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**Interprofessional education in a student-led emergency department: a
realist evaluation**

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Abstract

This paper reports a realist evaluation undertaken to identify factors that facilitated or hindered the successful implementation of interprofessional clinical training for undergraduate students in an emergency department. A realist evaluation provides a framework for understanding how the context and underlying mechanisms affect the outcome patterns of an intervention. The researchers gathered both qualitative and quantitative data from internal documents, semi-structured interviews, observations and questionnaires to study *what worked, for whom and under what circumstances* in this specific interprofessional setting. The study participants were medical, nursing and physiotherapy students, their supervisors and two members of the emergency department's management staff. The data analysis indicated that the emergency ward provided an excellent environment for interprofessional education (IPE), as attested by the students, supervisors and the clinical managers. An essential prerequisite is that the students have obtained adequate skills to work independently. Exemplary conditions for IPE to work well in an emergency department demand the continuity of effective and encouraging supervision throughout the training period and supervisors who are knowledgeable about developing a team.

Keywords: interprofessional education, realist evaluation, student-led emergency department, teamwork

Introduction

Increasing specialisation in health care requires the ability to collaborate across professional boundaries to ensure the delivery of competent, safe and effective care, as has been recognised worldwide by providers of medical education. Moreover, interprofessional education (IPE), defined as a process where “two or more professions learn with, from and

about each other in order to improve collaboration and the quality of care” (Barr, 2002., p6, footnote) is now part of the undergraduate curriculum for many different health care programmes (Art, De Roo, Willems, & De Maeseneer, 2008; Dando, d’Avray, Colman, Hoy, & Todd, 2012; Hamilton et al., 2008; Hylin, Nyholm, Mattiasson, & Ponzer, 2007; Jacobsen, Fink, Marcussen, Larsen, & Hansen, 2009; Moskowitz, Glasco, Johnson, & Wang, 2006; Reeves, Freeth, McCrorie, & Perry, 2002; Sicat, Huynh, Willett, Polich, & Mayer, 2014).

Several university hospitals in Sweden have implemented IPE interventions in clinical settings in the form of student-led inpatient wards. In this IPE model, students of several health care professions treat patients together, aiming at team training with the support and guidance of supervisors (Hallin, Kiessling, Waldner, & Henriksson, 2009; Ponzer et al., 2004). Many of these student-led wards have now been in operation for more than 10 years in Sweden. Evaluations have shown a high degree of goal achievement (Hallin et al., 2009; Hylin et al., 2007; Ponzer et al., 2004), and this model of IPE is now broadly accepted in many health science universities and colleges in Sweden as an appropriate and effective approach to teaching collaborative and communicative skills.

At Karolinska University Hospital in Stockholm, a different form of IPE was established: KUM (*Klinisk Utbildnings Mottagning*, roughly translated to ‘clinical educational emergency department’). KUM started in 1999 as part of an IPE project initiated by Karolinska Institutet in Stockholm under the motto, ‘Learning together to be able to work together’. It remains a unique outpatient alternative to the student-led wards that were set up at the same time at three other university hospitals in Stockholm.

Clinical training is provided in a designated part of the hospital's emergency department for teams of medical, nursing and physiotherapy students. For two weeks, the students take care of patients with varying acute complaints under the guidance of supervisors from each profession, with the aim of developing interprofessional collaboration. A previously published evaluation of KUM showed that all students considered KUM to provide very good opportunities for team training and stated that it had increased their understanding both of their own and the others' professional roles (Ericson, Masiello, & Bolinder, 2012). However, it is a challenge to evaluate educational interventions in clinical settings, since many factors can contribute to the outcomes.

