Using the Pictor technique to reflect on collaborative working in undergraduate nursing and midwifery placements.

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MSc SRE Dissertation, 2011

Acknowledgements

First and foremost, thank you to the midwifery and nursing students who took part in this research study, both for their time and for their willingness to engage with the Pictor technique and experiment with it. The students used the technique in sometimes unexpected ways, and this has been extremely helpful in gathering ideas about how to present the technique to other students and use it in a way that best facilitates reflection on collaborative working. Thank you also to Nigel King for support, advice and encouragement at every stage of this project.

Student participation could not have been achieved without the help of staff members in the nursing and midwifery departments at the two universities involved in the study. Particular thanks to Chris Palmer, Graham Thurgood, Christina Howarth and Yvonne Jarvis for their efforts to circulate information and facilitate recruitment.

Thank you to Anne Campbell, Photography Department, Grays School of Art, Robert Gordon University (Aberdeen), for permission to use the photograph on page 60.

THOUGHTS ABOUT REFLECTION FROM A THIRD YEAR NURSING STUDENT

I really couldn't believe that they were making us write it down in the first year, *[laughing]* I was amazed! I was like, "Doesn't everybody just…?" in fact I did actually think, to start with, I said to, um, one of the tutors, I said, 'I don't, I don't get it, it doesn't work for me', an' they said, 'Well, having known you for a bit, you probably do it anyway, you just don't realise that you do it', and I said, 'Well, yeah I'm…yeah, I think you're right, I do do it'. I just don't formalise it in this way, an' it's almost, I almost felt a bit like I was being regressed to a child in terms of being told that…something that I'd already kind of made automatic, that I now had to write down and prove that I was doing it. And, an' there was a bit of a reaction I think, from me, about that, sort of sayin', "Pfff, you know, I don't, I don't wanna have to write down reflections, you know, I already deal with it in my head!" '

Julia, nursing student [lines 865-78]

Contents

Introduction 1

Models of reflection 2

Is writing enough? 5

The potential of the Pictor technique for reflective practice education 7

The aims of the project 9

Sampling and recruitment 10

Ethics 11

Methodology 11

Methods 12

Semi-structured interviews 12

Analysis 14

Findings 22

Section 1: Health care practice and its relationship with the physical features of Pictor 25

Section 2: The seven elements of the Pictor technique 35

Section 3: What do students think of Pictor? 46

Section 4: A students'-eye view of reflective practice 50

Discussion 58

Conclusion 65

References 66

Appendix: Pictor charts 70

List of tables

Table 1 Themes of reflective models 3
Table 2 Participant details 10
Table 3 Example of index of matrix themes.....18
Table 4 Situations depicted in Pictor charts 22

List of Figures

Figure 1 Pictor charts produced in training sessions 7
Figure 2 The matrix analysis grid structure.....16
Figure 3 Pictor feature data in an individual matrix.....17
Figure 4 Template analysis using Post-It Notes.....20
Figure 5 Creating a colour audit trail of the template in Miscrosoft Excel.....21
Figure 6 Case study: Diane 23-4
Features of Pictor charts:
Figure 7 Information flow.....26
Figure 8 Interruption of conversation.....26
Figure 9 Good rapport.....27
Figure 10 Emotional alliance 28
Figure 11 Conflict 28
Figure 12 A catalyst arrow.....29
Figure 13 A rectangle for the patient.....30
Figure 14 Ordering arrows: sequence of involvement 31
Figure 15 Suitability of role 31
Figure 16 Organisational structures 32
Figure 17 Pressures of policy and workload 33
Figure 18 Two sides of the 'fence'.....34
Figure 19 Case-specific charts 36
Figure 20 Generic charts 37
Figure 21 Interrelational charts 38
Figure 22 Linear charts.....38
Figure 23 Complex charts 39
Figure 24 Single interaction charts.....39
Figure 25 Spatial charts.....40
Figure 26 Temporal charts 41
Figure 27 Chart-talk: comparing interrelational and temporal elements.....42
Figure 28 Metaphorical charts..... 43-4
Figure 29 Monochromatic chart.....44
Figure 30 The template: A student's-eye view of reflective practice.....51
Figure 31 The anthropomorphic nature of arrows.....60

Introduction

Reflective practice is a contested concept. Its advocates champion it as a process which enables health and social care practitioners to deal with the 'swampy' (Schön, 1983, p42), 'messy' (Ruch, 2002, p213) realities of practice, and as crucial to lifelong learning and professional development (Jasper, 2007). Its critics regard it as a fashionable 'cult' (Ixer, 1999, p513) and a 'flawed' educational strategy (Mackintosh, 1998, p553) which focuses on deficits in practice (Clarke *et al*, 1996) and lacks a concrete evidence base (Mann *et al*, 2009). For those who teach, the subjectivity involved in reflective work can make it difficult to assess (Hargreaves, 2003). Despite these contentions, the use of reflection as a tool of professional development in higher education has become well established over the last two decades in both health (Palmer *et al*, 1994; Johns and Freshwater, 2005) and social care (Taylor, 1996; Knott and Scragg, 2010), and evidence of reflective thinking forms part of the academic assessment of every nursing and midwifery undergraduate (Hogston and Marjoram, 2007).

There is no universal definition of the term 'reflection'. According to Dewey (1933), reflection is considering our beliefs and knowledge in the context of theory. Boud *et al* (1985) define it as the intentional focus on personal experience to inform future understanding, Moon (2004) as the mental processing which we apply to problem-solving when there is no obvious solution. These definitions assume that reflection takes place on a 'uniform level' (Mackintosh, 1998, p553) – that the process of reflection is open to improvement, but there is no higher level of reflection to be reached. Mezirow (1981) disagrees, distinguishing between reflection which brings emotions and judgements into consciousness, and a higher level of reflectivity indicating conceptual and theoretical thinking. This distinction is attractive in terms of criteria for assessment (Mann *et al*, 2009), but the evaluation of critical reflective abilities involves a level of subjectivity (in the case of qualitative assessment, for example Jensen and Joy, 2005) or reductionism (in measurement scales, for example, van Woerkom and Croon, 2008; Wallman *et al*, 2009).

The partnership of demonstrable conceptual thinking abilities and higher achievement can be an uncomfortable alliance in health care practice: critical thinking skills cannot guarantee effectiveness in the working environment. In *The Reflective Practitioner* (1983), Schön proposed that technical solutions provided by 'scientific' thinking consistently fail

to provide guidance in dealing with the 'unique, uncertain and conflicted situations of practice' (p *ix*). An emphasis on movement towards 'higher levels' of reflectivity subordinates the intuitive and the experiential (Rolfe, 2002). The parameters of practice, in contrast to those of academic ability, are difficult to specify (Ashworth *et al*, 1999; Belton *et al*, 2006). As van Manen points out, 'practice possesses its own integrity' (1995, p47) – his characterisation of pedagogy as 'contingent, dynamic, everchanging' in a way which 'makes a partnership with theory impossible' (p42) could equally apply to health care.

For the purposes of this study, Boud *et al*'s broad definition of reflection, with its focus on experience and understanding, is taken to be the most appropriate, encompassing 'those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations' (1985, p19). Rolfe *et al* (2001) summarise the purpose of reflection, suggesting three outcomes: 'to learn from our actions, to challenge established theory and…to make a real difference to our practice' (p *xi*).

Models of reflection

Health care textbooks contain numerous models of the reflective process (see Table 1). The majority of reflective models have four features in common: the description of a health care incident, the exploration of associated personal meanings (thoughts and feelings), critical thinking (evaluation, making links with theory, and considering wider influences such as policy and resources) and planning for future action (how things might be improved). The concepts of critical thinking and planning are illustrative of two dominant textbook approaches to reflective practice (for example, Rolfe *et al*, 2001; Taylor, 2006): the critical approach, which examines issues such as the influence of policy dynamics and inequities in power on practice, and the instrumental approach, which focuses on improving outcomes. Willis (1999), who takes a phenomenological perspective on reflective practice, has argued that the description of practice and the exploration of its meaning are often underemphasised, and that: 'the experienced qualities of an activity become a major factor in what amounts to the practitioner's reactive appraisal of it in a different and complementary way to critical and instrumental explorations' (p92).

EXAMPLES OF REFLECTIVE MODELS		
Model	**Themes**	**Concept**
Borton's Developmental Framework (Borton, 1970, pages 95-8)	What? So what? Now what?	*What happened? Why was it important? What can you take away from it?*
Gibbs' Reflective Cycle (Gibbs, 1988, page 52)	Description Evaluation Analysis Conclusions Action plan	*Moving through the stages, and re-entering the cycle or spiral with each new event.*
Kolb's Experiential Learning Cycle (Kolb, 1994, page 21)	Experience Observations Concept development/ theorising Testing the implications in new situations	
Marks-Maran and Rose's Reflection Cycle (Marks-Maran and Rose, 1997, page 128)	The incident Reflective observation Related theory Future action	
Jasper's Reflective Spiral (Jasper, 2003, page 4)	Experience Action Reflection New perspective	

Table 1 Themes of selected reflective models.

Description and exploration

Reflective models require the separation of what is experienced from how it is experienced. In phenomenological terms, this division between what we experience (noema) and how we experience it (noesis) is difficult to make (Langdridge, 2007). As we describe something, we also interpret and make sense of it: 'It is through reflective experience that we formulate meaning and construct the various hierarchies of significances contained within those meanings' (Spinelli, 2005, p27). While reflective models can guide students in thinking through events in practice, as Willis (1999) points out, there is a danger of obscuring the 'specific quality' of an experience when categorising

it to fit an 'abstract matrix' (p95). The shoehorning of every student's experience into a similar framework will often fall short of capturing what is unique about that experience.

The emphasis in reflective models on exploring personal meanings positions the self firmly at the centre of the reflective process, but fails to capture another fundamental aspect of the lived experience of practice: the self in relation to others. We can only label our own characteristics by comparing ourselves with others (Spinelli, 2005) – by sensing ourselves 'as observed and objectified by others', as 'a self trying to deal with this situation' (van Manen, 1995, p40). At a time when the issue of collaborative working is high on policy agendas as a means of enabling cost-effective, patient-focused care (D'Amour *et al*, 2005; NMC, 2008), educational models of reflection leave the multidisciplinary nature of practice largely unexplored (Stevens *et al*, 2009).

Critical thinking and planning for future action

The critical thinking stage of reflective models serves as a basis for planning change. Dewey (1933) describes this thinking process as the 'cultivation of a variety of alternative suggestions' or hypotheses (p75) which can then be tested by taking action ('experimental corroboration', p77). This concept resonates with Kelly's personal construct theory (PCT) (1955). Kelly suggests that every person has a 'scientist-like aspect' (1955, p4): we base our hypotheses on the way that we construe or interpret events, then we act on our hypotheses and weigh up the results in an effort to anticipate future events.

This active experimentation is a useful metaphor for the experience of the student learning to take on a new professional role – as Butt (2008) explains, learning encourages us to 'try on different behaviours for size…see what works and what does not' (p13). It is a concept also recognised by Shön (1983), who points out that 'experiment in practice is of a different order than experiment in the context of research' – that its nature is exploratory rather than predictive, undertaken in order to 'get a feel for things' (p145). This experimentation is particularly intense for undergraduate students undertaking clinical placements, which provide them with their earliest opportunities to 'observe role models, practise on their own and reflect on what is seen, heard, sensed and done' in practice (Löfmark *et al*, 2008, p36).

Kelly's PCT (1955) draws links between meaning-making, experience and action, and in doing so, shares common ground with phenomenological approaches to the person (King and Horrocks, 2010). Kelly characterises learning as searching for the recurrent themes in personal experience, looking for 'the repetition of some characteristic which can be abstracted from each event and carried across the bridge of time and space' (p76) in order to anticipate future events. In nursing theory, the experiential patterns and meanings which inform practice emerge from paradigm cases (Benner, 1984) – unique events from which abstract significances can be drawn to inform ongoing action.

Is writing enough?

Written reflective assessment has been criticised for encouraging students to think in terms of learning outcomes, and remove from their accounts elements of experience which may provoke negative judgements (Silén-Lipponen *et al*, 2004; Coward, 2011). This drive towards faultless practice fails to acknowledge the learning curve experienced by students as they are socialised into their professional role (Silén-Lipponen *et al*, 2004). This tension also arises in journal writing and critical incident analysis, activities also criticised as time-consuming and lacking in their consideration of collaborative working (Mackintosh, 1998; Stevens *et al*, 2009).

There is an instinctive recognition within health care education that written methods of reflection do not suit every student. The separation of verbal and visual processing by cognitive scientists (Braisby and Gellatly, 2005) has encouraged a widespread effort to characterise students' 'learning styles' (Gibbs, 1988, p17) – for example, their preferences for visual, verbal or kinaesthetic learning (Smith, 1996). This is a contentious field in which there is little agreement over terminology and validity (Sharp *et al*, 2008; Romanelli *et al*, 2009). In nursing and midwifery education, reflection on practice experience is not exclusively restricted to written accounts – for example, picture collage has become an established tool (Seymour, 1995; Williams, 2002), and freestyle drawing has been used in reflective groupwork (for example, Cruickshank, 1996).

Collage and artwork, like reflective models, place the self at centre stage, facilitating talk about personal symbols and perceptions (McKie *et al*, 2007) – there is a limit to how far artwork can bring the interpersonal dynamics of a specific practice situation to mind. The

immediacy of artwork creation, and its contrast to the predictability of group reflective talk, are seen as advantageous by many students (Cruickshank, 1996; Williams, 2000). Others are uncomfortable with visual techniques, based on the perception of a personal lack of artistic skills (Cruickshank, 1996). Visual techniques that do not require 'polished artistic ability' (Williams, 2000, p274) allow more equitable participation.

No single reflective technique can resolve all of the criticisms outlined above, and written work will always be necessary in an academic environment as an assessment of competency. What these issues do suggest is the need for an additional technique which facilitates reflective thinking without requiring a written structure or artistic skills, which is quick to do, and which takes into account the collaborative nature of the working environment. Pictor has the potential to fill this gap.

The potential of the Pictor technique for reflective practice education

Figure 1 Pictor charts showing patients surrounded by professional and lay support, from case management training sessions run by Jane Melvin and colleagues (CareMax, 2010).

What is Pictor?

The Pictor technique has its theoretical roots in personal construct theory (Kelly, 1955). It has been developed from a procedure employed in family therapy in which movable arrows are used to visually conceptualise social networks in their continual 'state of flux' (Hargreaves, 1979, p155). In Pictor, the roles of people involved in an experience of collaborative working are written onto arrows, and the arrows arranged on a large piece of paper in a layout, or 'chart'(see Figure 1), which represents the chartmaker's personal perception of the experience. In giving instructions, researchers and trainers ask the chartmaker to include an arrow labelled 'self' and an arrow for the person who is the focus of the collaborative working (for example, the patient). The physical features of the arrows can be used to represent aspects of relationships – for example, distance between arrows could imply lack of involvement, and closeness a high level of involvement – but there are no fixed rules. The chart then serves as a starting point for reflection.

The Pictor technique has been used in qualitative interviewing in a limited number of health care studies to date (Ross *et al*, 2005; King *et al*, 2010), and is currently being used to investigate the experiences of professionals and lay people in palliative care (four ongoing research studies funded by Macmillan, three based at Huddersfield University, one at Cambridge University). It has also been used as a reflective tool in case management training for Macmillan professionals, facilitating reflection on collaborative working and the comparison of multiple perspectives within a team (CareMax, 2010; King, 2011).

Could Pictor be a useful reflective tool for undergraduate students?

This study is designed to find out whether Pictor is likely to be a useful way of reflecting on clinical placement experiences for undergraduate students. Its use in research and training suggests that it is likely to be useful for the following reasons.

Pictor focuses on collaborative working

Ross *et al* (2005) outline the difficulties in retrospective reflection on social interaction in health care, pointing out the possibility of a reliance on existing 'textbook' (p2) interpretations of behaviour when reflection takes place outside of the practice environment. Retaining a feel for the complexities of collaborative working requires reflection on how an event is constructed by social interaction. Pictor specifically focuses on personal identities and relationships (King, 2011). Its approach to these concepts is grounded in symbolic interactionism – the notion that social interaction is driven by 'the meanings actors attach to actions and things' (Bryman, 2008) – and in the view of 'role' espoused by George Mead, which is 'something figured out by the individual in his dealings with others' (Butt, 2008, p13). It allows the consideration of a situation from an individual perspective, but takes into account the perspectives of, and interrelationships with, other actors in the situation.

The physical features of Pictor set useful boundaries

Pictor is quick to do, and employs a fixed set of visual features, unlike artwork or collage: chartmakers are limited to using the proximity, direction and grouping of the arrows to represent the situation. The original technique used in family therapy (Hargreaves, 1979) employed white arrow-shaped cards; Pictor replaces these with sticky Post-It Note arrows, which allow the added dimension of a limited range of colours (they are manufactured in dark green, light green and orange). These features set useful boundaries: no decisions

have to be made about which symbols to include (unlike magazine collage), no drawing is required, and arrows can be moved around as new thoughts come to light. The act of chartmaking reconstructs a situation, rather than deconstructing it to fit a model, and keeps the chartmaker's mind focused on roles and relationships as enacted in a specific situation.

