervention.

Methods: A previously validated questionnaire, that explored team members' views of team climate, was administered before the IPL programme, at four months following facilitated meetings, and again at eight months. Responses were analysed using one-sample and independent samples *t*-tests.

Results: Nine teams, made up of 79 individuals, agreed to join the IPL programme. After four months, during which time the teams were supported by an educational facilitator, the overall team climate increased by 8.0% of the maximum possible score of the questionnaire (95% confidence interval = 7.4% to 8.6%). This difference was highly statistically significant (*p*-value <0.001) and similar increases in scores were seen in each section of the questionnaire. This significant change was sustained after a further four months when the programme continued without the support of an educational facilitator.

Conclusion: An IPL programme, such as the one described in this paper, can improve team climate and raise awareness of professional roles within established clinical teams.

Practice points

- Although there are studies that evaluate pre-registration interprofessional learing programmes, there is little research evaluating interprofessional learning programmes and teamworking in active clinical teams.
- Purposeful and structured facilitation of established interprofessional healthcare teams can lead to improvements in perceptions of team climate and teamworking.
- Further research is needed to confirm the effect of interprofessional learning on teamworking and the benefits to patient care and patient safety.

Introduction

A strategy for radical change in the National Health Service (NHS) in the UK (Department of Health 1997) proposed improvements in patient services and initiated a ten year programme of modernization. This programme advocated new ways of working (Department of Health 1999), including cross-boundary collaboration, and encouraging interprofessional interactions and teamworking through education and training (Department of Health 1996). Although the importance of teamworking has been recognised implicitly for many years, it is only relatively recently that the NHS has placed a strong emphasis on this style of working (Leathard 2003). Effective teamworking, across different professional groups within healthcare settings, is now considered essential to first-class patient care delivery and the provision of a seamless service (Department of Health 1997, 1998; Pearce et al. 2006). Furthermore, high quality teamworking is associated with reduced patient mortality (Knaus et al. 1986; Aiken et al. 1994) and the promotion of safer patient care (Leonard et al. 2004).

Teamworking, interprofessional learning/education (IPL/IPE) and interprofessional practice (IPP) are central to the implementation of Agenda for Change (Department of Health 2000a). The knowledge and skills framework of core dimensions in healthcare in the UK form an integral part of the modernization of the NHS (Department of Health 2004). Teamwork requires healthcare professionals to have effective interpersonal skills and an understanding of how successful teams operate (Payne 2000; Miller et al. 2001). This knowledge and skills base has not been taught explicitly, until recently, as part of healthcare professionals' training (Department of Health 2000b; English National Board for Nursing, Midwifery and Health Visiting 2001). Health Care Commission inspections continue to flag a number of instances where teamworking is lacking or does not involve appropriate personnel (Healthcare Commission 2007). Despite a recognised importance, few studies have actually looked at improving teamworking effectiveness within proximal work groups (Anderson & West 1998) of active teams of qualified healthcare staff.

Although an increasing number of studies are evaluating pre-registration IPL programmes (see for example Cooper et al. 2005; Lindqvist et al. 2005; McNair et al. 2005; Anderson et al. 2006), little research is evaluating IPL programmes and teamworking in active clinical teams. In the practice setting, where professional boundaries and established hierarchies exist, high quality teamworking can be complex and difficult to achieve (Hall 2005). Some of the constraints on interprofessional practice are thought to be discrete training backgrounds; incompatible professional and organizational boundaries and loyalties; isolation with little management support; disparities in status and pay and lack of clarity over roles (Leathard 2003). This is in addition to problems of differing ideologies or goals, inequalities in power and poor communication. Nevertheless, teams and teamworking are seen by some as the basis of a new paradigm of healthcare (Gafa et al. 2005).