Therefore, the aim of the present study was to gain a deeper understanding of the contextual factors and mechanisms that may contribute to the positive outcome of KUM. For this purpose, we conducted a realist evaluation – a method originally developed by Pawson and Tilley for evaluating complex policy interventions in health and social care (Pawson, 2006; Pawson, Greenhalgh, Harvey, & Walshe, 2005; Pawson & Tilley, 1997). Lately, realist evaluations have been proven, albeit to a limited extent, to be suitable for evaluating educational interventions (Hollenberg et al., 2009; Ogrinc & Batalden, 2009; Wong, Greenhalgh, Westhorp, & Pawson, 2012).

Background

The two weeks IPE at KUM were implemented into the nursing and physiotherapy students' sixth and last semester. For the medical students, the IPE training was introduced in their eighth of eleven semesters, when they had clinical rotations in surgical and orthopaedic specialities. Thus, besides the IPE goals, the medical students had profession-specific goals to fulfil.

KUM had two tracks – one for surgical case and one for orthopaedic cases. The students were scheduled in teams consisting of two medical students, two nursing students and one physiotherapy student. The physiotherapy students attended only the orthopaedic team. To accommodate all students, two teams worked in parallel on each track, alternating between day and evening shifts. Within the emergency department, the students and their supervisors were provided with their own physical space for documentation, administrative tasks and team discussions. The ordinary patient examination rooms were also used for the KUM patients.

The students practised under the full-time supervision of professionals representing the three aforementioned professions. The supervising physician had the medical liability for the patients treated at KUM. There was no requirement for formal pedagogical qualifications, but all new supervisors were invited to an informative lecture about the pedagogy of KUM. The pedagogical strategy adopted was that of adult learning (Knowles, 1990), and the supervisors were instructed to facilitate rather than teach. Thus, the students were encouraged to work with a certain degree of independence, to become aware of the need for communication and collaboration within the team. In order to promote teamwork, team building and team performance were discussed in daily seminars, with the aim of teaching the students to plan their joint initiatives, manage conflicts and share responsibilities.

The supervisors served at KUM for a week at a time, once or several times per semester. Longer periods of supervision were rarely possible due to staffing needs in the regular departments. Some of them volunteered to be scheduled at KUM, while most of the supervisors were scheduled as part of their regular duties. The necessity for two shifts for the

students and the different affiliations of the supervisors resulted in different scheduling principles. The nurses, who were employed in the emergency department, were scheduled in parallel with the students, which meant alternating day and evening shifts, while the physiotherapists worked only during the daytime. The physicians, who belonged to the surgical and orthopaedic departments, were scheduled during the daytime for a week at a time, owing to organisatory reasons. The evening shifts had to be shared by two or three other colleagues each week.

The emergency department for adult patients at the Karolinska University Hospital, at the time of the study, had a total intake of about 83,000 patients yearly, about 19,000 of whom had surgical or orthopaedic diagnoses of various severities. Patients whom the supervisors deemed appropriate were given the choice to be treated by the student team after obtaining informed approval.

Methods

The participants in the study were medical, nursing and physiotherapy students training at KUM, their supervisors and two managers from the emergency department. We sought to analyse the KUM intervention through exploring the mechanisms of learning in the context of the emergency department, where the intervention took place. According to the realist framework, 'context' is an important factor if researchers want to understand *what works* in an intervention, for *whom* it works and *under what circumstances* it works (Pawson & Tilley, 1997). The context refers to the pre-existing features of a system, locality or setting into which an intervention is introduced. Underlying mechanisms – processes and behaviours that bring about the effects of the intervention (Ogrinc & Batalden, 2009) – are nested in the context. Understanding the connections or relationships between the *context* (C) and related

mechanisms (M) and how they affect the *outcome* (O) of the intervention is the strategy used in a realist evaluation. The CMO configuration is then explored through different phases of a study to produce a refined CMO configuration, which is the final (summative) result of the study.

This study's realist framework was based on that of Ogrinc and Batalden (2009). The researchers started analysing historical documents about the establishment of IPE in 1999 at the Karolinska Institutet (Mogensen, Elinder, Widström, & Winbladh, 2002) and the results from the previous study on KUM (Ericson et al., 2012). Hypotheses were then formulated about the factors – called the *plausible mechanisms* and *potential context* – that were interpreted to have a major impact on KUM as an IPE model – that is, the *outcome*. A realist hypothesis grid with a preliminary explanatory theory to capture the relationship between the CMOs is presented in Table 1.