Pictor enhances communication

A key aspect of reflection in research, training and supervision is the communication of thoughts and ideas between two or more people. The features of Pictor provide visual 'hooks' which enable the researcher, trainer or supervisor to ask relevant questions about the situation and deepen the chartmaker's reflection (Hardy *et al*, in press). For example, asking why arrows have been placed close together or pointing towards one another will act as a cue for talk about the interaction between the people represented on the arrows.

The aims of the project

This study investigates the use of Pictor as a means of reflection on experiences in undergraduate clinical placements in Primary and Secondary Care. The study aims to address the following research questions:

- How do the features of Pictor facilitate reflection on collaborative working?
- How do students feel about using Pictor as a reflective tool?
- Can Pictor work alongside existing models of reflection in undergraduate health care education?

Sampling and recruitment

For the purposes of this dissertation, a convenience sample of ten undergraduate students was drawn – five studying adult nursing, and five studying midwifery. Details of participants are given in Table 2. A further five students from each group have since been interviewed with a view to producing a paper for submission to an academic journal. Given the time and space constraints of this dissertation, the additional interviews have only been used for the analysis based on a review of the visual features of the charts (see *Findings*, Section 2).

Recruitment took place by presenting a brief summary of the project at lectures and leaving a sign-up sheet, and by advertising project details to five nursing student cohorts and two midwifery cohorts via university electronic 'Blackboard' systems. Participation was voluntary. An incentive of a £10 shopping voucher was offered in return for an interview, funded by the Centre for Applied Psychological Research at the University of Huddersfield. Information about the project was presented to 748 nursing students (674 women and 74 men) across two universities, and 76 midwifery students (all women) at one university.

NURSING STUDENTS		
Pseudonym	**Year/Course**	**Location of most recent placement experience**
Julia	3rd/full-time degree	High Dependency Unit
Janet	1st/full-time diploma	Community Hospital
Elsa	4th/part-time diploma	Surgical Ward Management
Jemima	4th/part-time degree	Community District Nursing
Sarah	4th/part-time degree	Surgical Ward Management
MIDWIFERY STUDENTS		
Pseudonym	**Year/Course**	**Location of most recent placement experience**
Jennifer	3rd/full-time degree	Community
Hannah	3rd/full-time degree	Community
Diane	3rd/full-time degree	Community
Lorna	3rd/full-time degree	Community
Cath	3rd/full-time degree	Community

Table 2 Participant details.

The time available to recruit participants was limited to four months. During this time, twelve nursing students and ten midwifery students (all women) volunteered to take part, and all but two nurses reached interview in the time available. Nursing student volunteers included three full-time first-year students (diploma), two full-time second-years (degree), two full-time third-years (degree and diploma), and four part-time fourth-years (one diploma, two degree), with ages ranging from 28 to 48. Midwifery volunteers included six third-years and four second-years on a full-time direct-entry degree course, aged between 20 and 51.

Ethics

Ethical approval was given for the study by the Masters Ethics Panel at the University of Huddersfield. Participants were given information sheets describing the timing and basic content of the interviews, and were asked to sign consent forms. Identities were kept anonymous from the transcription stage, with participant details kept separate from the data files. Pictor charts were spontaneously anonymised by all but one participant; in one case, where a name was written onto an arrow, the participant was asked to anonymise the arrow. The potential for participants to discuss sensitive or distressing cases was acknowledged, and contacts with support services were requested and obtained from nursing and midwifery departments at both university sites.

Methodology

The study's focus on the process of reflection, and on health care practice as it is lived out within the walls of hospitals or inside homes in the community, involves an experiential element which has links with phenomenology. While attention has been devoted to this issue above (see the *Introduction*), the interviews did not take a phenomenological approach. With the research questions in mind, interviews focused on the process of chartmaking, and on exploring each individual's perspective on the reflective process in the abstract. The experiential details of the events described on participants' Pictor charts were probed to elucidate the way that they dovetailed with the chartmaking process, and with the personal meanings connected with the concept of reflection by each participant.

This theoretical perspective, and the symbolic interactionist approach to the notion of professional roles (outlined above), sit within a broader epistemology of contextual constructivism in which both participant's and researcher's accounts of a phenomenon are considered to be subjective and shaped by cultural meaning systems and contextual understandings (Pidgeon and Henwood, 1997). Participants' understandings of the process of reflection and its assessment were grounded in their university's approach to teaching reflective practice. Their placement experiences, while unique and 'actively worked out' (Ross *et al*, 2005, p2), were situated within the broad organisational culture of the Primary and Secondary Care systems of the United Kingdom's National Health Service: Pictor charts and talk about the charts would inevitably reflect these organisational frameworks.

The researcher had limited experience of working in health care research, and no clinical experience, and in this respect, took the perspective of an outsider. After consideration of previous literature on insider-outsider research (Ritchie *et al*, 2009), interviewees were made aware that the researcher was not connected with their academic department in the hope that this allowed them to talk freely, without the assumption that the interviewer had preferred views on methods of reflective work in an academic setting. A conscious effort was made to put aside preconceptions about how Pictor might be used, based on previous experiences of the technique, and allow the students to engage with chartmaking in ways which made sense to them. A detailed record of the study's methods is given below to make the interviewing and analysis processes explicit.

Methods

Semi-structured interviews

Each participant took part in a semi-structured interview. Interviews lasted, on average, 70 minutes (ranging from 56 minutes to 79 minutes), and were structured in three sections.

Section 1: Introduction

Participants were asked to talk about their background and work placements. This called to mind practice experiences and the other people who took part in those experiences, so as to have these to hand when creating a Pictor chart. This section was intended to put participants at ease and facilitate chart-making, and was not included in the analysis.

Section 2: The creation of Pictor charts

Participants were asked to call to mind a specific experience from a placement which was meaningful or significant to them, based on a single incident or case. They were asked to think about everyone who had some connection with the situation, both professionals and lay people, and write the roles of these people onto Post-It Note arrows, including an arrow for themselves and an arrow for the woman they were looking after (midwifery students) or the patient (nursing students). They were then asked to arrange the arrows on a large sheet of flip-chart paper in a way which represented the situation for them. Participants were guided to use the distance between arrows and/or the direction of the arrows to say something about relationships, and to use colour only if they wished to. The researcher made it clear that there is no right or wrong way to compile a Pictor chart, and that further to the general guidance described above, the arrows could be laid out in any way that made sense to the participant.

Participants were invited to ask questions about the instructions, and assured that there was no time limit to the exercise. The researcher left the room to enable participants to begin the Pictor chart without being watched, and came back into the room after five minutes in case of further questions, giving the participant space to finish the chart at their own pace. When the participant indicated that the chart was complete, the researcher invited them to explain the chart, and probed about the positioning, direction, grouping and colour of the arrows.

Participants who offered spontaneous ideas about using Pictor in another way were asked to demonstrate by constructing a second chart following their own agenda. Participants who offered no spontaneous ideas were asked to construct a second chart based on the same incident, showing how the event could have been handled in an ‘ideal’ manner. The intention of this exercise was to investigate whether Pictor can enable students to talk through a hypothetical situation, and to generate comparative material to deepen the analysis of the use of the physical features of Pictor. If participants wished to create a third chart, they were given time to do so and asked to describe the features of the chart.

Section 3: Discussion of reflective practice

Participants were encouraged to talk about their own experiences of reflective practice and its incorporation into their academic work, and how their use of Pictor compared to other methods of reflection used in their coursework.

Analysis

The analysis needed to investigate three issues: participants' use of the fixed visual features of Pictor, the substantive content of the talk provoked by Pictor ('chart-talk'), and participants' views on the concept of reflective practice. This created a tension in analytic approaches: Pictor's visual features (the proximity, direction, grouping and colour of the arrows) created a strong *a priori* focus, requiring a top-down analytical approach; a bottom-up approach was more appropriate for analysing talk about the concept of reflective practice. An initial consideration of the use of grounded theory techniques was made, based on the intention to produce a theoretical idea of how the Pictor technique represents elements of collaborative working. Given the time constraints on sampling, the strong *a priori* focus on the physical features of the technique and the necessity of giving these features equal weighting (making a hierarchical thematic analysis difficult), the emphasis on theoretical sampling and avoiding *a priori* concerns characteristic of grounded theory made this approach inappropriate. A decision was made to use a combination of matrix analysis (Miles and Huberman, 1994) and template analysis (King, 2004), the rationale for which is given below.

All ten interviews were analysed together, rather than carrying out a separate analysis of nursing students and midwifery students. This was based on a strong feeling of similarity across the interviews as analysis progressed (detailed further under the discussion of template analysis, below), both in participants' use of Pictor and in their views on reflective practice. It was also felt that five participants in each section of the analysis could potentially lead to thin conceptual categories. Each piece of data was tagged 'N' (nurse) or 'M' (midwife) at each stage to allow the potential for separation during the analysis of further interviews.

Analysing the 'chart-talk' section of the interview: the choice of matrix analysis

The *a priori* focus on the visual features of Pictor necessitated an initial stage of identifying and tagging each mention of proximity, direction, grouping and colour in the chart-talk – the section of the interview in which participants were asked to explain why they had placed the arrows in the way that they had. The intention was to investigate how these four features were used, and which elements of health care practice they were used to represent. This involved gathering data on proximity, direction, grouping and colour from each individual interview into a conceptually-ordered grid, or matrix (Nadin and Cassell, 2004; Miles and Huberman, 1994), and subsequently re-grouping the data from all interviews together under these four

feature headings by tipping this grid on its side (see Figure 3). A comparative analysis could then be made across all four features to investigate which experiences in the practice environment they had been used to represent, and how they were used. This method enabled the grounding of the analysis in the participants' talk, referring to the charts where necessary to clarify the data.

Columns were added to the grid to gather other potentially useful data for cross-comparison, including 'Shape of chart', 'Questions about Pictor', 'Evaluation of Pictor' (see Figure 2). A column was added for 'Notes on potential themes': this contained material from a second reading of the chart-talk section of the interviews, taking account of potential thematic strands in the narrative of the event described, such as 'Miscommunication', 'Being responsible for life and death' and 'Constrained by protocol'. Brief memos were included in the matrices, highlighted in colour on-screen, if the data warranted extra comment. Figure 3 shows an example of the Pictor features section of the individual matrix for Jemima (a nurse).

In the comparative analysis, feature data under proximity, direction, grouping and colour was thematically coded for the elements of care it represented – examples of themes include *Information flow*, *Referral*, *Rapport*, *Conflict*, *Emotional alliance*, and *Keeping the patient at the centre*. This process made apparent a considerable crossover of themes between each feature – representing health care often relied on a combination of features (proximity, direction, grouping, colour) rather than a single feature, or could be represented equally well using different features (for example, a lighter colour *or* increased distance between arrows indicating a lower level of involvement in a case). Each theme/element of the care process was of equal weight – it either appeared in a transcript or did not appear – making a hierarchical arrangement of themes difficult to present.

Based on the researcher's previous training in indexing techniques, a decision was made to index the themes against the features used, with an indication of the frequency of their occurence (see Table 3, page 18). A spider diagram was used to map the themes and group them into categories, producing a two-level hierarchy of themes similar in appearance to a template analysis presentation (King, 2004), but simpler in scope, and resulting from matrix analysis rather than the application of a template.

Participant	Proximity	Direction	Grouping	Colour	Shape of chart	Questions about Pictor	Evaluation of Pictor	Notes on potential themes
Julia								
Janet								
Elsa								
Jemima								
Sarah								
Jennifer								
Hannah								
Diane								
Lorna								
Cath								
	Proximity	**Direction**	**Grouping**	**Colour**	**Shape of chart**	**Questions about Pictor**	**Evaluation of Pictor**	**Notes on potential themes**

Figure 2 The initial grid, used to conceptually order and compare the chart-talk section of the interview data from individual transcripts.

Participant	Proximity	Direction	Grouping	Colour
'Jemima' (N) *Getting the processes right; looking at links in the chain.*	235-6 I've put…the people [staff] that were…sort of…closest to them, or, on that, on their relatives and friends' side, [A: Mmm] or the ones dealing the most with them nearest to them. [FREQUENCY OF CONTACT, FAMILY TIES] 527-31 An' then we're closest to what's happening, so we're that green *[dark green]*, and then these ones are a bit further removed, but they are affecting what's happening, because…before you can complete it, you've got to go away, check these *[light green]*, and get them to re-prescribe it, cos it was the wrong level, the wrong amount of drug.[P] [COMBINED COLOUR AND DISTANCE, RATHER THAN DIFFERENTIATED – using two features for a single purpose, limits the chart/reduces the number of 'axes' as 'Julia' would call them. Differentiation between features may be needed to exploit Pictor fully? Is this done with ease by any other participants?] 590-8 A: Mmm. OK. And it's quite interesting that you've overlapped all of the, the orange and the green arrows, [J: Yeah] but these, the lighter greens, are… J: They're, yeah…yeah. [.] A: And they're at more of a distance. J: They are, yeah. This [the right hand side with dark green and orange arrows] is, like, **the nitty gritty of it**… A: OK, with these overlaps? J: …where you decide everything. Yeah. [OVERLAP AT KEY AREA OF DECISION MAKING – you have to actually go away to communicate with the separate arrows on the left, they are elsewhere physically] 602-8 A: So why is the doctor completely separate from… J: Cos he doesn't really [laughs] know what he's doing!	272-90 [Palliative nurse having to tell other staff what to do, because doctor/consultant don't necessarily know – her arrow is made double, pointing out to drs/con and in to staff/student nurse, who point outwards from patient to liaise with specialist nurse] 292-3 She, she's was kind of going…both ways, [A: OK] in that she was givin' us information and them information [P] [Reason for arrows pointing to one another – to denote decision-making hierarchy, who tells who what to do in a particular situation, without reference to actual power hierarchy implied by the roles. This is situation-specific.] 409-11 The arrows are pointing as in representing, I suppose, the information. We were giving information out, [A: Mmm] th'un then they were sort of acting on it and giving us the right stuff back. [DIRECTION OF INFORMATION FLOW] Chart 2: [Student describes two-way arrow linking guidance/protocols for administering drugs with drugs round as it affects patient – two-way arrow links these – student actually three-way arrow, linked sideways with mentor who is looking on (pointing towards, head-on). Patient facing away, not interacting with student arrow, but being acted on by her.]	234-7 Chart 1 has a middle, where the patient is, and two 'sides' – one is the relatives' and friends' side, and two staff members are purposefully placed there because they are 'closest to them'. [P] 292-304 J: Mmm. She, she's was kind of going…both ways, [A: OK] in that she was givin' us information and them information, [.] and they were… [.] [P] A: This is the OT and the porter. J: Yeah. They were sort of, [moves arrows to separate out porters, OT and pharmacy from doctors, consultant and palliative specialist nurse] yeah. A: OK, I see. J: Yeah. A: OK. So they were…liaising with…you and the staff nurse? J: They were, b…because…yeah. A: OK. J: Because of the information that we got, and the things that we needed to get, we then had to [tapping pharmacy, porters, OT with hand] get these people involved as well. [OT/pharmacy/porters together, drs/con together, staff nurse and student nurse together.] 335, 346 Refers to 'the side for the patient', which Sister had to manage, and 'relatives' side' [P]	399-402 J: Um, [2.0] right, I used that, that orange is just the patient, [A: Mmm] I don't know why I used orange. The, the darker green was s'pposed to be the people that were closest to it, [A: OK, right] [.] and then the lighter green was s'pposed to be the ones that were more on the periphery [COLOUR DENOTING LEVEL OF INVOLVEMENT] 527-31 An' then we're closest to what's happening, so we're that green [dark green], and then these ones are a bit further removed, but they are affecting what's happening, because…before you can complete it, you've got to go away, check these [light green], and get them to re-prescribe it, cos it was the wrong level, the wrong amount of drug. [P] [Level of involvement – darker colours usually used for more central/significant roles, lighter yellow arrows for more peripheral stuff.] Chart 2: 590-8 [Light green for distant guidance (doctors, protocol), dark green for what's happening around student, orange for patient.]

Figure 3 A small section of an individual matrix showing Pictor feature data, with a brief memo highlighted; [P] indicates data that has been parallel coded.

Top-level category: Levels of involvement		
Themes	**Pictor features used**	**Frequency [context of occurrence]**
Initial contact with patient	Arrow close to patient	N9
High level of involvement/ Managing care	Arrow close Overlap [N8 only] Darker colour [N9 only]	M4, M7, N2, N8, N9 [the nitty-gritty of it, the hub of decision-making]
Physical contact	Arrow close	N8
Lack of involvement	Arrow distant Arrow on edge of group Arrow on periphery of chart Lighter colour	M4 [low involvement at a distance], N2 [slightly removed from the situation], N8 [doctors not having much to do with patient]
Involved in case but absent from event	Arrow distant Arrow on periphery of chart	M7, N2

Table 3 An example of a top-level category with its index of themes. In the column on the far right, 'M' refers to midwife, 'N' to nurse, with their associated participant number; the context was noted if the participant expanded their description of the use of the feature.

Analysing the reflective practice section of the interview: the choice of template analysis

A bottom-up approach was taken to the analysis of the reflective practice section of the interviews in the hope of staying close to the students' characterisation of reflection, rather than imposing concepts from the vast health care literature on reflective practice. The possibility of disparate views on reflection between nursing and midwifery students made it necessary to identify data as 'nursing' or 'midwifery' to allow any obvious differences to emerge. A need for the flexible development of a thematic framework at an early stage to allow orderly and auditable progress within a short time period made template analysis (King, 2004; King and Horrocks, 2010) an ideal method.