West & Markiewicz (2004) suggest that improving teamworking involves teaching decision-making skills effective information strategies; improved communication skills; and co-operation and conflict resolution skills. Also, it is argued that there needs to be a conscious and concerted effort to develop and nurture a team if it is to be more than a collection of individuals grouped around a task (Lawford 2003). Learning to work together is fundamental to effective teamwork. Gafa et al. (2005) and Taylor (2002, cited in Hall 2005) propose that effective interprofessional learning should address the attributes, skills and knowledge required for the mutual respect and effective communication, both across members of interprofessional teams and between teams. Improved patient care can be realized if staff regularly interact to negotiate and agree work (Zwarenstein & Reeves 2006).

This paper reports on the evaluation of an IPL programme developed to improve interprofessional team functioning in established clinical teams.

The IPL programme

The IPL programme was developed in a centre for interprofessional practice at a university linked academically with an acute Healthcare Trust. The aim of the programme was to improve team performance and communication, leading to improved patient care. The objectives were to enable team members to enhance their skills and understanding of working in an interprofessional team, empower each team member to feel valued within the team and promote the effective contribution of their own professional expertise to the goals of the team. The purpose of the programme was also to: improve team decision-making processes; increase understanding of methods of information sharing across the team; and improve methods of team conflict resolution.

The IPL programme took place over a period of eight months and included five team meetings co-ordinated by an educational facilitator. Each team met with the facilitator for two hours every month for four months. The meetings were followed by a fifth and final meeting with the team and facilitator, after a four month interval during which time no facilitation took place. It was expected that each team member would attend at least three out of the five team meetings. The first meeting was devoted to the identification of areas of practice that the team wished to progress or develop, which they believed would lead to improvements in patient care or patient experience. A declared list of learning goals emerged, which formed the backbone of the programme. The teams then worked towards achieving these goals, reporting back on progress at each meeting during the first four months. In some instances each team member was responsible for the delivery of one particular goal, and in other instances two or three team members - usually cross-professional - worked together on the delivery of one more complex goal. Examples of team goals are given in Figure 1.

- Devise a questionnaire to gain greater insight into the patients' understanding of risk factors between diabetes and eye disease. This would help inform planning for the provision of educational information to meet patients' needs;

- Carry out an independent investigation using semi-structured interviews with patients to examine possible duplication of verbal and written information given to themwhen attending the antenatal clinic. The rationale for this was to reduce confusion for the patients which could lead to mismanagement of their care;

- Improve communication between the ward and the Pharmacy department by implementing a link nurse system. This could help to minimise the risk of drug errors and also potentially improve the efficiency and safety of drugs supplied to the ward;

- A member of the team to take responsibility for improving inhaler technique for patients on a respiratory ward. This involved devising a checking system and assessing patients from admission to discharge to ensure thatthe patient received the full benefit of their medication;

- Devise a criterion to prioritise patients' requiring vascular emergency treatment in the angiography department to ensure their care throughout any procedure was as safe as possible.

Figure 1. Example of goals set by the teams.

The role of the educational facilitator was to:

- facilitate the identification and consensus of team goals;
- support appropriate research around specific goal topics;
- obtain relevant educational material as necessary;
- offer emotional and practical support;
- work to empower each team member and encourage them to believe that their contribution, whatever their status, was of equal value to the wellbeing of the team and the patient;
- encourage team members to observe the particular area they were working to develop from a range of viewpoints in order to eliminate or reduce obstacles to progress.

Recruitment of teams

The nine teams who took part in the programme were invited to join the study: pregnancy and diabetes; radiology and vascular surgery; chronic obstructive pulmonary disease; pharmacy; ophthalmology and diabetes; gastroenterology (medicine and surgery); mental health; and continence. Seven of these teams were selected by a group of senior managers from the Acute Trust who represented all clinical directorates and professional groups. The relevant consultant for each team directorate was first approached by the Director of Human Resources from the Trust. A letter was then sent to each team member from the management group to invite them to join the IPL programme. The remaining two teams were similarly selected via a Mental Health Trust and a local Community Hospital. All team members who volunteered to participate gave their consent to join the study with the assurance that their data would be treated with anonymity and confidentiality in evaluation and in future publications resulting from the study. Team size ranged from between ten and twelve participants, which is viewed to be an optimum number of people working for team effectiveness (West 1994). Each of the teams reflected the range of professionals working together in the discrete specialities of healthcare within the trusts (Table 1). Teams that were associated with a clinic (e.g. continence, radiology and vascular surgery, ophthalmology and diabetes, pharmacy, and pregnancy and diabetes) met on a regular basis as part of their work. Other teams, associated with a particular area of care (e.g. chronic obstructive pulmonary disease; medical; surgical; and mental health teams), had more dispersed and irregular meetings prior to this programme.