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Data collection

To capture the complexity of KUM, observations, questionnaires and interviews were used to collect data from the students, supervisors and two managers. The data were analysed with the intention to test the formulated preliminary explanatory theory and the CMO hypotheses.

Observations. An independent researcher (SL) observed the training sessions and the other activities at KUM for five days. Direct observation was used, and the technique was 'non-intrusive', that is, the observer was passive and the students and the supervisors performed their normal work without being disturbed by the observer. The purpose of the observations was primarily to obtain a base for the in-depth interviews. The focus was on the collaboration

and interactions between the students and the supervisors. The observations were related to discussions during seminars, as well as to the students' clinical care of the patients.

Questionnaires. These data used to explore the students' and supervisors' attitudes towards KUM. A questionnaire resembling one that had been used in a previous study (Ericson et al., 2012) was distributed to all students immediately after they completed their KUM training period. The first section consisted of closed questions reflecting the learning goals and the students' general attitude towards KUM, with answers marked on a Likert scale from 1 to 9, where 1 denoted the most negative opinion and 9 the most positive opinion. The questionnaire also included two open-ended questions for free text comments on the positive and negative aspects of KUM.

The questionnaires to the supervisors were constructed in the same way, with a section of closed questions to be answered on a Likert scale from 1 to 9, followed by the same open-ended questions for comments which explored their perceptions of working at the KUM. The

The questionnaire was distributed to all students during a period of two months in the spring term (52 medical, 52 nursing and 16 physiotherapy students), with response rates of 90%, 81% and 75%, respectively. The questionnaire for the supervisors was distributed to those having experience of two or more sessions as supervisor at KUM in 2011 and in the spring term of 2012, which included 33 nurses, 35 physicians and five physiotherapists. The response rates were 70%, 89% and 100%, respectively. Participation was voluntary and the questionnaires were answered anonymously.

Interviews. Semi-structured interviews were used to get in-depth knowledge about the views of the students and supervisors regarding the IPE activities and their own roles. Among the students and supervisors who had been invited to complete the questionnaire, ten from each group were randomly chosen from a list and invited to participate in a voluntary, individual interview. The interviewer was the same independent researcher (SL), known neither by the students nor by the supervisors, and the interviews lasted between 30 and 40 minutes. Seven individuals in both groups – supervisors and students – accepted to be interviewed. The head of the emergency department as well as the head nurse were also interviewed, with the intention to explore what they perceived as positive and/or negative with KUM.

Analysis

All interviews were digitally recorded and transcribed verbatim. The answers to the free text in the questionnaires and the interview data were first coded using an inductive thematic approach. Preliminary thematic summaries were produced and confirmed using both methodological and investigator triangulation. The two data sources were analysed first individually and then discussed and negotiated within the research team, and with those responsible for the course, resulting in a final consensus. Anonymity was maintained by reporting the findings thematically, and only the professions were linked to individual responses. The data were organised into three main perspectives: the students', supervisors', and emergency department managers' perspectives.

An uncomplicated way to treat the raw data from the observations was used by simply exploring and counting the collaborative activities between the subjects. The data accumulated from the observations, free text questions and interviews were gathered in a convergent design fashion. The methodological triangulation approach was used to compare

the data from the different sources and establish patterns to determine consistency in the data (cross-data validation). An overall interpretation of the data was then performed to understand why and under what circumstances KUM operated successfully.

Ethical considerations

No formal ethical approval was sought, since this project conformed to the evaluation of an educational intervention, where observations, surveys and interviews were carried out with unidentified individuals using non-invasive techniques and free from psychological stress or anxiety. Nevertheless, this study followed the ethical guideline for humanistic social scientific research dictated by the Swedish Research Council and the standards of the Declaration of Helsinki, and all participants gave informed consent before taking part.