Template analysis allows researchers to build a tentative hierarchical framework of themes relatively early in the analysis process using a small number of transcripts. This is applied to subsequent transcripts and revised as analysis progresses to provide a best fit for the data. The technique allows for the use of *a priori* themes, but can be applied equally well to a bottom-up style of analysis, in essence helping to develop bottom-up themes into a hierarchical framework at an early stage to facilitate focused progress through subsequent transcripts. The form of template analysis developed at the University of Huddersfield and currently being used in studies evaluating palliative care services allows quick and flexible individual or

group analysis at the early stages. A small selection of transcripts are initially read through and coded, and potential themes and their associated data are written onto rectangular Post-It Notes. This allows hierarchical coding using different colours and sizes of Post-It Notes arranged on large sheets of flip-chart paper pinned to the wall, giving ultimate flexibility for rearrangement as the Post-It Notes can be repeatedly peeled off and re-stuck.

The analysis of the final section of the interviews began by reading through and coding two nursing student transcripts and two midwifery student transcripts, writing the tentative codes onto Post-It Notes, and arranging and rearranging them on large sheets of flip-chart paper until an initial coding scheme emerged (see Figure 4). Nursing student data were marked with a bright red dot, midwifery student data with a dark purple dot, which gave a visual overview of whether they contributed to the same or different themes.

The distribution of red 'nursing' dots and purple 'midwife' dots gave a clear indication that both groups of students contributed to the majority of the themes, and a decision was made to proceed with the analysis without separating nursing and midwifery students. A *Version 1* template was finalised after reading four transcripts and entered into Miscrosoft Excel, listing each piece of data against its theme and tagging it with an identifier ('N9_451-4' for nursing student, participant 9, lines 451-4). This template was used as a framework for coding the remaining six transcripts, and revisions to the template were tracked in colour in Excel, using a new sheet to record each session (see Figure 5).

The section of the grid in the matrix analysis which contained 'Notes on potential themes' (see pages 15-16) resonated strongly with themes emerging in the template, and a decision was made to display themes which dovetailed with chart-talk in colour (blue) on the final template.

Figure 4 The template began with circular arrangements of data around star-shaped Post-It Notes, which were recombined into a hierarchical structure (photo on left) using rectangular notes after four transcripts had been read. The main photo shows one top-level theme in development, with the initial tentative top-level categories on stars, reformulated into the hierarchical themes on the flip-chart paper below.

REFLECTION TEMPLATE v1 changes 29.05.2011 AB Dissertation [Purple denotes Pictor chart analysis] Colour key: New Moved Added From Pictor section			DATA: M4, M12, N10, N20, N2, M6, N9, M5, M7, N8
1	What is reflection?		
	1.1	Talking	N20_869-71 Ref=Talking about Pictor chart [P] N2_846 I like to talk - things become clear when you vocalise them [Q] but don't breach confidentiality N2_861-5 Talking to partner who's a thoughtful guy, limited by confidentiality, 857 clinical supervision, 868 talking to friends on course, 885-6 talking to mentor, 889 supposed to have time to talk but you rarely do, 893-4 taking opportunity to talk when bedmaking etc M6_689 Talking to people involved in situation is best way to get support M6_722 Talking better than writing, cos writing becomes academic (not a good thing) M6_738 Talking doesn't feel like wasting time (writing for no marks does) M6_708-12 Talking through with others - about what could have been different, how things could have been handled sensitively N8_664-7 Need to talk to somebody else to offload your feelings, esp if a bad day
	1.2	Thinking	N10_967-9 Reflection is thinking N9_684-6 You're thinking about the situation, they call this 'reflecting', thinking about how you should've done things differently M5_985 From doing a ref and just thinking about it, leading to decision to do more in difficult situation next time (midwife shouting at Iraqi woman) N8_643 I did more thinking than anything else [about man dieing when turned] N8_663-4 I do reflect a lot in my mind as well
	1.3	Unravelling	M5_972 breaking things down M5_1090-1 Breaking things down and actually looking at a situation, to learn from it M4_877-84, taboo 889: Intuition of need to unravel v medical management M4_857-62 Unpicking the situation to see what's going on N2_787 ask about/do a little bit of research (to improve response) M5_973-4 Understanding the influences to understand the situation better N10_967-9 Learning; what you did and didn't do well and why N20_816-17 What happened, what I will do diff, what went well, what didn't go well (spontaneous) M5_1091 learning from a situation by breaking things down N2_595-6 it took a bit of time to write the incident down and then I had to redo it...[667] I rewrote it cos the staff nurse said "That wasn't quite how it was" M12_977-8 For something you need to process, to understand why it's happened M12_968-70 Going through something to understand it [P] M4_697-702 Improved understanding between first and third year: using the model to write (failed), then using it to plan the writing N8_659-60 Writing it down on paper helps me understand what's happened M7_856-66 'Branching out' to say why, when, how M7_870-1 Who was involved, when, who was care focused at

Figure 5 Keeping an audit trail of template development using colour coding in Microsoft Excel; [P] denotes parallel coding. Red indicates new themes, green denotes data that has moved from one section of the template to another, and blue indicates new data added at the session. Data is listed using line numbers and brief descriptions of the context.

Findings

The *Findings* are presented in four sections, the first three emerging from the matrix analysis, the final section from the template analysis. *Section 1: Health care practice and its relationship with the physical features of Pictor* describes how Pictor can be used to represent aspects of the practice environment. *Section 2: The seven key elements of the Pictor technique* suggests a conceptual framework behind the visual patterns used in Pictor charts and its potential relationship with the richness of interview data. *Section 3: What do students think of Pictor?* offers the participants' evaluation of the Pictor technique as a reflective tool, and *Section 4: A students'-eye view of reflective practice* presents the template analysis, and describes how participants' chart-talk resonated with themes in the template.

As an introduction to the *Findings* and to the concept of Pictor, Figure 6 (pages 23-4) shows the three charts produced by midwifery student 'Diane', with a brief description of the chartmaking process. Table 4, below, lists the situations depicted in students' charts.

NURSING STUDENTS	**SITUATIONS DEPICTED IN PICTOR CHARTS**
Julia	Patient's refusal to undergo surgery (2 charts)
Janet	Patient's injury after a fall on a hospital ward (2 charts)
Elsa	Care and discharge of patient with complex palliative care needs (2 charts)
Jemima	Communication difficulties with friends and relatives of palliative care patient (2 charts); drugs round (1 chart)
Sarah	Diagnosis and care of elderly cancer patient (2 charts)
MIDWIFERY STUDENTS	
Jennifer	Case management/safeguarding of pregnant woman who had suffered domestic violence (2 charts)
Hannah	Conflict between midwife and pregnant woman during booking-in session (1 chart); care pathway for a woman with gestational diabetes (1 chart)
Diane	Patient refusal of vaginal examination during labour, baby in danger (2 charts)
Lorna	Stillbirth of baby (2 charts)
Cath	Death of twin baby within hours of birth (2 charts)

Table 4 The events or cases participants chose to depict in their Pictor charts.

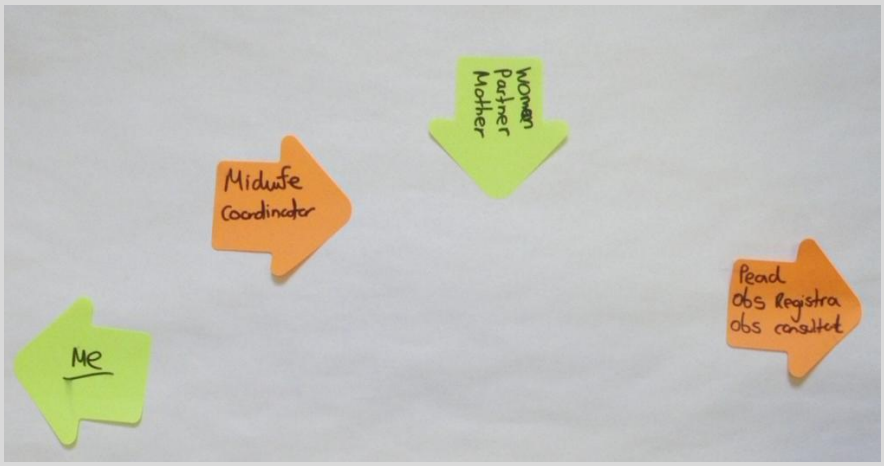


Figure 6 (a) Diane, Chart 1. The chart represents an incident of foetal distress during labour.

'the registrar wanted to do foetal blood sampling…but this woman was refusing…but they were not listening to her…she was screamin' *[pause]* "No! Get off me! Don't touch me!"…So I've put that they're like, they've got their backs to this woman, and the midwife's like tied, cos she's tryin'a support them.' [lines 275-89]
'Ss me, tryin'a go out the door…I just absolutely hated the situation.' [296]

Figure 6 (b) Chart 2: Diane was asked to expand her chart by using individual arrows and adding 'accountability' – an issue arising in her talk about Chart 1.

'I started with the woman… she's the centre of care at all times...an' I felt like this were lost.' '…they was all talking like she wasn't there.' 'I've turned the midwife round… cos I feel like she…did her best to support me.' [317-18, 443, 487-91]

'A: So can you tell me why you chose the colours that you chose?
D: I'd have put like, me, with them *[Woman, Partner, Mum]*, cos I felt just as terrified as they did.' [326, 336-7]

'We were all tied by legal…accountability for the woman.' [446]
'…how did we stand? Because we didn't actually get full consent, informed consent.'
'The, the argument is, if, if we never done the foetal blood sampling, and we'd 've explained the risks *[the death of the baby, which was distressed]*…is that scaring her into doing it, into complying…? But then also, is it hiding her from the truth if we don't tell her, and is she in a sound state of mind, because she was so *[pause]* distressed?' [464-72]

Figure 6 (c) Diane was asked to think about how the situation could have been handled more successfully, and rearrange her chart to demonstrate.

'Me not walking out the door. *[laughter]* You've got to take them all into account *[legal, protocols]*, so you can't get rid of them, but we should all have been on the woman an' the baby…Maybe them, the doctor tried to talk to her rather than just do it.' [525-8]

'It was a very complex situation. It just went from being straightforward to completely high risk. As a student midwife, I'm more of the outsider who could have offered to scribe, could've offered to get equipment.' [533-6]

Section 1: Health care practice and its relationship with the physical features of Pictor

The matrix analysis enabled an investigation of the aspects of health care practice that Pictor can be used to represent. These are presented in two categories: *Care and collaboration* and *Working within the system*. Top-level and second-level themes within these categories refer to the different ways that arrows were used in these contexts. The *Findings* in this section emerge from the concrete data provided in the interview talk, and are supplemented with visual examples from the charts. An indication is given of the frequency of occurrence of each second-level theme.

Care and collaboration

Three top-level themes were identified in this category: *Lines of communication*, *Relational dynamics* and *Professional roles and the process of care*.

Lines of communication

Arrows were often joined in lines or by pointing them towards one another, to represent communication between people represented on the chart. Post-Its joined to make two-way arrows were used to denote someone liaising between people on either side. Second-level themes are underlined and described below.

Information flow: Five participants pointed arrows in the direction of information flow, either from one person to another or outwards in different directions from one person to multiple others. Double- or triple-headed arrows were used by three of the same participants to indicate the passing of information backwards and forwards (see Figure 7).

Witholding information: Two participants used distant arrows pointing away from the centre to represent people withholding information, or having information withheld from them.

Interruption of communication: One participant represented the persistent rude interruption of a booking conversation between a midwife and patient by another member of staff by placing the 'interrupting' arrow at ninety degrees across two joined arrows (see Figure 8).

Chains of decision-making: One participant laid arrows in a line, each pointing to the next, to show a chain of decision-making between people.

Referral: One arrow placed behind another, pointing in the same direction, was used to signify the referral of a patient or pregnant woman from the arrow in front to the arrow behind, depicting referrals to Primary Care, specialist services or social services (two participants).

Jennifer, midwifery, Chart 2
'the community midwife needs to be two-way really, because she had contact with the woman and also made the referral to the specialist team…that would also apply to the duty social worker' [lines 462-73]

Jemima, nursing, Chart 2
'Suppose I want to represent that she *[Palliative Specialist Nurse]* was sort of…giving us information about what the patient needed…she was kind of going both ways, in that she was giving us information and them information' [lines 281-2, 292-3]

Figure 7 Information flow.

Hannah, midwifery, Chart 1
'…we were tryin'a have a discussion and going through all of the booking stuff, um, then my mentor, I've put her like that, I suppose, cos she kept interrupting, and sort of getting in between everything…and, um, being quite rude' [lines 449-54]

Figure 8 Persistent interruption of conversation.

Relational dynamics

Talk about the Pictor charts often referred to affective characteristics of relationships, or to perceptions of emotional processes in the events described.

Support: Four participants placed another arrow close to, touching or facing their own arrow, or parallel with it, to represent the support they received from another professional (this included representations of the mentoring relationship). Three participants used arrows in the same way to represent support received by patients or pregnant mothers from health professionals or from their partner, and one nursing student depicted a lack of support from a patient's relatives by placing arrows at a distance from one another.

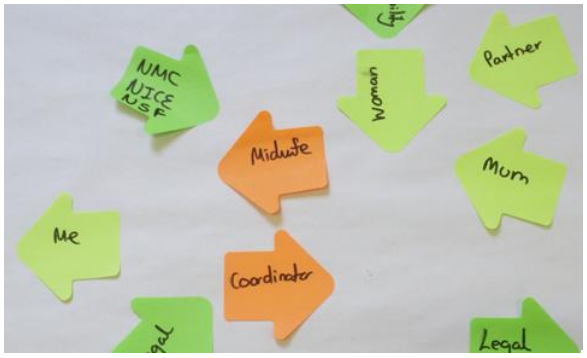
Rapport: Five participants used arrows to demonstrate rapport or lack of rapport. Arrows positioned close together were used to demonstrate good rapport between midwives and mothers-to-be, and nurses and patients (see Figure 9). Examples of rapport included wanting the same outcome as the patient, and one instance of open awareness in talking about impending death. Arrows were set apart to represent a lack of rapport, or the perceived unsuitability of close rapport – for example, between a physiotherapist and patient in comparison to a nurse and patient.

Cath, midwifery, Chart 1
'I did get quite involved with the care of this woman and her partner, and her mum…we were all together from the very beginning' [lines 443-4, 454]

Elsa, nursing, Chart 1
'it's more the nurses that are, that get that closeness, that rapport with patients, more so than doctors' [lines 326-7]

Figure 9 Good rapport: Cath described the death of a twin baby in the hours after birth; Elsa mapped out a palliative care case.

Emotional alliance: Colour-matching of arrows was used to denote emotional closeness between patients and family (four participants), though this was not obvious unless a participant spoke about it, as lay people were often represented in the same colour, regardless of emotional closeness. Four participants described being emotionally in tune with the person in their care, and used colour to demonstrate this (see Figure 10).

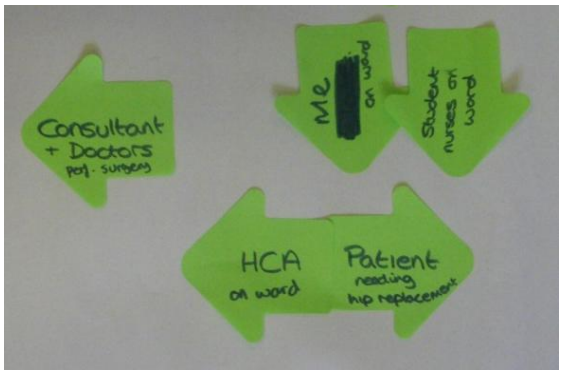


Diane, midwifery, Chart 2
'A: Can you tell me why you chose the colours that you chose?... D:…cos I felt just as terrified as they did.' [lines 326, 337]

Hannah, midwifery, Chart 1
'A: So it's significant that you've put yourself in the same colour?... H: Yeah, I suppose I was on her side…we're meant to be an advocate for women'

Figure 10 Emotional alliance between a student and the person in their care.

Conflict: Two participants represented professionals acting against the patient's wishes by positioning arrows back-to-back, pointing outwards (see Figure 11). Disagreements are shown by four participants, using back-to-back arrows pointing outwards, arrows pointing across one another at a ninety degree angle, or by separating arrows into different groups.



Julia, nursing, Chart 1
'I said to her, "You need to make the decision now as to what you want to do"…and she said, "I don't want to go", and one of the Health Cares came up and said, "For goodness sake, stop talking about it, just send her!" ' [lines 383-6]

Cath, midwifery, Chart 1
'They did seem to go off in two completely different directions. And the obstetrician was "No, that's not right…this is what happened"… the paediatrician said, so, "No, that's wrong – this is what's actually happened".' [lines 489-92]

Figure 11 Conflict: a tug-of-war over a patient who doesn't want to go for surgery (left), and a difference of opinion between consultants (right).

Pressure and persuasion: Four participants used close, pointing arrows to depict the negative emotional pressure of professionals or lay people on patients or pregnant mothers, for example, pressuring a patient to go to surgery, or the effect of the worrying presence of a violent ex-partner on a pregnant woman. Cath's scenario in Figure 9 (page 27), while demonstrating rapport with close arrows, also represented pressure: 'she *[the woman who had lost a baby]* was very supported…which was fantastic, but she was almost blocked sometimes as well, because they just seemed to wrap her up' [lines 522-4].