Table 1. Professionals involved in each team

Team	Catering staff	Dietician	Doctor	Mental health worker	Midwife	Nurse	Occupational therapist	Pharmacist	Physiotherapist	Radiographer	Radiologist	Secretary	Social worker	Technician
Pregnancy and diabetes[a]		1	2		2	2			1					
Radiology and vascular surgery[a]			2			3			1	1	1	1		1
Chronic obstructive pulmonary disease[a]			2			5	1	1	1					1
Pharmacy[a]								5						3
Ophthalmology and diabetes[a]		1	2			2		1				1		1
Gastroenterology (medicine)[a]			1			3	1	1	1					
Gastroenterology (surgery)[a]	1	1	2			3		1	1					1
Mental health[b]			1	1		4							1	
Continence[c]		1				4	1	1	2			1		

[a] = teams from an Acute Trust; [b] = team from a Mental Health Trust; [c] = team from a Local Community Hospital. Notes: 'Doctor' refers to those specialising in: endocrinology; medicine; mental health; obstetrics; and surgery. 'Nurse' includes those specialising in: continence; diabetes; infection control; psychiatry; respiratory; and vascular surgery.

Evaluation

Team members completed a questionnaire based on *The Team Climate Inventory* by (Anderson & West 1994) that was later validated as a tool for measuring group processes and team climate for innovation (Anderson & West 1996, 1998). Participants completed the questionnaire at the start of the programme (baseline), at the end of the four month programme (working with support of the educational facilitator), and again at eight months (following a four month period where no facilitation took place). The questionnaire was divided into six sections, each with a varying number of questions addressing the following areas: team participation (TP), including 12 items; support for new ideas (SN), 8 items; team objectives (TOb), 11 items; task orientation (TOr), 7 items; reviewing processes (RP), 7 items; and social relationships (SR), 8 items. A five point Likert scale was used to assess the TP and SN items and a seven point Likert scale to assess the TOb, TOr, RP, and SR items of the team climate inventory. The reliability of the overall set of items of the questionnaire (Chronbach-α = 0.96) was high, suggesting the questionnaire as a whole could be considered as a scale in itself. Similarly, reliable scores could be drawn from the separate sections of the questionnaire, shown to be reliable, apart from the SR section whose reliability was poor (Chronbach-α scores: TP = 0.92; SN = 0.90; TOb = 0.96; TOr = 0.91; RP = 0.84 and SR = 0.26).

Method of analysis

All statistical analyses were conducted using SPSS-win (version 14.0). An overall score of team climate was estimated by adding the scores of all questionnaire items for each participant. The maximum possible value for the overall score of team climate and for each participant was 347. Similar scores were then calculated for each of the six sections of the questionnaire, and for each participant. The maximum possible score for each section for every participant was: team participation (TP) 70; support for new ideas (SN) 45; team objectives (TOb) 77; task orientation (TOr) 49; reviewing processes (RP) 49; and social relationships (SR) 57. Mean and standard deviation of team climate scores were estimated at baseline, at four and eight months.

A variable proportion of change in the overall score of team climate, from baseline to four months, was devised for each individual taking into account the maximum possible score of the questionnaire (i.e. the score after four months' facilitation as a proportion of the maximum possible score, in relation to the score before facilitation as a proportion of the maximum possible score). The same formula was applied to devise a similar variable for each of the six sections of the questionnaire. One-sample t-test was applied to examine the average change in the overall score of team climate and separate scales from zero (no change).