Results

The results are presented according to the three perspectives: first the students' perspectives, then the supervisors' perspectives and finally the perspectives of the emergency department managers.

Student perspectives

In general, the students reported that they had positive experiences of interprofessional learning at KUM. As the following extracts indicate:

‘[It was] great to learn what the doctors and nurses think and do when they meet and examine a patient. I appreciated the cooperation with the other students at the same level and to learn how we can help each other.’ (Physiotherapy student)

‘At KUM I got insight into what the other professionals do, and we learnt to communicate and cooperate with each other.’ (Nursing student)

The overall satisfaction with KUM showed for all three student groups a median value of 9 on the Likert scale from 1 to 9. The students' also perceived that they, to a large extent, had experienced team training, with the median value for the nursing students' opinion being 8 and 9 for both the medical and physiotherapy students.

The students emphasised that they enjoyed working together under qualified supervision and that they had learnt from and about each other. When rating what was most important for good teamwork, clear communication, knowledge of each other's expertise, mutual respect and a willingness to cooperate were the most frequently mentioned factors. The students were well-informed about the IPE learning goals at KUM, acknowledging the main purpose of the course to be cooperation across professional borders.

Although they were pleased with their IPE, the students shared diverse opinions on the simultaneous gain in profession-specific training. The data indicated that the medical and nursing students felt that had a more valuable profession-specific educational experience than the physiotherapy students:

'[I had a] very valuable learning opportunities for us students. I was trained to pay attention to the differential diagnosis, and got better at clinical reasoning. You will benefit for years to come from what you learn at KUM.' (Medical student)

'[It was valuable] to meet patients at an acute stage has been very instructive, and I got a lot of new medical knowledge, but not so much new knowledge as a physiotherapist.' (Physiotherapy student)

The scoring for the degree to which KUM, besides team training, had contributed to their professional knowledge was 9 for the medical students, 8 for the nursing students and 6.5 for the physiotherapy students. The medical students were especially appreciative of meeting undiagnosed patients and the good medical training in handling emergency cases. The nursing

and physiotherapy students emphasised to a greater extent the communication with, and knowledge of, other professional groups.

Feedback from supervisors, both on clinical reasoning and teamwork, was deemed important. The scheduled sessions for reflection and discussions were considered as a way to get a deeper level of knowledge of what each one could contribute to the patient cases at hand:

‘It has been extremely instructive and fun to work in a team. The supervisors gave us a lot of valuable feedback, and in my team we shared our experiences.’ (Physiotherapy student)

‘The best experience with KUM is that you have to face real situations and have to deal with them, and afterwards get feedback and reflect on what happened and what could be done better.’ (Medical student)

The students emphasised the importance of the supervisor role. In general, they were very satisfied with the supervision (median value 8). However, the students were displeased with the frequent change of supervisors. There were also negative comments that some of the physicians scheduled during the evening shifts were insufficiently prepared for the IPE learning goals:

‘Differences in the quality of the doctors’ supervision also affected me as a nursing student.’ (Nursing student)

‘There was varying quality and understanding of the objectives for KUM among the supervisors on the evening shifts.’ (Medical student)

Each team handled between two and six patients during a shift. As a consequence of the varying inflow of patients, the student teams sometimes had to wait for the next suitable patient, which was mentioned as a drawback.