Catalyst arrows: Three participants used a single arrow to represent a person perceived as a catalyst for an incident or process. One midwife placed the initiator of a care plan at the beginning of a line of arrows representing the care plan process. Two nurses placed a great deal of emphasis on a single arrow representing someone whose behaviour was perceived as the linchpin of a negative event (a patient's fall, and the disregarding of a patient's wish not to have surgery). These arrows were close to, and pointing towards, the patient (see Figure 12).

Janet, nursing, Chart 1

'the reason I've put this person here *[HCA]* is because somebody put him *[the patient]* on the bed and didn't put the bed rails up' [lines 325-6]

'these *[arrows]* are close because the HCA was obviously part of the cause, whoever it was, I don't know who it was' [lines 352-3]

Figure 12 A catalyst arrow, in green, depicting a person (a Health Care Auxiliary) who was thought to have left a bed guard down, allowing a patient to fall out of bed.

Professional roles and the process of care

Keeping the patient at the centre: Nine participants placed the patient or pregnant woman at or very close to the centre of the chart; the arrow for the patient or pregnant woman was the first to be placed on the paper (no instruction was given to do this). Three mentioned the concept of a 'circle' of care, and another three mentioned a wish to have a different shaped Post-It Note for the person being cared for – one nursing student folded the 'patient' arrow into a rectangle (see Figure 13); one midwifery student represented a pregnant woman with a double-headed arrow, and another expressed a wish for a circular Post-It Note to represent the pregnant woman. There were some exceptions: Jemima (nursing) produced a third

Sarah, nursing, Chart 1
'I put the patient in the centre and I folded over the arrow because it's all going to her, isn't it?' [lines 406-7]

Figure 13 An arrow folded into a rectangle to represent the patient.

chart representing a drugs round in which she placed herself at the centre as the person administering medication, Cath (midwifery) produced a chart depicting herself on one side of the paper with the mother and relatives, and hospital consultants on the other.

The level and sequence of professional involvement: Arrows close to the patient or pregnant woman were used to represent a high level of involvement in their care (five participants), the first point of contact for a patient (one participant), and physical contact (one participant). A low level or lack of involvement was signified by distant arrows and arrows on the periphery (two participants), or the lightest colour (one participant). Distant or peripheral arrows were also used to signify a person involved in the situation but physically absent (two participants). The sequence of professional involvement was represented by ordering arrows from the centre outwards, combined with grouping or placing them in a line (four participants, see Figure 14). An arrow on the periphery was used by three participants to signify the anticipated involvement of a professional at a later point in time.

Frequency of contact: Six participants used arrows close together to signify frequent contact between staff and patients or women in their care, or relatives and patients/women, and arrows at a distance to signify infrequent contact.

Suitability of role to situation: Three participants described arrows close to the patient or pregnant mother as denoting roles suitable to involvement in the situation – for example, having knowledge and awareness of a situation, and being at the foreground of care. Arrows were placed at a distance to demonstrate a background role or a lack of suitable knowledge (see Figure 15). Jennifer (midwifery) included the Safeguarding Police because they had specialist knowledge of domestic violence suitable to the case, but placed them on the periphery because she had no personal contact with them.

Shadowing: The word 'shadowing' was used by one nursing student and one midwifery student to describe accompanying and observing their mentor, and shown in their charts by placing the 'Me' and 'Mentor' arrows close together and overlapping.

The professional/lay divide: Seven participants distinguished professionals from lay people (patients/pregnant mothers and their friends and relatives) using different colours.

ABOVE: Lorna, midwifery, Chart 1
'I've sort of listed this in order, really…Midwife Three at the far end because she sort of came in at the very last point… the initial contact's with the labour ward staff…after the baby's born, then there's the tests that need doing, the pathology…then the morgue are notified' [lines 506-25]

LEFT: Janet, nursing, Chart 1
'you can sort of thread things out' [line 304]
'we were all involved in his initial care…then the night staff…took over that role…then the next day, we've got the physios coming to reassess him…' [lines 361-2, 410-11]

Figure 14 Ordering of arrows to signify the sequence of involvement: a case of stillbirth (above), and dealing with an accidental fall from a hospital bed (left).

Jemima, nursing, Chart 3: Drugs round. The doctors are on the periphery – a doctor 'doesn't really know what he's doing' [line 604] in terms of prescribing drugs: the pharmacy is placed closer to the student who is dispensing drugs at the centre of the chart.

Figure 15 Suitability of role.

Working within the system

This smaller category indicated a broader use of the features of Pictor to represent *Organisational structures*, *Protocol in practice* and *Locations of Care*.

Organisational structures

Primary/Secondary/Tertiary Care: Three participants used a combination of grouping and colour to delineate different organisational levels of care, for example using different colours for Primary Care and Secondary Care in addition to placing them on opposite sides of the chart. Patients and relatives were seen as based in the community, and were placed facing the community services or depicted in the same colour as the community services (see Figure 16).

Sarah, nursing, Chart 1
'I put all the professionals on that side and all the family and community people in the same colour' [lines 408-9]

Lorna, midwifery, Chart 1
'the hospital staff I've kept dark green, just because they're part of the group, the hospital group – orange is the community group' [lines 785-6]

Figure 16 The depiction of organisational structures.

The doctor-nurse/doctor-midwife division: Two participants distinguished between consultants and nurses/midwives using different colours.

External services: Services external to health care were included by four participants, and placed on the periphery of the chart – midwifery students included Safeguarding Police, Social Services and a link worker (translator); nursing students included Social Services.

Protocol in practice

Protocol constraining care: Three participants used arrows to represent NHS protocol or guidelines. Diane (midwifery) represented an event tied by issues of accountability, appearing literally at all angles around her chart (see Figure 6b, page 23). Hannah (midwifery) represented NHS guidelines with an 'NHS policy vs workload' arrow pointing towards (pressuring) a midwifery mentor (see Figure 17). Janet (nursing) included a 'Ward Manager' arrow, but talked about it as a gateway to the system, rather than a person, representing risk assessment paperwork which would have to be completed after a patient fell on a ward.

Practical tasks: Three participants pointed arrows towards patients or pregnant mothers to denote the carrying out of specific practical tasks during the process of care, including administering medication or other treatment.

Hannah, midwifery, Chart 1
'I suppose she has that influence of the NHS policy of "You can book wherever you want" versus the amount of work that she actually felt that she had, so I suppose that's influencing how she was being quite so rude, and, you know, awkward about the whole thing. Um, so I suppose that influences her, to then have an effect on us, not being able to *[pause]* get everything done, and to be able to really support her properly and explain things.' [lines 461-7]

Figure 17 The pressures of policy and workload are perceived to adversely affect a midwife's behaviour – the midwife is resisting a pregnant woman's request to move her care to a different geographical area.

Locations of care

Pictor allows the positioning and grouping of arrows to represent spatial locations (for example, different wards in a hospital, or a representation of where people were standing in a room) and virtual or metaphorical locations (for example, another unspecified space or room, or two ends of a metaphorical tug-of-war). The representation of spatial locations and the reflection of metaphors is dicussed further in *Section 2: The seven elements of Pictor*, below.

Real locations: Real locations were only represented by one of the ten participants included in this report, but appeared in further interviews beyond the ten considered in this section of the *Findings*. Cath (midwifery) created a second chart by dividing her arrows into a hospital room, corridor and midwives' station (Figure 18).

Virtual and metaphorical locations: Four participants used arrows to visualise other non-specific rooms or areas, or metaphorical locations. For example, one nursing student depicted a tug-of-war between professional staff and the patient's relatives and friends (see Figure 28a, page 43), another depicted doctors and consultants pulling a patient towards surgery. One midwifery student represented two sides of a 'fence', professionals following guidelines on one side and the woman in her care and her relatives on the other (see Figure 18), another (Diane, Figure 6b) depicted herself physically running away from a situation.

Cath, midwifery, Chart 2

'it makes it hard as a student, cos you don't know where to put yu…where to be…Which side of the fence are you?...you wanna be able to support her and, but not go against the people you're working with' [lines 652-60]

'this was like flotation, in the middle…it was like walking on eggshells…it felt to me you either had to be here *[bangs green arrows]* or here *[bangs orange arrows]*…' [lines 773-6]

Figure 18 Two sides of a metaphorical 'fence': supporting a woman who has lost a baby a few hours after its birth. The chart also depicts hospital rooms (top left, bottom left), a corridor ('Me' and 'Mentor') and a midwives' station (bottom right).

Section 2: The seven elements of the Pictor technique

There is a felt sense when interviewing with Pictor that some charts work better than others in facilitating in-depth talk about an experience. A visual overview of a large number of Pictor charts, without reference to associated transcripts, reveals commonalities among the patterns created by different individuals (Bravington, 2009). These two observations, taken together, suggest that examining the patterns across charts may tell us something about the mechanics of chartmaking and their association with interview data.

What makes Pictor work well?

The researcher has had the opportunity to view Pictor charts in the limited existing literature and across four training and research projects, including a set of 108 Pictor charts from case management training (CareMax, 2010; Bravington, 2009), charts and interviews from an evaluation study interviewing patients and health professionals in a palliative care setting (University of Huddersfield), and selected charts and interviews from an ongoing PhD study of patients' perceptions of palliative care services (see Hardy *et al*, in press).

The impression gained from viewing Pictor charts produced in training and research is that a number of patterns occur in charts across all projects. This provoked a search for similar patterns across the charts in this study in the hope of revealing something fundamental about what best facilitates reflection on collaborative working – what makes a 'classic' chart: a chart that facilitates easy, in-depth communication about the dynamics of a situation. There was a sense in some of the interviews for this study that a minority of the charts were difficult to talk through, or did not make good use of the features of the arrows. An examination of these cases helps to reveal what 'good use' of the arrows might mean. This is not to suggest that the students who took part in this study constructed visuals which were not 'correct' in their approach (the researcher made it clear during interviews that there is no right or wrong way to construct a chart). The suggestion is that the spontaneous construction of charts by the students, following their own agendas, has been very helpful in examining how the technique might best facilitate rich descriptions of collaborative working, and how Pictor instructions given in training or educational contexts might be refined to achieve this.

The *Findings* in this section are based on a visual analysis of the charts from all twenty interviews made for the broader project, and attempt to outline the researcher's view of the fundamental elements of a classic Pictor chart.

Primary elements of the Pictor technique

In the context of training and education, there are three key elements in a Pictor chart which facilitate easy and productive talk about collaborative working. A classic chart is:

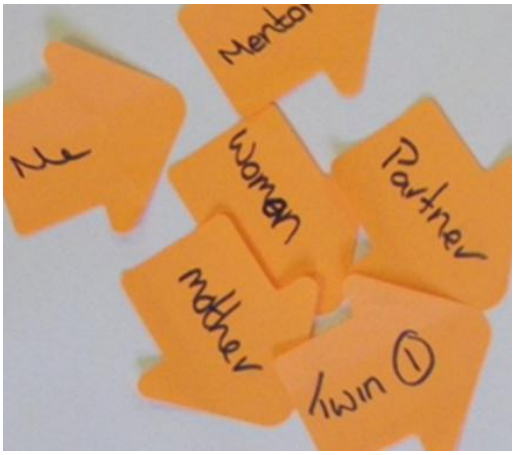
- **Case-specific:** It focuses on a specific case, either taking a snapshot of a moment in time or giving a cross-sectional snapshot of the case over a period of time;
- **Interrelational:** It uses the direction of the arrows and the distance between them to suggest something about the relationships between the people they represent;
- **Complex:** It involves a reasonably broad range of people and/or services.

These key elements are best illustrated by contrasting visual examples of instances of their use with examples of charts in which they are missing or not fully used.

Key element: Case-specific

Case-specific Pictor charts in health care are easily identifiable from the inclusion of an arrow for the focus of the care: a patient or a pregnant woman (see Figure 19). Two participants in the study produced charts which were not case-specific, best defined as generic charts, illustrating a generalised plan of a health care environment or process (see Figure 20).

Janet, nursing, Chart 1
An arrow for the patient.



Cath, midwifery, Chart 1
An arrow for the woman – the new mother.

Figure 19 Case-specificity: including an arrow for the focus of care.

ABOVE: Karen, midwife, Chart 1

Working relationships in a labour ward, showing 'women' as the focus of care, rather than 'woman'. This chart followed a misinterpretation of the researcher's initial Pictor instructions.

LEFT: Jemima, nurse, Chart 3

Drugs round. 'We're closest to what's happening, so we're that *[dark]* green, and then these ones are a bit further removed, but they're affecting what's happening, because before you can complete it you've got to go away and check these *[light green]*' [lines 527-30]

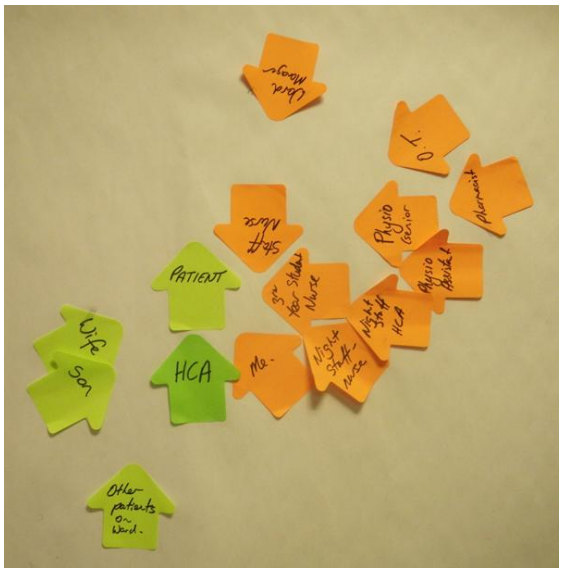
'And up here *[Reflection]* you've got what you learn out of it. That's the "Oooh!" *[spreads hands over chart]* That's the cloud, yeah! The thinking bit!' [lines 502-8]

Figure 20 Examples of generic charts.

Key element: Interrelational

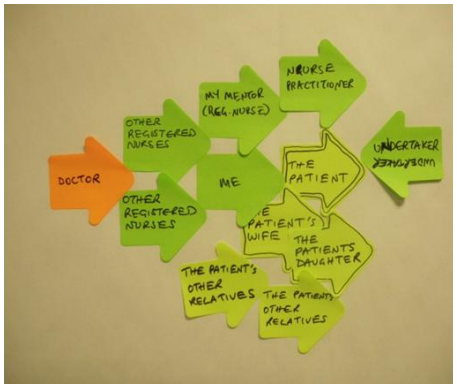
The interrelational element is characterised by arrows arranged at many different angles, in diverse directions (see Figure 21). Interrelational charts look busy, and lack uniformity. Charts with few interrelational aspects are often wholly or partially linear in format (see Figure 22): interrelationships are expressed using closeness between arrows, but not direction – arrows are parallel and unidirectional.

Diane, midwifery, Chart 2
The consultant and registrar are distant, their minds on accountability; the midwifery student (the 'Me' arrow) is running out of the room, and the woman is isolated with her relatives.



Janet, nursing, Chart 1
The actions of someone the participant recalls as a Health Care Auxiliary (HCA) allow a patient to fall out of bed; his relatives are unaware of the situation; the students and staff nurse provide close support, and other patients on the ward watch the situation unfold.

Figure 21 Interrelational charts look 'busy' by making good use of the direction of the arrows.



ABOVE: Lorna, midwifery, Chart 2
Described by the participant as a 'timeline' [line 619].

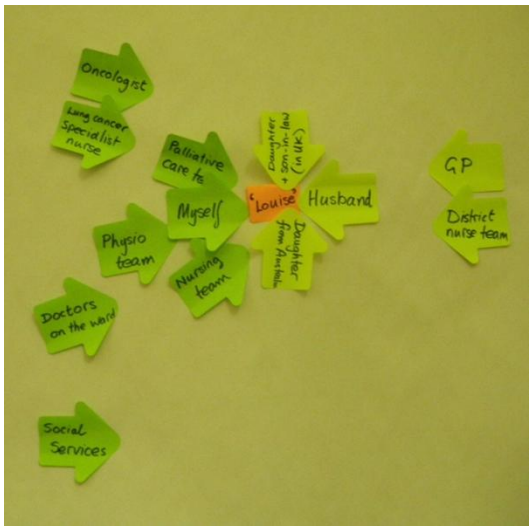
LEFT: Ruth, nursing, Chart 1
Interrelationships are expressed using closeness between the arrows: arrows closer to the patient represent more frequent contact, but there is little to draw out about who takes the lead and how these people affect one another.

Figure 22 Charts with few interrelational aspects have a linear appearance.

Key element: Complex

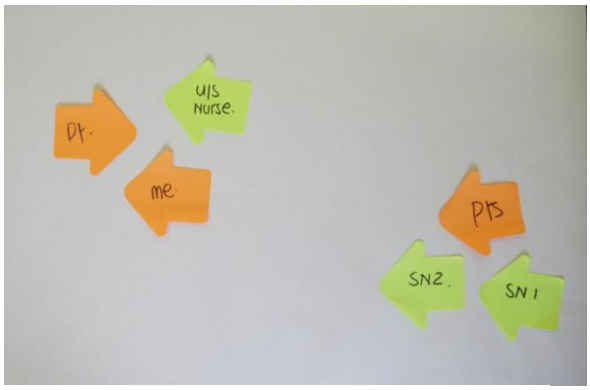
Complexity involves the use of multiple arrows representing diverse roles and/or services (see Figure 23). Charts lack complexity when they use few arrows and make little little reference to the broader interprofessional picture. This may come about through focusing on a single interpersonal interaction rather than an event or case (see Figure 24), or because the chart represents an event which involved few people. One midwifery student from the broader study chose to represent a traumatic home birth which involved few people – talking through the chart took noticeably less time and was based on emotional responses more than issues of collaborative working, suggesting that Pictor may be less useful for this type of incident, and more useful when the purpose of reflection is to bring the broader picture of practice to mind.