Results

Nine teams and 79 individuals joined the IPL programme; 90% of these individuals (*n* = 71/79) completed the questionnaire before the facilitated intervention. Table 2 presents mean scores at baseline, four months and eight months. Results suggest that the mean overall score of team climate at baseline was about 58% of the maximum possible value for the full questionnaire (347). On average, team climate had improved after four months, and was sustained at eight months.

Table 2. Mean scores of team climate at baseline, four months and at eight months

Scales	Baseline mean (SD)	At four months mean (SD)	At eight months (four months after facilitation ceased) mean (SD)
Team participation	34.9 (8.1)	42.6 (6.8)	43.3 (6.9)
Support for new ideas	25.4 (4.9)	29.1 (3.7)	29.6 (4.3)
Team objectives	51.7 (13.6)	61.1 (8.6)	60.8 (7.8)
Task orientation	26.7 (8.7)	32.7 (7.1)	32.7 (6.6)
Reviewing processes	25.8 (7.2)	31.7 (6.2)	31.0 (6.5)
Social relationships	36.6 (5.6)	40.3 (5.6)	42.0 (4.4)
Overall team climate	202.4 (35.9)	239.1 (28.1)	238.1 (26.9)
	n = 71	*n* = 64	*n* = 42

SD = Standard deviation.

The average scores in each of the questionnaire sections at baseline were: 50% of the maximum possible value for team participation (34.9/70); 53% for reviewing processes (25.8/49); 55% for task orientation (26.7/49); 56% for support for new ideas (25.4/45); 64% for social relationships (36.6/57); and 67% for team objectives (51.7/77). Statistical tests for differences in mean score of team climate between four months and eight months were not carried out as the observed means were practically the same (Table 2). Independent samples *t*-test was used to examine if, on average, the overall team climate at baseline differed between individuals who completed the questionnaires on each of the three occasions and those who did not. A *p*-value of 0.916 showed no evidence of difference in mean score at baseline between these two groups.

Table 3 shows differences in mean score of team climate from baseline to four months. Data are presented as a proportion of the maximum possible value of the questionnaire and each of the separate scales. There is evidence of a difference in mean score from baseline to four months. On average, the overall team climate increased by about 8.0% of the maximum possible score (95% confidence interval = 7.4% to 8.6%). This difference was highly statistically significant (one-sample *t*-test for proportional change in score; *p*-

value <0.001). Table 3 shows that similar increases in score occurred in each section of the questionnaire.

Table 3. Difference in mean score between baseline and four months, as a proportion of the maximum possible value of the inventory and the separate scales

	Change as a percentage of maximum possible score	
Scales	Change (95% Confidence interval)	*p*-value
Team participation	8.2 (7.6 to 8.8)	<0.001
Support for new ideas	8.7 (8.0 to 9.4)	<0.001
Team objectives	8.4 (6.9 to 10.0)	<0.001
Task orientation	8.1 (7.3 to 9.0)	<0.001
Reviewing processes	8.2 (7.4 to 9.0)	<0.001
Social relationships	8.7 (7.9 to 9.4)	<0.001
Overall team climate	8.0 (7.4 to 8.6)	<0.001

n = 64 individuals who participated in both assessments; *p*-values from one-sample *t*-test applied to the variable proportional change in score in relation to the maximum possible value of the score.

Discussion

The aim of the IPL programme was to improve team functioning in established clinical teams. Team members worked around goals, set by themselves, for a period of eight months. During these months changes in team climate was assessed. Findings in this paper show a significant change in overall team climate between baseline (before the start of the programme) and at four months (Table 2). Further analysis of data shows that this significant change was sustained at eight months (i.e. four months after the facilitated meetings had stopped).