Supervisor perspectives

The supervisors’ overall opinion was that KUM was a positive experience, and they perceived their task as supervisor to be very satisfying (median values for the nurses, doctors and physiotherapists were 8, 7.5 and 8, respectively). The supervisors appreciated that time was

allocated for teaching, and they found it stimulating to mentor committed students, who were eager to learn and work in teams:

‘A dream scenario. The understanding of the different professional roles increases and you notice that the students have greater respect for each other’s competencies.’
(Nurse)

Although most supervisors were experienced professionals, they mentioned their own simultaneous experience of learning at KUM as a positive experience. Most of them (76%) had more than eight years of professional experience and 71% of them had had more than a total of six weeks of supervision at KUM. As one of the supervisors noted, ‘the discussions with the students result in increased knowledge for both students and supervisors.’ (Physician)

The students had to learn to work together as a team, and the supervisors served as role models. However, several supervisors pointed out that there was no defined teamwork in their own clinical activities. The question, ‘has the work at the KUM influenced your own way of interprofessional collaboration?’ resulted in median values of 6, 5 and 7 for nurses, physicians and physiotherapists, respectively. Nevertheless, the experience of working as supervisors at KUM seemed to have had a potential effect on their own interprofessional cooperation during ordinary work. Several of the nurses mentioned that building a supervisory team had been a positive experience, as they felt that it reduced the hierarchy between physicians and nurses. As one mentioned, ‘the gap between the physicians and us decreases and the physicians cooperate better.’ (Nurse)

There were slightly different views on what the supervisors personally estimated as their most important mission. The nurses and the physiotherapists emphasised to a higher degree than the physicians the promotion of interprofessional collaboration between the students, and there were some negative comments on physicians focusing too much on their ‘own’ students.

'The physicians' interest in KUM varies greatly; they should focus on the purpose of KUM and not only on having many patients.' (Physiotherapist)

The supervisors were positive towards the work at KUM, but it was clear that they did not want to spend too much time supervising. However, the lack of continuity in the supervisory team due to scheduling difficulties proved to be a major concern for all supervisors. The nurses were especially critical of the fact that there were different medical supervisors during the evening shifts.

Management perspectives

The separate rooms for the two student teams and their supervisors were a necessary condition and were reported to be greatly appreciated by the ordinary staff. It provided an area for teaching without disturbing the ordinary work. The general demands of efficient handling at the emergency department applied also to KUM's patients. In situations with a high inflow of patients, the ordinary staff members were sometimes concerned about the time the students needed to devote to each patient, as this could block rooms for the ordinary patient flow. However, the management of the emergency department did not find that the normal patient flow was adversely affected by KUM.

"KUM has lead to a significantly improved teaching situation for our students, who get a good tutorial both individually and as a member of team-based care. Although teaching takes time, the KUM concept has not had any adverse affect on our production-oriented flow processes." (Head of department)

Although KUM was demanding in terms of staff scheduling and space, and was also economically quite expensive, the management supported the concept of the IPE training due to the high degree of satisfaction among the students, supervisors and patients. A 'win-win' relationship was mentioned, as the staff members were perceived to have a better notion of teamwork since the start of KUM.

“The KUM has provided opportunities for our nurses to develop their own professional role by guiding the students in team work.” (Head nurse)

Another positive effect was that the staff could be offered more diverse tasks.

Discussion

We undertook a realist evaluation of an IPE intervention for undergraduate health care students at an emergency department in order to understand how the context and different mechanisms influenced the outcome. The results show that we identified several plausible mechanisms and context factors that proved to have significant effects on the outcome.

Traditionally, undergraduates from different health care programmes are taught emergency medicine separately. The concept of IPE for students in an emergency setting still seems to be unique, as we found no other similar IPE intervention that could be used for direct comparison. The discussion below is divided into four parts, as shown in Table 1, to link back to the hypothetical CMO factors, their relationships and effects.

The training at KUM fulfilled the IPE learning goals to a very high degree (O1), equal to what was reported in the earlier study (Ericson et al., 2012). Thus, the concept seems to be sustainable. The advantage of team training in an emergency setting is the continuous demand for collaboration involving several professionals (O1). Each new patient needs a fairly rapid medical investigation, treatment and care. This can provide the members of the training team insight into the need for accurate communication and the need for collected knowledge and skills to solve the patient’s ‘dilemma’ (C1) (Table 1).