Lucy, midwifery, Chart 1
Arrows include Family Nurse Partnership, Registrar, Ward Staff, Anaesthetist.

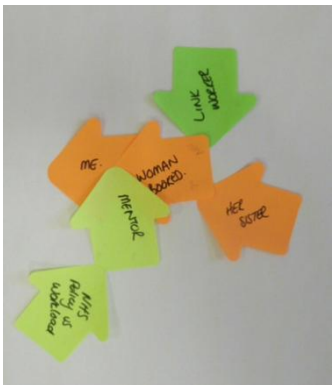


Sarah, nursing, Chart 1
Arrows include Specialist Nurse, Consultant, Palliative Care Services, Social Services.

Figure 23 Charts involving a range of people and services.



Beverly, nursing, Chart 1
Ultrasound nurse abrupt with student.



Hannah, midwifery, Chart 1
Interruption in booking session.

Figure 24 Charts focusing on a single interaction.

Secondary elements of the Pictor technique

Other approaches taken to chartmaking suggest four secondary elements of the technique. Secondary elements ideally need to be combined with other elements to create a chart facilitating a detailed description and including talk about social interaction:

- **Spatial:** Arrows laid out to represent locations, showing where people were when an event took place;
- **Temporal:** Arrows ordered to represent who took action when, or laid out sequentially to represent a process;
- **Metaphorical:** Arrows laid out to represent imaginary concepts such as a 'circle of care';
- **Chromatic:** The use of colour as an extra dimension.

Examples of charts in which these elements are clearly visible show how they are used.

Secondary element: spatial

Spatial arrangements map out the physical locations of people in a room or working environment (see Figure 25). Spatial charts can be case-specific, and may look complex because they involve many people, but provide few cues to provoke talk about the social interaction in a situation. The chartmaker may refer to interrelationships because of the presence (rather than the position) of the arrows, or may combine spatial and metaphorical approaches to produce a rich description, but charts using solely spatial arrangements make interrelationships less visible, offering fewer possibilities for trainers or researchers to probe.

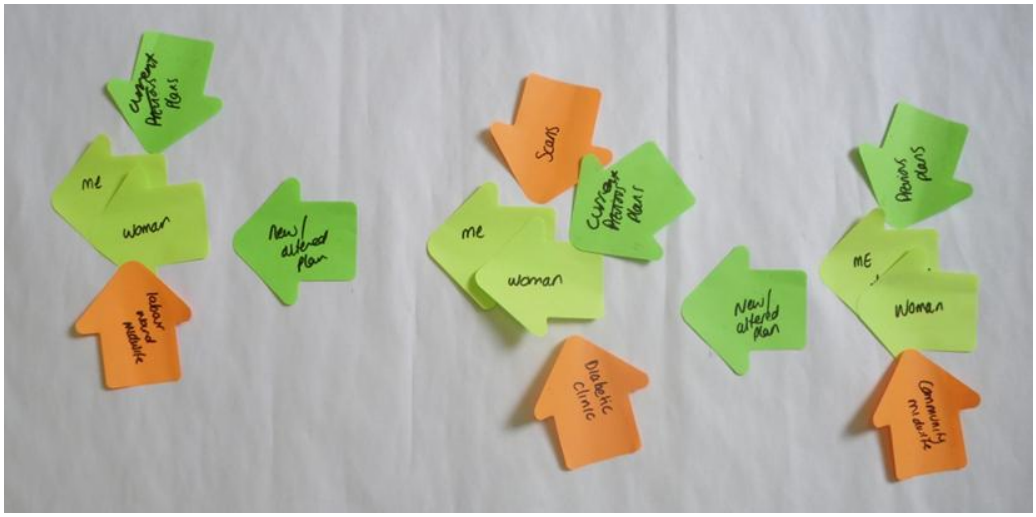
Christine, nursing, Chart 1
Standing around a patient's bed.

Cath, midwifery, Chart 2: Patient's room (top left), corridor (centre), midwives' station (right); another hospital room (bottom left).

Figure 25 Pictor charts using spatial arrangements. Cath's chart was combined with a metaphor in her chart-talk, which gave the researcher plenty of opportunities to probe.

Secondary element: Temporal

The shape of the arrows prompted some participants to represent time-ordered sequences or processes, producing charts which look more linear in format unless they are also case-specific and interrelational (see Figure 26). A chart which is fundamentally temporal with few interrelational aspects does not fully exploit the features of Pictor, suggesting that another graphical representation suited to time-ordered events – for example a timeline or a process diagram – may be a more productive means of reflection. The temporal chart by Lorna in Figure 26 elicited a long description of when each stage of a series of events occurred, with less talk about why it occurred and how this affected the people involved (see Figure 27).



ABOVE: Hannah, midwifery, Chart 2 – Care plan for a woman with gestational diabetes.
'A: It's sort of mapping a process, isn't it? H: Yeah, yeah, I suppose it is…I don't know if that's a bit long-winded and complicated…maybe you could just have significant, you know, if you had meetings and everything was fine, just to carry on, map out significant times, when she's been to diabetic clinic, you know, if something major is changed.' [lines 693-702]

Lorna, midwifery, Chart 1 – Supporting a woman through an experience of stillbirth.
'…woman and partner in the middle because they're the centre of it all…midwife one…her initial contact… midwife three at the far end because she sort of came in at the very last point…' [lines 502, 509-14]

Figure 26 Pictor charts using temporal arrangements.

(a) Chart-talk: interrelational (left).

Elsa, nursing, Chart 1, talking about a dying patient.

'I put the HCAs at a distance…because, although they're there for the, um, personal care, when it comes to the discharge, they're not really involved, as such, [A: Right] it's more a staff nurse's role, um, and the physio and the OT I put at a distance as well, because, the patient was quite mobile, so her personal input, um, with physio and OT, was not really suitable, because she was quite a mobile lady…I think she, she really wanted to see them more for er, um…just to, um, settle her nerves, really, [A: Right] because she was a bit concerned about going home with her being…in advanced stages of cancer. [A: Right] and…whether or not she'd be able to cope, so it was more for reassurance purposes…just to reassure her before she went home…once they were happy they took a step back…the palliative care team was involved quite a bit with this patient, [A: Mmm] um, they was, er, there to talk through um, er, her pain control, things like that, and just make her aware that she wasn't on her own and she wouldn't be on her own once she'd gone home, and that she would get input from other services to make sure that, um, she was receiving adequate pain relief.' [lines 319-39]

'…everybody just all comes together, that's why I've done it in a circle…'
[lines 383-4]

(b) Chart-talk: temporal (below).

Lorna, midwifery, Chart 1, talking about the birth of a baby who had died in the womb.

'…she was her initial contact …she did the home visits…and then midwife three at the far end because…she sort of came in at the very last point…the labour staff co…communicate with the obstetrician, who will then come and see the woman and the partner, [A: OK] speak to the labour ward staff first and then the woman, to get the background. Um, and then obviously after the baby's born, there's then the…the tests that need doing, the pathology, the post mortem, which I don't know if it went ahead… Um, but the pathology and morgue are contacted pretty much immediately really…I mean don't know if, once they knew, the chaplain came, but as far as I'm aware, once the baby was born the chaplain came and…gave a blessing…' [lines 540-68]

Figure 27 Extracts of chart-talk: (a) talking about a chart containing the three primary elements (case-specificity, interrelationality, complexity); (b) talking about a temporal chart.

As the midwifery student who produced the timeline in Figure 27b talked through the arrangement of arrows, she began to speculate on another way of putting a chart together:

> 'I mean it doesn't really work with, with this particular thing, but I guess if you was in children's nursing or something like that then you'd…where mum and partner are, you'd have the child up there as well, [A: OK] so then you could have arrows, sort of, you'd have the doctors at, pointing towards the child, [A: OK, yep] and you'd have another one pointing to the, the parents, because th…the doctors are treating the child, [A: Yes] but also the doctors need to communicate with the parents…' Lorna, midwifery [lines 903-9]

In these words, a move is made beyond the timeline format with the realisation of how the arrows could be used to represent relationships, taking a step towards a more complex use of the Pictor technique.

Secondary element: Metaphorical

Six participants spontaneously laid out arrows in arrangements which they described as representing a metaphor. Two nurses represented a circle of care around the patient in their first chart (Figures 27a and 28b), an image which also occurs in Pictor training charts (Bravington, 2009); one midwife used this metaphor when asked to create a chart representing the 'ideal' situation (Figure 6c, page 24). Two nurses represented situations which could be described as a tug-of-war over the patient, in one case with professionals metaphorically pulling an unwilling patient towards surgery and opposing professionals trying to pin the patient down in order to make her own decision to go, in another with nurses and the patient caught between consultants and specialists and the patient's unhappy relatives and friends. One midwife (Cath, Figure 18, page 34) represented the two sides of the 'fence' (sympathetic and unsympathetic) in a case of infant death. These metaphors are visible in the visual appearance of the chart with minimal explanation by the chartmaker.

Figure 28 (a) A tug-of-war between the needs of a patient and the needs of his relatives and friends.

Jemima, nursing, Chart 1

'…you don't want five different relatives coming…in all asking the same things of different nurses. [A: Yes, yeah] Yes, so we had to be a little bit strict and say, "We want one representative from each faction", *[smiles]* if you like, [A: OK] and that they will talk to the sister who's on at that time, to get some sort of rules established, if you like. [A: Yeah, yeah] So that *[right hand side of chart]* was <u>that</u> side of it, and then this side *[left side of chart]* was the practical side of…we've got this patient who's in a lot of pain, and needs sorting…' [lines 374-81]

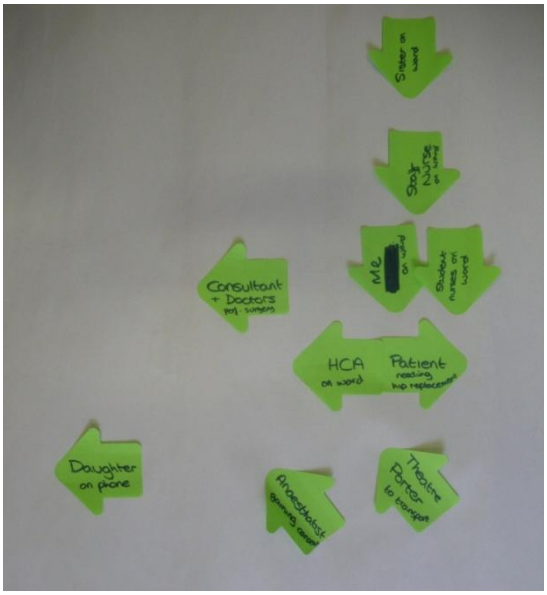
Sarah, nursing, Chart 1

A circle of care around the patient:
'I put the patient in the centre…it's all going to her, isn't it?' [lines 436-7]

Figure 28 (b) A circle of care.

Secondary element: Chromatic

A feature of the Pictor technique that is always offered to participants, but not always used, is colour. The Post-It Note arrows offer a limited range of possibilities: orange, dark green and light green. One participant, a nursing student who created a monochromatic chart using only dark green arrows, talked about the interplay between the physical features of the Pictor technique and the dimensions of the event represented in her chart (Figure 29).



Julia, nursing student, Chart 1

A: Were you tempted to use colours at all, or not really?

J: Uuum, I didn't see any use in the colours, [A: Right] an' although, so I…if there'd been a situation where I'd felt that I needed a third dimension, colour would've been my next thing to do.

A: What might your third dimension've been? What sort of thing?

J: I don't kn…in this situation, but you know, like, because I've got one…in my mind, I've got kind of one axis of the direction of the arrows, [A: Yep] and one in terms of the closeness to patient, [A: Yep] if there was a third factor that I needed to fi…figure in somewhere, [A: OK] then I would've used colour, but I didn't <u>have</u> anything like that, so I [A: Yep] kind of decided not to.

Figure 29 A monochromatic chart: reasons for not using colour.

In the ten interviews in this study, colour was used to express professional affiliations or to group lay people separately from professionals (nine of the ten participants), often in combination with the grouping of arrows. It was used independently to represent 'the system'

in the form of guidelines and protocol (two participants), or to represent emotional alliance or empathy between professionals and the people they cared for (four participants). Julia's chart (Figure 29) is an example of a classic Pictor chart: it is case-specific, focusing on a single incident (persuading a reluctant patient to go to surgery); it is interrelational, demonstrating conflict between professionals trying to take the patient to surgery against her wishes and professionals trying to resist this; and it is reasonably complex, involving a range of job roles. The chart worked well in facilitating talk about the case and the moral dilemmas involved, and as Julia pointed out herself, colour would have been an added dimension for her. The frequent combination of colour with other features to represent the same phenomenon, and its rare independent use, suggests its secondary nature as an element of Pictor: a classic chart can be constructed without using colour.

Section 3: What do students think of Pictor?

> *…phenomenologists urge us to treat each bit of initial experience as if we have been given the task of piecing together some gigantic jigsaw puzzle without prior knowledge of what image the completed puzzle depicts…* (Spinelli, 2005, p21)

The jigsaw puzzle metaphor above, from Spinelli's introduction to phenomenology, *The Interpreted World*, suggests that we use isolated 'bits' of experience to build an image, the meaning of which only emerges when the picture is complete. In Pictor, the chartmaker builds a visual image of an experience by fitting the arrows together, often without realising what is significant about the pattern until the chart is finished and they step back to reflect on it. Participants in this study summarise this feeling:

> A: It might sort of seem obvious to you, but can you explain why you've put the arrows in the direction you've put them in?
> E: I don't know really why I've done that…' *[she continues]* '…you're not actually aware of why, why, you know, you're putting them down, you…you're not actually aware of where you're putting them…until you said so…I could see why I've done it now.'
> Elsa, nursing [lines 380-2, 391-97]

> '…when I started this, I wasn't quite sure what I wanted to say, or what the relevance of certain things are, and in putting them on *[the chart]*, that becomes clearer. [A: OK] And I think that's a, perhaps a good starting point because it can evolve…it helps you clarify the situation.'
> Jennifer, midwifery [lines 981-5]

Five participants talked about their previous experience of mapping out processes or reflective work using timelines and spider diagrams, and saw similarities in Pictor which made it approachable as a technique. The response to the technique was positive: comments were made on how Pictor feels to do, and on how students felt it helped their reflective thinking.

How does it feel?

Quick, practical and easy to do: Students commented that Pictor was 'quick', 'an easy thing to do', 'practical and usable', 'you do it however you want to do it' (Janet, nursing, lines 294-5, 302, 307, 728-9), 'fairly easy' (Elsa, nursing, line 309) and 'much easier' than a spider diagram (Lorna, midwifery, line 615). Charts took an average of six minutes to construct (times ranged from one minute to ten minutes).

Kinaesthetic and creative: Four participants commented on the feel and appearance of the chartmaking process, finding the arrows pleasurable to use. Diane describes its appeal:

> '…we're all sick of writing! *[laughter]* So yeah, it's good and it, it's not just that, it's visual, um, like the different colours an' that, you can be a bit more creative, whereas in writing you can't, if you're not very academic…' Diane, midwifery [lines 871-4]

Chartmaking was felt to have potential for deflecting self-consciousness in groupwork by refocusing observation from the reflector to the chart. Julie (nursing) felt that pictures were easier to explain to other people: 'I found it useful to actually use a picture to talk to somebody', 'a picture clarifies more' (lines 767, 889).

Flexible, fluid and dynamic: The potential to move arrows around and change the chart as your thoughts change was seen as a useful feature. Two participants talked about being able to map out a situation as a record for writing up a reflective account, and how changes in their perceptions could be recorded in a chart: 'As I'm writing things up, I might change that' (Janet, nursing, lines 733-4); 'a month later you've got the "What happened afterwards?" that's included in this *[chart]*' (Sarah, nursing, lines 719-20). Two participants contrasted the flexibility and dynamism of Pictor with the structure of reflective models for writing:

> '…there's things in the chart that you can't get over in writing…it's not a narrative, is it? Whereas the writing is narrative…and the writing's…linear, isn't it?' [Sarah, nursing, lines 782-8]

> 'You can add to it, can't you? It's quite dynamic. *[pause]* And I think some reflective models are quite linear…And that linearity I think sometimes isn't very helpful. I like the fluidity of this, in that you can move it around…' *[she continues]* '…it's more of a diagram than a list, which some reflective models are quite list-like, and for people who don't like writing *[smiles, breaks off]*…' [Jennifer, midwifery, lines 959-64, 978-80]

How does it help?

Gets at the 'the important bits': Participants focused on how Pictor helped them to 'separate things out' (Hannah, midwifery, line 842), 'get the important bits' (Jemima, nursing, line 780) and find out what was central to their experience. Jennifer (midwifery) summarises this:

> '…it *[Pictor]* has the potential to have more impact *[than a written reflective model]* because you can just think, well, what were the key bits? Right, if I've only got two thousand words to write my essay, this is the key part in the middle *[indicating centre of chart]* where everything was happening, and these other things *[indicating periphery of chart]* may just be a quick reference because they weren't really central to the experience.' [lines 991-6]

Jemima (nursing) felt that practicing with Pictor would help her to focus on what was central in an experience:

> '… I think the more that you did you'd quickly get into a, a rhythm of, um, what's at the centre…' [lines 779-83]

Lorna (midwifery) commented on the ability of the arrows to visually focus in on the centre of care: 'I quite like the arrows, because it all points to the centrepiece, and the woman and the partner are always central to what we do' (lines 671-8).