Results suggest that an IPL programme, such as the one described in this paper, can improve team functioning and raise awareness of professional roles in established clinical teams. The results gained from this study are encouraging giving clear incentive for similar interventions to be offered to already established clinical teams, supported by a skilled educational facilitator who enables its members to identify and agree goals aimed to improve patient care. The educational facilitator is considered to be vital to the success of any collaborative interprofessional practice in a number of ways (Barr 1994; Oandasan and Reeves 2005; O'Halloran et al. 2006). The first implementation of this IPL programme highlighted several challenges for the educational facilitator: the importance of setting realistic goals that were achievable within a given timeframe; setting goals that were attainable in order to avoid disappointment and de-motivation; ensuring all members of teams with a wide range of professions with varying levels of experience and responsibility felt able to contribute to the meetings in a climate of safety and confidence regardless of perceived status; managing discussion to avoid team members attempting to take the lead; and ensuring that all those taking part felt equally valued and empowered. Efforts made to support the team to engage in strategies to minimise professional isolation may be particularly

crucial where input to a team is limited on a day-to-day basis due to the peripatetic nature of their role, e.g. occupational therapists, physiotherapists, pharmacists, etc.

Collaboration amongst other team members in order to achieve goals during the IPL programme helped members enhance their understanding of each others' roles. As suggested by West (1994) a full understanding of each others' roles can help to overcome conflicts by considering how the roles complement rather than compete with each other. A further positive aspect of the programme was that some teams requested to meet with the educational facilitator for a follow-up session one year later in order to reflect on their progress, consider the development of new goals, and learn from sharing experiences and ideas with each other in order to further improve their interprofessional working.

The evaluation of this IPL programme has established a promising indication of change following purposeful facilitation of teamworking within a number of clinical healthcare teams through a structured intervention. Changes within individual teams defined by specialist area were not examined. Sub-group analysis should only be carried out when hypothesised *a priori* during the study design, and strongly justified by theoretical background (Assmann et al. 2001) to avoid undue emphasis on results that may come up by chance. These criteria were not fulfilled for this evaluative study, as there was no clear anticipated reason to expect the programme effect on team climate to differ between specialist teams. This study was carefully designed to be useful to the teams. For example, a major issue was to encourage teams to meet up in order to enhance team climate. Furthermore, none of the components of the IPL programme were expected to be useful to some of the teams and not to others.

The study was carried out in 2004-5 using a questionnaire, which was based on a number of sections of varying length, assessed with different Likert scales. The results presented in this paper must be treated with some caution as only 42/71 participants completed the questionnaire both at baseline, four months and eight months (Table 2). The reason(s) why some participants did not complete all three questionnaires is not clear. Today, other inventories have been purposefully developed (cf Mickan & Rodgers 2005) or extended and adapted (Anderson & West 1998), which may provide a more coherent framework for future work. However, an overall improvement in team climate has been evidenced from using this intervention and approach to evaluation. Due to the encouraging data obtained from this study, this IPL programme will be extended to include further acute healthcare Trust teams and primary care Trust teams, giving attention to encouraging teams to continue to meet regularly following facilitation and to continue to set new goals.

Further research is needed to improve our understanding of the impact of effective team functioning on patient care, and to investigate the sustainability of this type of intervention both in the medium and long term. This study was based on a before and after research design using self-report data. A limitation of this type of study is that it cannot completely rule out the

possibility that a small part of the positive effect of the IPL programme identified could result from some team members responding that the IPL programme was more useful than it really was in order to support the research team (Roethlisberger & Dickson 1939; Bowling 2002). Therefore, two research approaches are recommended in further research: (a) a randomized controlled trial, where half the teams are randomly allocated to receive the IPL programme (intervention group) and the other half (control group) are not, to confirm the effects of the IPL programme on team climate; and (b) the inclusion of in-depth interviews with individual team members who had extreme responses to the IPL programme, i.e., those with very high and very low scores on the questionnaire in the last assessment. This would help address the risks associated with relying only on a standardised questionnaire looking at team members' perceptions of team climate, and missing the opportunity to evaluate processes, ie how outcomes are achieved, the mechanisms involved, and how situations unfold in the short- or long-term, by concentrating more on the minutiae of interactions (Barbour 2000). As Cott (1998) points out, healthcare teams represent complex sociological phenomena and it is vital that further in-depth studies of team behaviours in the workplace are carried out if interprofessional teamwork is to be fully understood and maximised in healthcare to the benefit of patient care.

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