A prerequisite for this kind of IPE is a sufficient number of suitable patients. The uneven inflow of patients in an emergency ward was shown to be a potential drawback (C1), although this gave room for discussions and the training of various skills connected to acute care.

When planning for a similar intervention, the results indicate that the emergency ward should have a rather large patient turnover to provide a good basis for the team training (M1).

There are different views on the level of undergraduate education at which interprofessional training should be introduced, from the notion that IPE at an early stage may prevent negative attitudes, to the opinion that the students need to have achieved confidence in their own profession (Barr, 2002; Horder, 1996). The findings in this study indicated that although the medical students had not reached their final educational level, like those in the other two categories (C2), all students obviously had enough knowledge and skills to be allowed quite a high degree of independence (M2). (Table 1).

However, the fact that IPE at KUM is part of the medical students' orthopaedic and surgical curricula can create tension between the profession-specific and IPE learning objects (O2). In several earlier studies on student-led wards, this 'conflict of interests' has been shown to be a problem for the medical students, who were reported to perceive that they had missed practising profession-specific skills, and who also found the education too nursing-oriented (Hylin et al., 2007; Reeves & Freeth, 2002). This is one of the major differences when comparing the emergency setting with that of an inpatient ward for an IPE intervention. In an emergency department, the medical students' needs for profession-specific learning can be addressed at the same time as they take part full-time in the teamwork (C2). As the results reveal that the nursing students were also pleased with their gain in profession-specific skills, the conflict of interests seems to be less pronounced at KUM (O2). However, as long as the medical students have both professional and IPE learning goals (M2), there is a risk that the education will become too medically-oriented.

The time for reflection on team performance, interprofessional cooperation and specific patient cases was much appreciated by the students and was perceived to be of importance for the fulfilment of the learning goals (O3). This has also been pointed out in previous studies on IPE activities (Hylin et al., 2007; Reeves et al., 2002; Reeves & Freeth, 2002). The offices provided for KUM contributed to the fact that both supervisors and students could carry out their work (O3). When implementing IPE in an emergency department, the premises must include sufficiently large spaces to harbour the students and their supervisors (C3). Scheduled time for reflection on team performance is mandatory (M3). (Table 1).

The supervisors' role in IPE has previously been described only to a limited extent (Reeves et al., 2002; Reeves & Freeth, 2002). Their role is both demanding and complex, and the quality of the supervision is important for student satisfaction (Ponzer et al., 2004). The setting of the IPE in an emergency ward entailed the need for full-time supervision for the supervising physicians as well (M4). This seemed to benefit medical students especially, who have been reported to lack role models in the student-led wards (Hallin et al., 2009; Hylin et al., 2007; Lindblom, Scheja, Torell, Astrand, & Felländer-Tsai, 2007) (O4). The easily accessible medical supervisor, along with learning from handling the emergency patients, can explain the extremely high satisfaction with profession-specific learning among the medical students at KUM, compared to what has been reported from student-led wards (Lindblom et al., 2007).

The different principles for scheduling contributed to frequent changes especially of physician supervisors (C4-O4). This can result in difficulty with keeping all of them up to date with the IPE learning goals and routines (M4). However, while this caused dissatisfaction among both the students and supervisors, the high degree of satisfaction with the team training contradicts a real adverse effect on the fulfilment of the IPE learning goals. For future interventions in

similar settings, the challenge of balancing the supervisors' request for a reasonable number of weeks at KUM and the continuity of supervision must be addressed (O4). An introductory seminar should be mandatory.

In relation to limitations, this study only gathered a small amount of interview data. A small sample size can hamper the transferability of the qualitative results to settings other than KUM. The researchers, however, have been careful in trying to maximise variation by including interviewees from all included professions, who also play managerial roles. In addition, several authors have analysed singularly and then triangulated different data set such as observations, questionnaires and interviews to enrich and confirm the results of each method and analysis.