Brings collaborative working into sharper awareness: Pictor helped students bring to mind the broad range of people they liaise with when working in practice:

> '…it made me more aware as well of…the other services that are out there, and of all the help that's available…' *[she continues]* 'it made me really think of who was involved…you know the doctors are aware, you know the staff nurses are aware…but there's so many other people involved in the background… you might not necessarily see them people...' 'I had to sit and think about what I'd done and who I'd spoke to…' [Elsa, nursing, lines 374-5, 685-90, 744]

Elsa also talks about how mapping out different roles made her realise that she is not solely responsible when things do not go to plan in the practice environment – that 'there's other factors contributing to that end result' (lines 710-11). Cath (midwifery) felt that separating out professional roles was a 'different way of thinking' about experience (line 711), and Julie (nursing) outlined its benefits:

> 'I think the useful thing is that you think about all of the different people. [A: Yep] So it makes you, um, almost analyse individually who was there, what was going on with that person, rather than just seeing the whole situation as a mass' [lines 772-5]

Deals with complexity in a simple way: Creating a Pictor chart was seen as a useful way of clarifying complex practice situations:

> 'it makes you more aware that, you know, with a complex case there's quite a lot involved behind the scenes, you know, it's not just the people that you see in the hospital.' Elsa, nursing [lines 698-700]

> 'It was interesting just doing that last bit, the more ideal situation…it just clarifies, you know, what, what you want that's best for the patients.' Sarah, nursing [lines 616-21]

Jennifer (midwifery) saw it as a way of keeping track of the complex human relationships that affect the process of care:

> 'I think the relationships that the woman has with other people in her life and the orange colours that I've used are probably quite useful, because some women have complicated relationships…Sometimes that's quite difficult to keep track of.' [lines 696-702]

Janet (nursing) felt that Pictor allowed her to take a complex practice situation and 'thread things out' (line 304) in a way that reflective models could not: 'I don't need over-complication, I just like quite a pragmatic approach, something that works…I like this, cos

that's quite a pragmatic approach' (lines 713-15). For Jennifer (midwifery), this simplicity was helpful: 'It doesn't need a lot of words to think it through, does it?' (line 978).

Questions students asked about the Pictor technique

⇨ Does it have to be a traumatic/negative situation?
⇨ Do I group people on one arrow?
⇨ Have I done it 'right?'
⇨ Is this situation good enough? Does it work?
⇨ Do I need to have had contact with all of the people on the chart?
⇨ How do I know if I've finished?
⇨ What if I've missed someone out?
⇨ Can I include emotions?
⇨ Does it matter that the writing is the wrong way up?

Section 4: A students'-eye view of reflective practice

In the final part of the interviews for this study, students talked about their views on reflective practice and the reflective methods made available to them during their studies. The template (Figure 30, overleaf) displays the results of the thematic analysis. Themes emerging from the reflective practice section of the ten interviews are represented in black on the template. Themes in blue include data from the chart-talk section of the interview: as analysis progressed, a level of cross-over between the two sections of the interview became evident, and the template demonstrates where the two dovetail together. An attempt was made to maintain a rich level of detail in each category, resulting in a parsimonious template with only three thematic levels. This retains a level of flexibility for the next stage of the project, in which the template will be used as a basis for analysing the remaining ten interviews and revised into a more detailed hierarchy. A theme-by-theme description is presented below, with an indication of the frequency of themes across the ten interviews included in this report.

1. What is reflection?

Students thought about what the word 'reflection' means to them. Their answers acknowledged the educational view of reflection as a process which helps to break down practice experience into its component parts, identify areas for improvement and think about how you might achieve this:

> 'I suppose it is looking back at something and breaking it down and understanding all the influences on something, to sort of understand that situation better, and then know how to…do something better the next time.' Hannah, midwifery [lines 1004-7]

> 'For me, it's about understanding why you're doing something and um, looking at your own practice and how you can improve on it to make sure that you, you don't make the same mistakes again…' Elsa, nursing [lines 595-9]

Talk moved beyond the educational purposes of the process towards describing how it can happen spontaneously (*Doing what comes naturally*), how it helps to identify areas for improvement (*Breaking things down*), and how it can lead to a change in understanding (*Making the shift*).

THE TEMPLATE:
A STUDENTS'-EYE VIEW OF REFLECTIVE PRACTICE

1. What is reflection?
   - 1.1 Doing what comes naturally
   - 1.2 Breaking things down
   - 1.3 Making the shift
     - 1.3.1 Seeing what's missing
     - 1.3.2 Changing your behaviour

2. Showing the evidence
   - 2.1 Doing it by the book
     - 2.1.1 Accepting direction
     - 2.1.2 The need for structure
   - 2.2 Finding your own way
     - 2.2.1 Resisting direction
     - 2.2.2 The need for choice

3. Reflecting the realities of practice
   - 3.1 Dealing with what's 'outside the door'
     - 3.1.1 Sitting with gremlins
     - 3.1.2 Realising your responsibilities
     - 3.1.3 Accepting the things you can't change
   - 3.2 Caring and collaborating
     - 3.2.1 Dealing with miscommunication
     - 3.2.2 Preserving patient autonomy

Figure 30 The template emerging from the reflective practice section of the interviews, showing areas in which chart-talk contributed to the themes in blue.

1.1 Doing what comes naturally

Nine of the ten participants talked about reflection as a process which they were familiar with and felt impelled to go through during placements, regardless of its academic assessment.

> '…it happens inside me and I only write it down if I have to prove it.' Julia, nursing [lines 804-5]

> '…to me it's logical, if something goes wrong you automatically say, well why did that happen? What did I do wrong? [.] I don't know, I don't know if that's something that maybe I've grown up doing.' Lorna, midwifery [lines 863-6]

Students considered thinking and talking about experiences as part of this process. Thinking was seen as a spontaneous way of coming to terms with events:

> '…you sit and you think about the situation…and they call it "reflecting", I know, d…don't they, but you sit and you think about, an' you think, gosh, you know, really, perhaps I should have done that, and if I'd known how to do this I would've been more use …' Jemima, nursing [lines 714-18]

Vocalising experiences helped to 'offload' negative feelings (Elsa, nursing, line 666), and to think about how situations might have been handled differently.

> 'I like to sometimes talk about things with somebody, [A: Right] bounce some ideas off, or… sometimes things become clear when you vocalise them, don't they?' Janet, nursing [lines 874-5]

> '…if you talk about somethin' you don't feel like you're wasting time, but I think if you're writing it down…well why do that when I've got an assignment due in in two weeks?' Diane, midwifery [lines 738-41]

1.2 Breaking things down

Six participants talked about the need to break a situation down in order to learn from it:

> 'I s'ppose it is looking back at something and breaking it down and…understanding all the… influences on something…' Hannah, midwifery [lines 1002-3]

> 'I have a feeling that there's something going on here and I'm not quite sure what it is, and I want to try and unpick it…' Jennifer, midwifery [lines 893-4]

Lorna (midwifery) talked about needing to 'branch out' (line 855) to work out who was involved, at what point, and where care was focused, Julie (nursing) about separating out 'what went well, what didn't go well' (lines 847-8).

1.3 Making the shift

Six participants explained how reflection on practice has fundamentally changed their ways of thinking, giving them a confidence that extends beyond practical tasks, and the ability to 'come to their own conclusions' (Jennifer, midwifery, line 779). Jennifer described this shift in understanding:

> '…it's almost a paradigm shift, you've got the intellectual understanding of what the purpose of reflection <u>is</u>, and how that be<u>comes</u> reflexivity. [A: Yep] Maybe it's about emotional investment. There has to be a point where you make that emotional investment to really look at your<u>self</u> in that situation and what you're in control of and what you're not in control of, and how do you commit to making, maybe, the changes for you to react differently next time. [A: OK] And I think it's about your conscious awareness of that in yourself…' [lines 857-64]

Jemima described the need to form intuitive skills – talking about building expertise in sensitive communication, she points out that 'you can't sort of go away and look it up' (line 685). Three participants commented that life experience facilitates this shift in understanding.

1.3.1 <u>Seeing what's missing:</u> The shift in understanding is informed by reflecting on what is missing in the students' practice (five participants). The ability to identify areas for improvement increases as practical experience is gained.

'…by being in the situation, you're recognising the things that you don't know…afterwards you think, well actually I don't know anything about that…but I might have to do it in the future… I need to know them things…It's quite practical that, isn't it? [A: Yeah] It's not sort of hairy fairy thinkin' about it.' Jemima, nursing [lines 668-76]

'…when I first started to try and do reflection, [A: Mmm] it was purely more a descriptive account of what had happened…I wasn't able to sort of analyse that…And as I've gone through the course and I've got more involved in patients and more experienced, I think you understand more why you've done something a certain way…it's got more, more deeper really…' Elsa, nursing [lines 568-86]

Being in practice 'highlights the fact that…your knowledge in a certain area is lacking' (Sarah, nursing, lines 630-1), directs questioning, and provokes students to 'do a little bit of research' (Janet, nursing, line 814).

1.3.2 Changing your behaviour: Students considered the outcome of the reflective process to be a change in behaviour in the practice environment:

'So yeah, it's looking at what's happened…learning from reading a little bit wider and then perhaps changing your approach to it – if necessary, if you need to.' Janet, nursing [lines 819-22]

Sarah (nursing) identified 'weak points' (lines 815-16) to be addressed at the next opportunity in practice. Cath (midwifery) talked about being inside a protective 'bubble' with her mentor, but being aware that this bubble would burst and reflection would help her to correct her mistakes: 'I'll be like, "Ooh, did I do that? Ooh God... Won't do that again" ' (lines 1022-4).

2. Showing the evidence

Seven participants talked about written models of reflection, spontaneously mentioning Borton's Developmental Framework (1970), de Bono's 'Thinking Hats' (1985), and the reflective cycles by Gibbs' (1988) and Marks-Maran and Rose (1997). There was a tension between a need for direction in presenting reflective work for assessment (*Doing it by the book*) and a resistance to using predetermined structures (*Finding your own way*).

2.1 Doing it by the book

All of the participants used written reflective models as part of their coursework and felt that a structured approach could be helpful for assessments, although some found it laborious.

2.1.1 Accepting direction: Five participants talked about using reflective models. Two participants purposefully constructed their reflective work to satisfy learning outcomes:

'…sometimes you do them *[written reflections]* because you want to remember what happened, and other times you know it'll achieve certain ones of your NMC outcomes. [A: Right, OK] Um,

> cos I always highlight the outcome number in yellow, so it's easy for a, a mentor to see, you know, that you've achieved that proficiency.' Sarah, nursing [lines 615-18]

Gibbs' reflective cycle (1988), the most popular among the ten participants in this study, was seen as clearly structured and usable (Julia, Cath) but 'too straightforward' for third year assessments (Diane, midwifery, line 840). The acceptance of reflective models was begrudging: they were described as 'inhibitory' and 'laborious' (Jennifer, midwifery, line 709), 'restrictive' (Jemima, nursing, line 632) and 'repetitive' (Julia, nursing, line 801).

2.1.2 <u>The need for structure:</u> Five participants found models helpful. Elsa (nursing) found that structure clarified her understanding of a situation, and it assured Cath (midwifery) that she was progressing: 'to feel like I've achieved something I need some form of structure' (lines 874-5). In reflective groupwork, a lack of structure was associated with 'not getting anywhere' – 'did anything actually happen then, or did we just talk about it?' (Cath, midwifery, 817, 852-3); for Jennifer (midwifery, line 768) the lack of structure prevented the group from moving 'past the storytelling' to questioning and challenging.

2.2 Finding your own way

The feeling that reflection is something which comes naturally made some participants feel resistant to the idea of forcing it into an academic structure.

2.2.1 <u>Resisting direction:</u> Four participants talked about the difficulty of moving from reflection as a process that happens naturally in thinking and talking about experiences to evidencing reflection as an academic exercise.

> 'I almost felt a bit like I was being regressed to a child in terms of being told that…something that I'd already kind of made automatic, that I now had to write down and prove that I was doing it. And, an' there was a bit of a reaction I think, from me, about that, sort of sayin', "Pfff, you know, I don't, I don't wanna have to write down reflections, you know, I already deal with it in my head!" ' Julia, nursing [lines 865-78]

In the transition between thinking through experiences and evidencing reflection, confidence in the ability to reflect could evaporate (two participants), leaving a student feeling as if they couldn't 'do' reflection – that they didn't 'get' it (Julia, line 837). For one participant, the structure of reflective models failed to accommodate the emotional aspects of experience, for another, academic models took the pleasure out of the reflective process.

2.2.2 <u>The need for choice:</u> Five participants emphasised the need for different methods of learning and reflection to suit different students – 'everyone works differently, don't they?'

(Cath, midwifery, lines 882-3). Preferred methods included watching simulations, reading from textbooks and 'visual learning' (Diane, midwifery, line 876). Jemima described herself as a person who works best when she can 'hold the book' (line 734); when asked what sort of reflection suited her best, she replied: 'My own!' (line 758). At the end of the interviews, participants were asked if there was anything they wanted to say before the audio tape was switched off; Diane (midwifery) responded by reinforcing the need for a diversity of methods:

> 'Are you trying to bring this *[Pictor]* into practice?...I think it would be good if we've got the choice… you can do it if you want, you don't have to…So I think activities like this that are optional…' [lines 940-3]

3. Reflecting the realities of practice

Participants felt that the theoretical background given to students fell short in dealing with some aspects of practice. Uncomfortable experiences had to be dealt with on a personal rather than academic level (*Dealing with what's outside the door*). Lessons in communication often happened on the ground in the practice environment (*Caring and collaborating*).

3.1 Dealing with what's outside the door

Midwifery student Jennifer talked about the need to 'be present' (line 846) with the woman she was caring for, and how this necessitates acknowledging your own emotions and putting them aside. She cited the example of doulas (people who provide non-medical support during childbirth) being trained to leave personal experiences 'outside the door' (line 792). Students had to develop strategies for dealing with moment-by-moment discomforts of practice (*Sitting with gremlins*), and for dealing with death (*Realising your responsibilities*) and their inability to control difficult situations (*Accepting the things you can't change*).

3.1.1 Sitting with gremlins: Six participants referred to persistent feelings of discomfort during placement. Sarah (nursing) referred to these discomforts as 'gremlins', denoting anxieties which continued to sit with her after an event and needed to be faced up to:

> '…in this case I was relieved that I had been able to say something to the husband when, when his wife died. [A: OK] Um, you know an' I thought, ooh, good, I'm glad I did that, you know, because that's…one of my gremlins, if you like, from that…previous reflection, you know – that I hadn't been able to do it.' [lines 816-21]

Elsa (nursing) also talked about taking discomfort home after a terminally ill patient died while she turned him in his bed:

> 'I went home that night feeling as if, as if I'd caused his death, you know, that's, that's initially how I felt' [lines 644-5]

Written reflection helped Elsa come to the conclusion that 'it wasn't all down to me' (line 632). Cath (midwifery) described feelings of guilt over the loss of a newborn baby, although she had not been present at the death. Jennifer (midwifery, line 899) described paying attention to 'things that…I'm uncomfortable with' as 'reflection-in-action' – reflecting moment-by-moment during practice (a concept borrowed from Schön, 1983).

3.1.2 Realising your responsibilities: Six participants described a realisation that health care involves situations with 'the potential to be life threatening' (Cath, midwifery, line 1027):

> 'The bit that scares me more is that I've got two people's lives in my hands. [A: OK] *[L laughs, A laughs]* Which I try not to think about, because if you think about it you'd just go insane. [A: Right] You know, not try and dwell on the fact, just know your things, and just go out and do them.' Lorna, midwifery [lines 72-5]

Jemima (nursing) pointed out the responsibility of carrying out drugs rounds carefully, because cumulative mistakes in dosages could be fatal; Diane (midwifery) described witnessing a difficult childbirth and feelings of fear at the realisation that the baby could die.

3.1.3 Accepting the things you can't change: For five participants, progress included accepting that some aspects of care, in particular the death of a patient, mother or baby, were beyond personal control. Elsa and Julia released feelings of responsibility through reflection:

> '…reflecting on that, it made me understand that…it just happened, and some things you just can't change, or, you know, it's not your fault...' Elsa, nursing [lines 659-62]

> 'When somebody dies, I've almost been through enough of that reflection to say, now look, *[quietly]* it happens. Um, as long as you've done all you can, then there's nothing much that you can change.' Julia, nursing [lines 785-8]

Cath and Lorna acknowledged that actions can only be taken on the basis of the knowledge available at a particular time, and that different actions do not guarantee different outcomes.

> '…you don't know that if things had been done differently the outcome would've been different…' Cath, midwifery [lines 783-5]

3.2 Caring and collaborating

Difficulties in working collaboratively were perceived as a reason for reflecting (*Dealing with miscommunication*). Many of the students' charts focused on communication, as noted in Section 1 of the *Findings*. In chart-talk, students often explained their actions in a situation as upholding the needs and rights of the person in their care (*Preserving patient autonomy*).