Concluding comments

Considering the core questions of a realist evaluation – what works, for whom and under what circumstances – we came to the following conclusions:

What works? The continuous need for collaboration in a student-led emergency department provides an excellent setting for the IPE of students representing several professions. The students undertake team training through the clinical practice without hampering the normal patient flow.

For whom? IPE in an emergency department is suitable for team training for medical, nursing and physiotherapy students. It is possible to combine profession-specific learning goals with IPE goals for medical students in the beginning of their clinical practice. However, we hypothesise that it would help the students to be on more equal terms and for the focus of the

IPE to be more sharply on team-building and collaboration, if all student categories are at their final stage in their different educational programmes.

Under what circumstances? A keystone is a common understanding of IPE and continuity in the team of supervisors. We conclude that it is of utmost importance that all supervisors share the same information about the IPE learning objectives. A mandatory introduction, focusing on team building, could improve the supervisors' capability to support the students in their development into a collaborative team.

The interprofessional collaborative nature of work at an emergency department can create conditions for team training, resulting in the ability to communicate and interact with the other team members and the patients. The realist evaluation allows identify what specific propositions, for whom and under what circumstances IPE activities may be developed.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content of this paper.

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Table 1. Preliminary theory and CMO hypotheses grid for understanding IPE at an emergency department.

Preliminary theory: *The continuous need of collaborative work at an emergency department, involving different disciplines, creates optimal conditions for team training, resulting in the ability to communicate and interact with the other team members and the patients.*

Plausible mechanisms	Potential context	Possible outcomes
M1: Access to appropriate patients that demands cooperation between several professions	C1: Undiagnosed emergency patients with acute surgical or orthopedic complaints C1: Varying inflow of patients	O1: Ability to collaborate effectively in an interprofessional team O1: Clarified professional roles
M2: Students able to work with a certain independence M2: Clear IPE learning goals	C2: The students are on different educational levels. C2: Students have both profession-specific and interprofessional learning goals	O2: Conflict of interests with risk of ineffective team training O2: Satisfaction with profession-specific learning
M3: Discussions and feedback on team performance and patient care	C3: Large enough area at the emergency to host the KUM	O3: Ability to share professional strengths and manage conflicts O3: No conflict with the ordinary work schedule
M4: Full-time supervision and profession-specific supervisors needed M4: Experienced tutors with an insight into the IPE fundamentals	C4: Supervisors recruited from ordinary staff. Different principles and rules for scheduling the supervisors are at play C4: Differing pedagogical competence among supervisors	O4: Lack of continuity in the supervision O4: Varying quality of teaching due to supervisors not concordant

Table 2.

Summary of results from interview, questionnaire and observation data. Both positive and less positive examples.

Method	Category	Example	
<u>Students Interviews</u>	2 nurses 4 doctors 1 physiotherapist	Cooperation; communication responsibility; independence; best learning; interesting cases Several supervisors involved; supervision not consistent;	High agreement of comments
<u>Students Questionnaires</u>	42 nurses 47 doctors 12 physiotherapists	Valuable learning opportunities; undiagnosed patients; great to work with mixed groups; good supervision; could be longer Several supervisors; uneven access to patients; the role of the physiotherapist not clear	High agreement of comments
<u>Supervisors Interviews</u>	2 nurses 2 doctors 3 physiotherapists	Positive students; great development curve in a short time; self-evolving; no stress; facilitates the patient flow at the emergency department Supervision takes times from surgery	Wider spread of subjects in comments
<u>Supervisors Questionnaires</u>	23 nurses 31 doctors 5 physiotherapists	Close relationship with committed students; collaboration between students; time for education, no stress Poor continuity of supervisors; all medical supervisors not informed; less tasks for nursing and physiotherapy students; uneven student groups; uneven inflow of patients	Wider spread of subjects in comments
<u>Observations at KUM</u>	1 observer 5 days	Students positive, alert; open minded; responsible; pedagogical supervisors; supervisors committed and co-operating; Some supervisors focusing only on their own student	