3.2.1 Dealing with miscommunication: Eight participants described perceptions of poor communication in the working environment. Jennifer and Hannah described an effect reminiscent of the game 'Chinese Whispers' when documentation was handed on and repeatedly reinterpreted:

> 'we…have responsibility to read that documentation, and there have been…situations where it's been skimmed through, and things have been misinterpreted.' Jennifer, midwifery [lines 633-5]

> ' "Everything fine, baby moving" *[short laugh]* it doesn't really tell you a lot, so I think you get a real appreciation for how important documentation is, an' the communication between teams of people working together…' Hannah, midwifery [lines 754-7]

Jemima (nursing) pointed out how misinterpretation could occur if relatives received inconsistent information. Sarah (nursing) and Diane (midwifery) felt that people in their care were caused distress by consultants' failure to listen and communicate – Sarah challenged the consultant about providing more thorough information after a cancer diagnosis; Diane felt it was inappropriate to challenge a doctor's behaviour because of the power differential in the professional hierarchy, but thought through how she might do so when she created a chart to represent her hypothetical 'ideal' way of dealing with the situation.

3.2.2 Preserving patient autonomy: Six participants focused on the need to listen to and uphold the wishes of the people in their care. Five described incidents in which they felt that the wishes of patients or pregnant women were not being acknowledged by staff or relatives.

> 'I think my role in that situation was an, as an advocate for the patient…' *[she continues]* 'She was saying the words, but…nobody was listening.' Julia, nursing [lines 438, 457-8]

> '…he *[patient's husband]* was really quite sort of argumentative, you, you know. It was really difficult for me, you know. I mean I could see where he was coming from but if his wife really wants the treatment, you know, it's, he's got to go along with that…' Sarah, nursing [lines 372-5]

For these participants, thinking through the ethical dilemmas posed by patients choosing to refuse care, or relatives putting pressure on them to do so, helped to formulate ways of behaving that would support the patient within the professional boundaries of their role.

Discussion

This study aimed to discover how Pictor facilitates reflection on collaborative working, to investigate how the participating students felt about using Pictor as a reflective tool, and to examine whether Pictor might be an appropriate addition to the techniques of reflection currently used in health care education. The *Findings* illuminate these issues, and have implications for the use of Pictor as a research tool.

Reflecting on collaborative working

The *Findings* demonstrate that the features of Pictor (proximity, direction, grouping and colour) can be used to represent the following aspects of collaborative working in health care: professional roles and their relevance in a specific practice situation, lines of communication, the timing and frequency of contact, relational dynamics such as rapport and pressure, the patient-centred nature of care, and the broader organisational structures, protocols and locations of care.

The definition of reflection by Boud *et al* (1985), 'those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations' (p19), has parallels with Pictor. Students mapped out situations with little hesitation, and the basis of their arrangement of arrows was not always evident to them until they talked through the chart, bringing a new perspective on their experience and making them 'aware of their construing' (King and Horrocks, 2010, p191). The facility of Pictor in representing relational dynamics demonstrates that the technique can take in the intricacies of Boud *et al*'s 'affective activities' as well as the broader organisational aspects of practice.

The use of Pictor as a reflective tool

Parallels can also be drawn between Pictor and the description, evaluation and anticipation of future actions involved in popular models of reflection such as those by Borton (1970) and Gibbs (1988). For many of the students, the first instinct on finishing their chart was to describe the situation it represented, without being asked. In talking through the positions of the arrows, participants went on to explore the issues of effective communication, patient advocacy and coming to terms with the discomforts of practice. In their discussion of the process of reflection, participants characterised the shift in thinking and change in behaviour which can occur through reflecting on experience (Section 4 of the *Findings*). Chart-talk

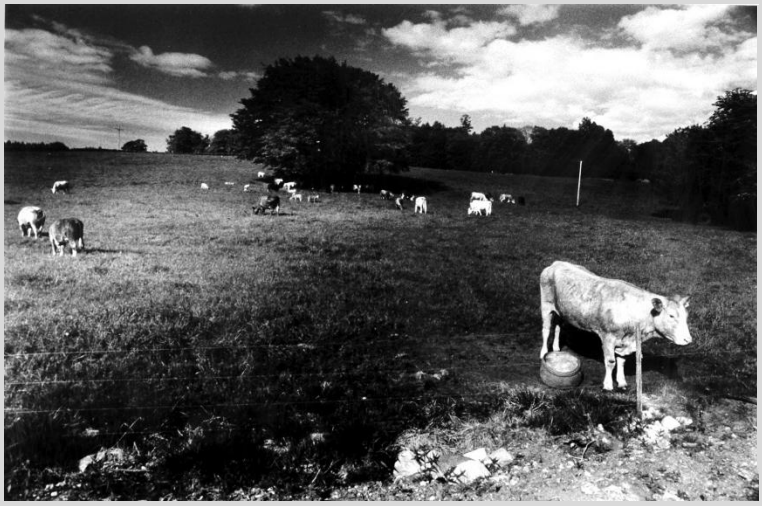
reinforced this, with references to the realisation of their responsibilities and the acceptance of being unable to exercise control in some aspects of their work. In mapping out charts showing a hypothetical ideal situation (for example, Figure 6c, page 24), students demonstrated an ability to think through how problematic situations might have been handled differently.

Pictor goes beyond existing models of reflection by freeing the reflective process from its stage-by-stage moorings and refocusing on the content and substance of an experience. It puts dynamism before structure, provoking spontaneous reflection rather than focusing on the *way* that reflection should be done. This dynamism made Pictor an easy and enjoyable process for the students in this study, including those who characterised themselves as 'academic' and those who felt that they sometimes struggled with written assessments. It works well because the basic principles of the technique are familiar from other settings – for example, the use of proximity, direction and grouping to infer qualities of human interaction and emotion. The photograph of cows in a field shown in Figure 31 (overleaf) is used in a nursing module at Robert Gordon University, Aberdeen, to explore the feelings of others in the context of nursing practice (McKie *et al*, 2007). Proximity and direction provide cues for inferring aspects of social interaction. Pictor uses the same anthropomorphic cues, but retains the human context of a situation with its focus on roles and identities, and allows students to use a unique, idiosyncratic picture of an experience in practice as a basis for interpretation.

Pictor as a classroom tool

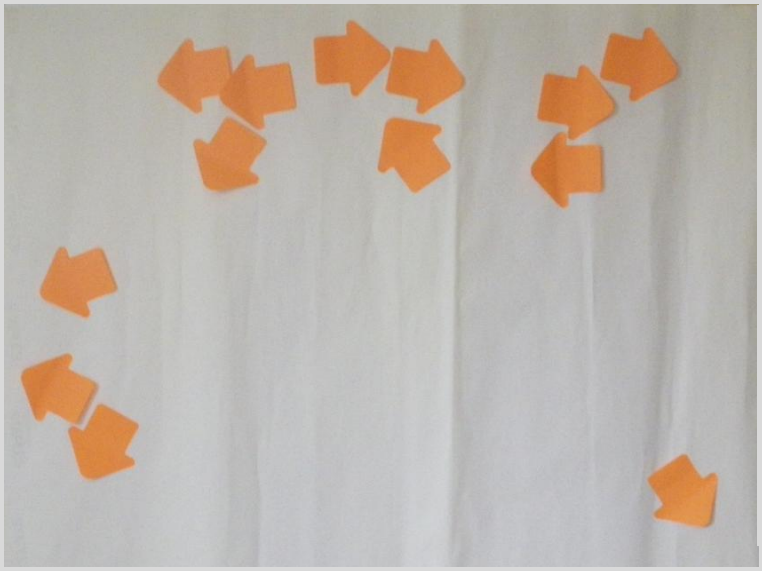
Ross *et al* (2005), writing about the first study using the Pictor technique, point out that classroom learning 'does not readily reflect the complexities that may arise through interprofessional working' (p2). This is recognised and addressed in nursing and midwifery training by the provision of work placements in Primary and Secondary Care. Students in this study saw reflection as a way of bridging the gap between theoretical learning in the classroom and experiential learning in the practice environment. In chartmaking, participants referred to policy guidelines and gaps in their theoretical knowledge as they arose within specific practice situations (Section 1 of the *Findings*).

Pictor assists communication in research interviews (Hardy *et al*, in press), and has the potential to assist communication between one student and another, and between students and supervisors. Ross *et al* (2005) describe the successful use of an earlier version of the technique in helping communication in groupwork with post-registration nurses. Students



A photograph used in a nursing module as a basis for discussing how the feelings of others can be interpreted.

Photograph by Anne Campbell, Photography Department, Gray's School of Art, Robert Gordon University, Aberdeen, Scotland. Reproduced with permission.



Arrows laid out to resemble the positions of the cows in the photograph above (constructed by the researcher).

Figure 31 The anthropomorphic nature of arrows: the use of proximity, direction and grouping to draw inferences about human relationships.

interviewed for this dissertation study reported feeling self-conscious during reflective groupwork sessions. Negotiating the boundaries between a sense of self, a role identity (as a nurse or midwife, for example) and a group identity (in this case, as a student in a group session) during social exchange involves emotions and feelings which can be uncomfortable (Lawler, 2001). Participants spontaneously commented on the potential of Pictor to deflect self-consciousness and discomfort in the group situation by refocusing the group's gaze from the talker to the chart, and clearly structuring narratives of collaborative working (Section 3 of the *Findings*), suggesting possible applications for Pictor in facilitating group reflection.

The importance of flexibility

Hardy *et al* (in press) point out that the nature of a Pictor interview may 'dictate a modification of the tool' (page numbers unavailable), and describe two approaches as examples: the creation of the chart as a discrete process, followed by discussion, or the discussion of the chart as it is put together. Hardy *et al* describe the use of the technique in interviews with palliative care patients, rather than with health professionals, but their point about flexibility holds across contexts, and is a key feature of the technique.

It would have been impossible to investigate the nature of Pictor as a reflective tool without taking a flexible approach to chartmaking in this study. Students adapted quickly to the process of chartmaking, and five of the ten participants in this report offered spontaneous ideas for a second chart. Asking students who represented problematic situations to re-map their charts to show the 'ideal' situation is not a procedure usually employed in Pictor interviews, but emerges from the technique's adaptability, and was found to be a useful supplementary reflective exercise by the participants in this study.

The workings of Pictor: the seven elements

The visual analysis of charts, bearing their accompanying transcripts in mind, suggests that Pictor is based on a simple structure of elements which set useful boundaries. This observation is made in the context of reflection on collaborative working – the *Findings* in this section may be limited in their applicability to the use of Pictor in research (discussed in more detail below). Further exploration of Pictor data against accompanying charts may reveal a relationship between the use of the primary elements of Pictor – case-specificity, interrelationality and complexity – and the richness of the description and interpretation of experiences in practice.

The flexibility of the technique in facilitating the display of temporal, spatial and metaphorical features allows students or research participants to use these familiar concepts as a way of approaching chartmaking if the idea of interrelationality is initially difficult to grasp. Colour, a similarly familiar visual cue, can also be used as an initial point of reference for delineating the dimensions of an environment (for example, organisational divisions or emotional bonds). The facility to represent metaphor visually without drawing on artistic skills or writing abilities is a unique feature of the Pictor technique. Metaphor can 'render

problems more tractable' by drawing on structures already embedded within the imagination as a way of clarifying our understanding of a situation (de Cruz and de Smedt, 2010, p30).

In suggesting the notion of a 'classic' Pictor chart, introduced in Section 2 of the *Findings*, the intention is not to create parameters for the subjective measurement of achievement in the production of a chart, or to support the notion that the assessment of reflective work should be based on attaining higher levels of reflectivity (Mezirow, 1981; Mann *et al*, 2009). Attaching the concept of levels of achievement to Pictor would compromise its accessibility to students performing across all academic levels. Pictor charts are intended to aid the process of reflection, and in doing so, could potentially contribute to the structuring of written assignments, but Pictor charts contain no objectively measurable features, and their use in assessment would be inappropriate.

A more appropriate application of the *Findings* would be in suggesting ways of encouraging a full exploration of the relational dynamics of a practice situation following cues given by students, rather than by forcing a particular approach to chartmaking. The visual analysis of the charts suggests that interrelationality may be a key factor in facilitating the rich description of experience, and that this is not always easily grasped. The ability of a trainer or supervisor to recognise temporal and spatial elements in charts creates the possibility of asking students to move arrows around to tease out a deeper consideration of interrelationships. Encouraging the elaboration of a chart representing an encapsulated process or a timeline would allow students to move beyond the 'who' and 'when' of a situation to examine the nature of relationships and collaboration. While encouragement can be given to move beyond temporal and spatial representations, it would be counterproductive to force this process in a way which causes discomfort to individual students.

There is a limit to how applicable the above comments are to the use of the Pictor technique in research interviews, in which the focus is exploring a particular case or incident rather than the process of reflection in itself (Ross *et al*, 2005; King and Horrocks, 2010). In interviewing lay people in particular, the interviewing process should not impose physical or emotional demands on participants (Hardy *et al*, in press), and the level of engagement with the process described above may be inappropriate.

Implications for the use of Pictor in research

The Pictor technique has been used in health care research, to date, but has the potential for application in any setting involving complex working relationships focused around a specific task (King and Horrocks, 2010). This study's investigation of the technique's use with students has demonstrated its facility for representing communication, relational dynamics and professional roles and processes – aspects of collaborative working which are transferable into other areas. Its *Findings*, while limited in their transferability to the research interviewing process, do have implications for the analytic process in research using Pictor.

Previous literature recognises that patterns may appear across a number of charts in a study, and suggest that these patterns may reveal similarities in the nature of experiences or understandings within the context of a particular study (Hardy *et al*, in press; King and Horrocks, 2010). This study is the first to directly examine the workings of the Pictor technique. The similarities in patterns across charts characterised by the seven elements (Section 2 of the *Findings*) emerge from the dynamics of the technique, rather than the substantive area of research. The features of social interaction which the arrows can be used to represent, such as lines of communication and relational dynamics (Section 1 of the *Findings*), are likely to be common to collaborative working across different substantive areas (Charles and Glennie, 2001). Whether patterns across charts representing health care have identifiable differences from those created in other areas of collaborative working is yet to be discovered, and would require a comparison of the use of Pictor in different environments.

It is possible that patterns across charts emerge from the physical features of the Pictor technique, the characteristics of a particular professional role or environment, or the nature of the event represented. The *Findings* of this study offer no evidence that deeper similarities in individual understandings within a specific research study could be inferred from these patterns. For example, in an ongoing palliative care study in which the researcher is involved, specialist nurses working in a community-based service often place GPs on the periphery of charts, and place themselves closer to the patient than district nurses. The patient is their most frequent point of contact, and the community-based service is separate from GPs and district nurses in its operation and administration. It could be inferred that the placing of the arrows reflects physical separation and infrequent contact (*Findings*, Section 1), but inferences about the feelings of specialist nurses about working with GPs and district nurses could not be made from looking at chart patterns alone. The nature of a particular role can also create similarities

in patterns. For example, 'circle of care' arrangements appear in nurses' charts, but linear or temporal representations of processes are more common in charts created by administrative staff or by volunteers providing transport for patients.

This study supports the warning given by King and Horrocks (2010) against drawing conclusions from patterns within individual charts without reference to the associated interview data. Illustrated examples from Section 1 of the *Findings* reveal common approaches to the use of the arrows between participants: to avoid assumptions about their use, these findings were drawn from an analysis of the interview data – the participants' words – not from a visual analysis of the charts. No assumptions can be made in interpreting the graphical representation in a specific Pictor chart without reference to the chartmaker's explanation. For example, closeness between arrows can indicate physical or emotional closeness, but can also indicate unwelcome pressure (*Findings*, Section 1). Students occasionally described their placement of arrows as happening by chance, rather than indicating something meaningful: the significance of the arrangement of arrows only becomes apparent by talking through the chart.

Limitations of the study

The study is qualitative in nature, and relied on a small, self-selected sample from a large research population; its results cannot be generalised to all nursing and midwifery undergraduates. Participation in the study attracted students who expressed an interest in discussing their experiences of reflective practice. The *Findings* suggest that the students found Pictor a straightforward and enjoyable technique to use, but do not imply that all of the students were enthusiastic about reflective practice or visual methods of reflection. Six participants considered themselves academically capable, citing previous experience in higher education and an enjoyment of written methods of reflection; four considered themselves less academic, had no previous experience in higher education, and reported a lack of confidence in their reflective abilities (see *Doing it by the book* in *Findings*, Section 4).

At the outset of the study, the researcher had limited experience of using Pictor, having employed the technique in interviews for one previous academic assignment. Before interviewing commenced, the researcher studied the current literature on Pictor in its entirety, and read through transcripts from Pictor interviews carried out for previous research studies. Pilot interviews with a qualified nurse and a qualified midwife were undertaken to practice

the technique further and refine the interview schedule. Detailed advice was sought from researchers experienced in using the technique. During the course of the dissertation, the researcher gained further experience of interviewing with Pictor while working as a Research Assistant on an ongoing evaluation study of a specialist palliative care service.

Conclusion

Pictor has clear parallels with existing models of reflection in midwifery and nursing practice. The technique goes beyond these models by retaining the qualities of a specific practice experience, as seen through the eyes of the reflector. The resulting chart is no more 'real' an account of practice than a piece of reflective prose (Taylor, 2003), but chartmaking does promote the active consideration of roles and relationships within the collaborative working environment. In its relationship with the principles of personal construct psychology (Kelly, 1955) and symbolic interactionism (Blumer, 1998), Pictor acknowledges that personal meanings provide the basis for behaviour in social interaction, and that professional identities are actively negotiated within the practice environment (Ross *et al*, 2005). Its dynamism and flexibility allow it to reflect the active experimentation of the practice environment, considering 'what is seen, heard, sensed and done' (Löfmark *et al*, 2008, p36). The technique is based on the reconstruction (rather than the deconstruction) of an experience, and allows the exploration of hypotheses about how things might have been different. Pictor is quick to do, and the physical boundaries of its features focus the student on their experience of roles and relationships, answering the criticism of reflective models as time-consuming, failing to consider multidisciplinary working (Stevens *et al*, 2009) and focused on the practitioner at the expense of practice (Newell, 1992).

Pictor has the potential to serve the interests not only of the most academic of students, but of those who have difficulty in putting their experiences into writing, and may facilitate the exploration of practice experience as a prelude to writing up. The construction of a Pictor chart does not require artistic skills or theoretical knowledge. The technique may also facilitate group reflection by concentrating talk on case-specific practice situations and deflecting self-consciousness in group situations by providing a visual focus. Its visual nature will not appeal to every student, but this study's in-depth exploration of the technique suggests that it would make a useful addition to the choice of reflective tools currently offered to undergraduates in nursing and midwifery education.

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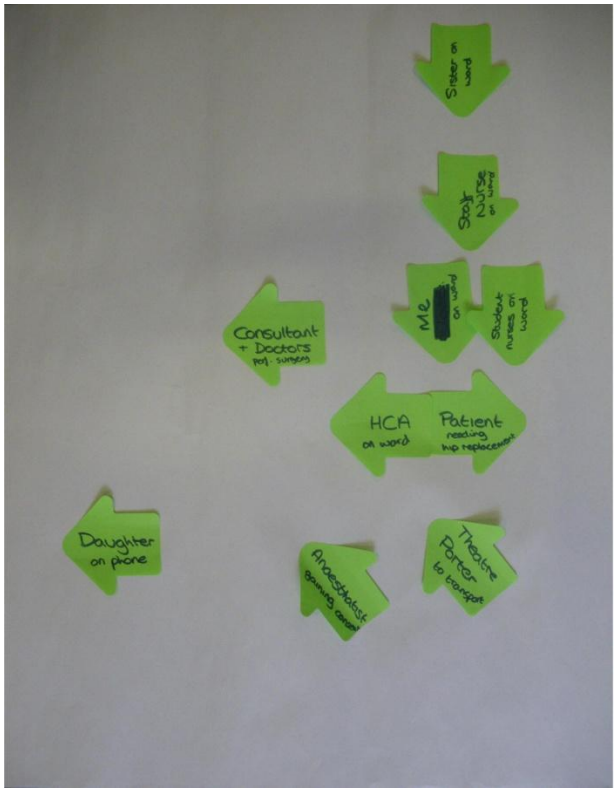
APPENDIX

Pictor charts from the main twenty-interview study (using pseudonyms)

NURSING STUDENTS:



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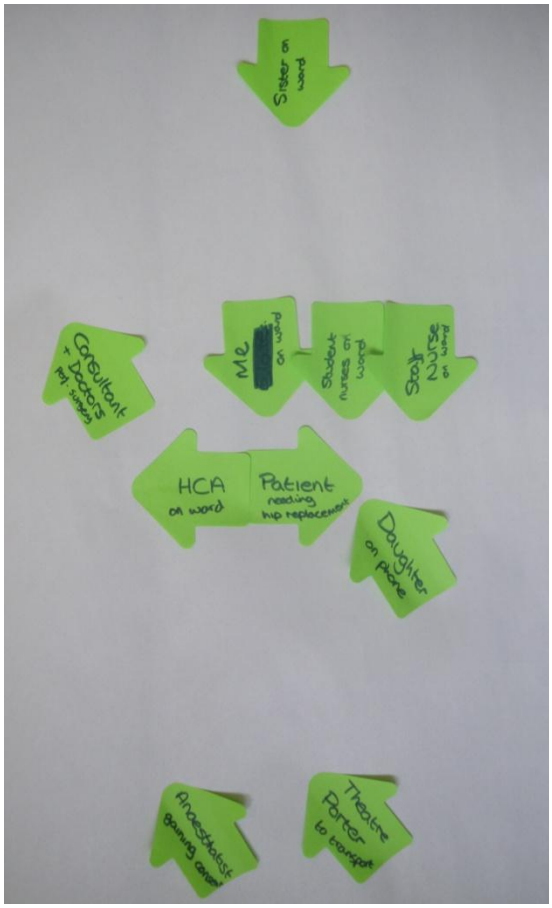

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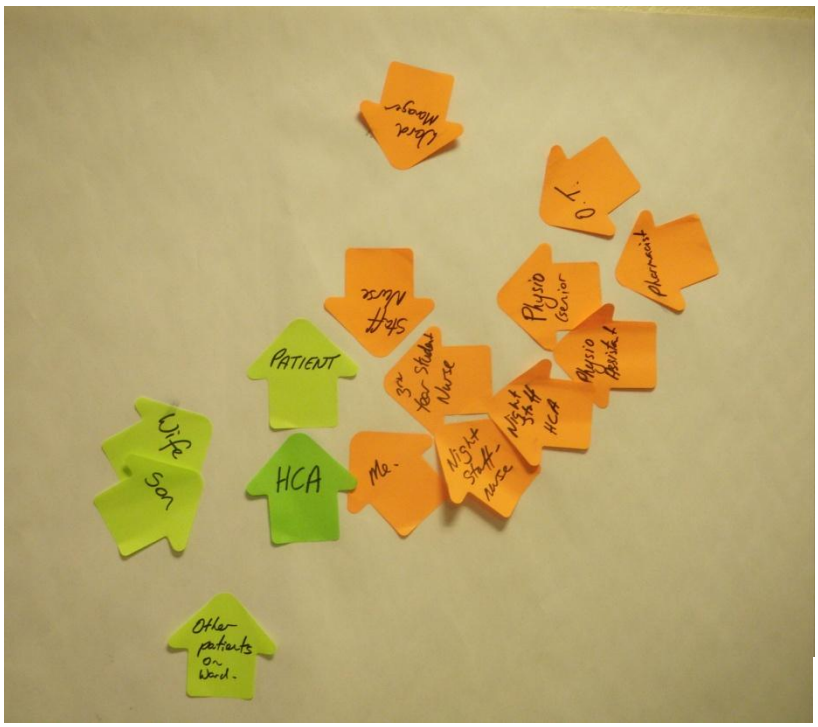

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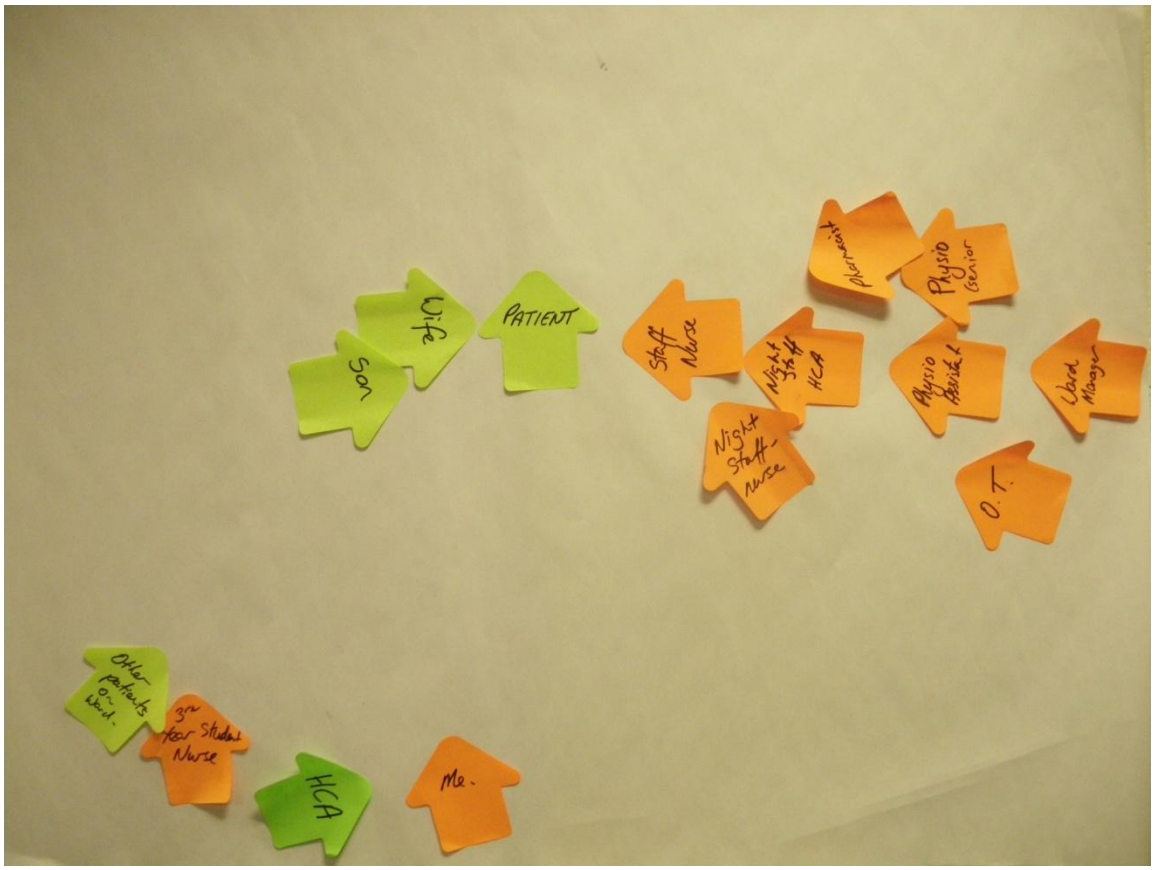

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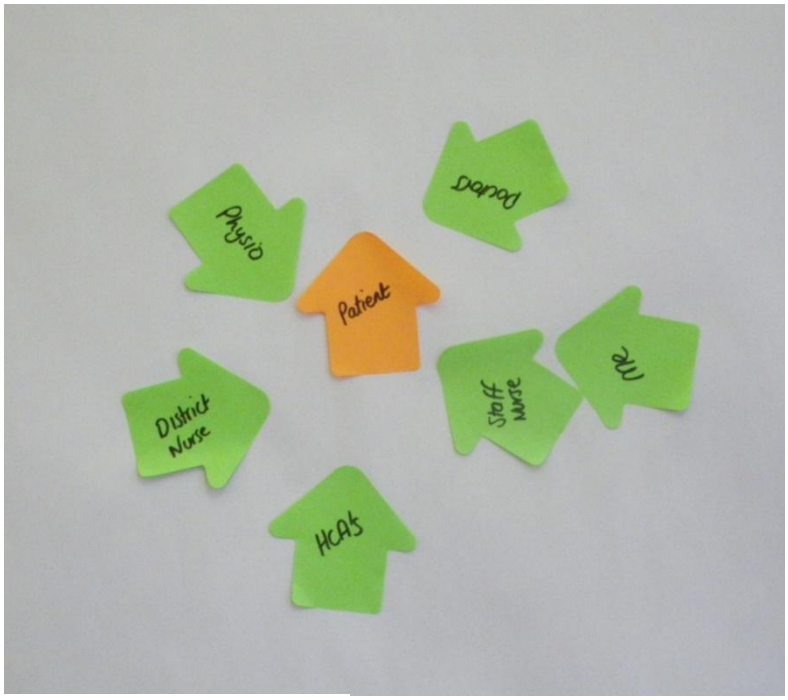

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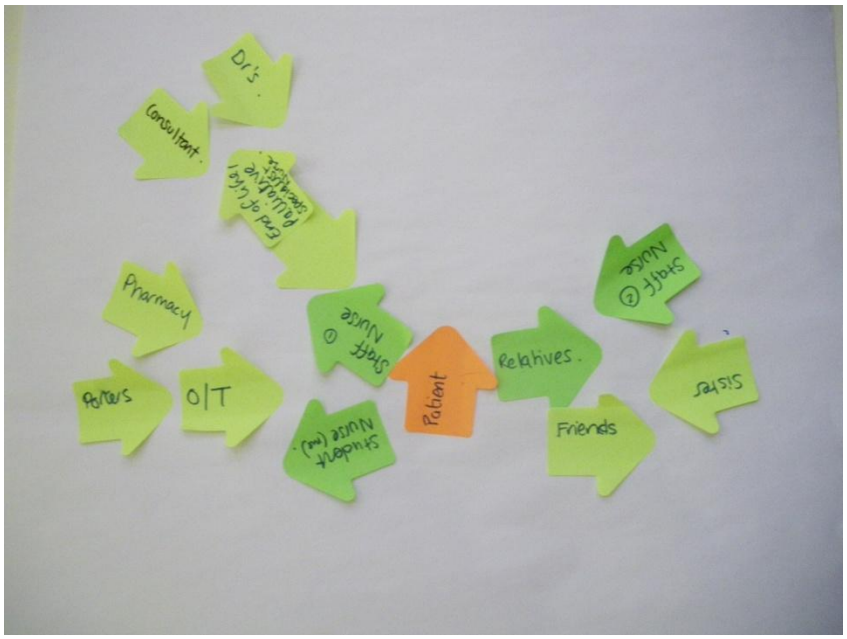

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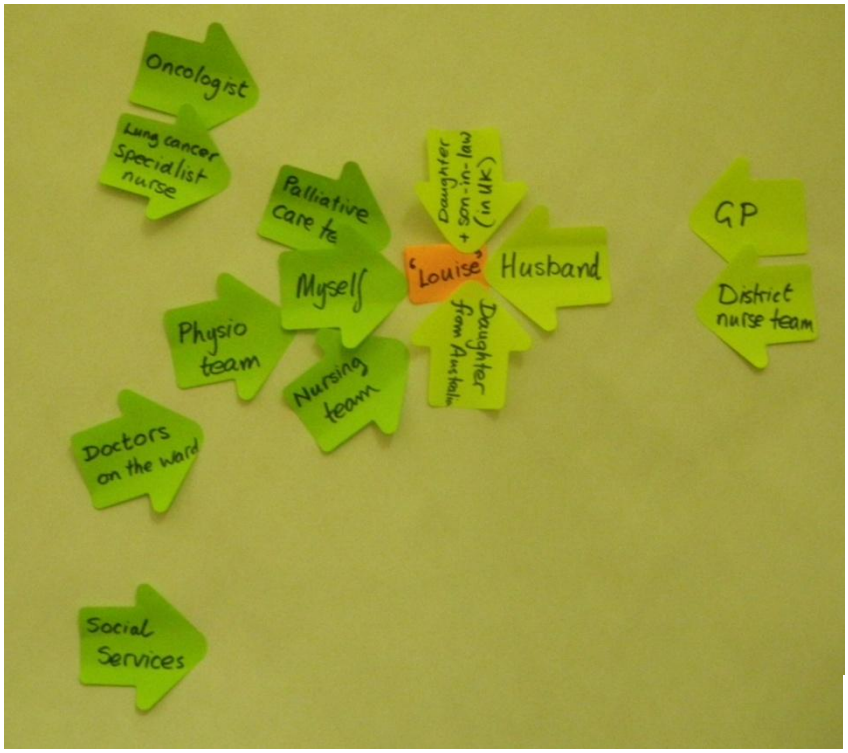
Jemima, Chart 3



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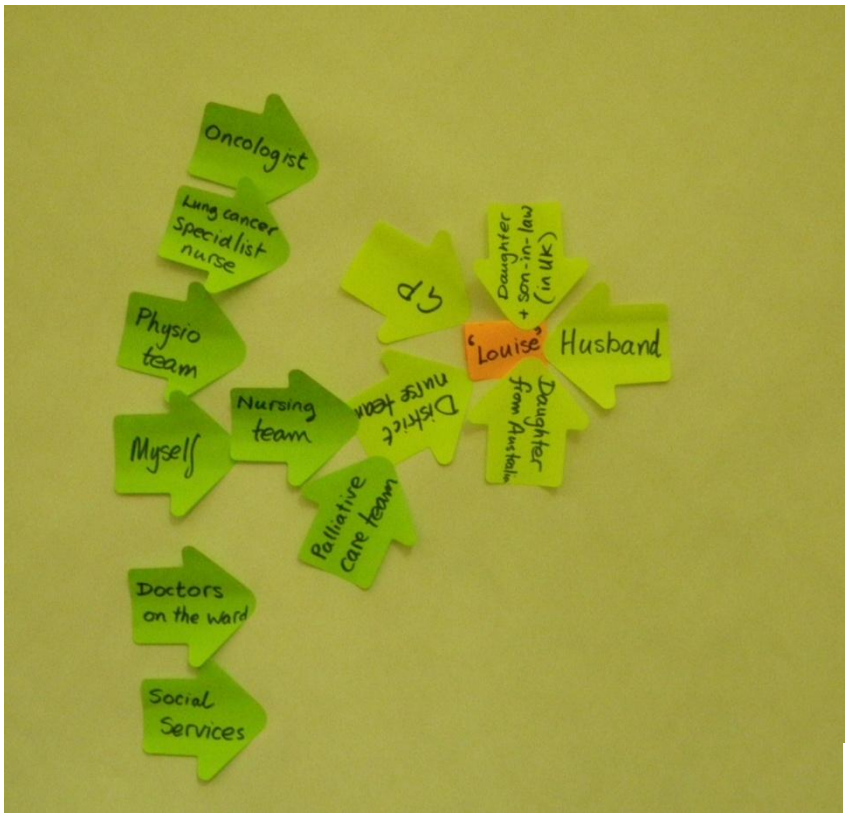

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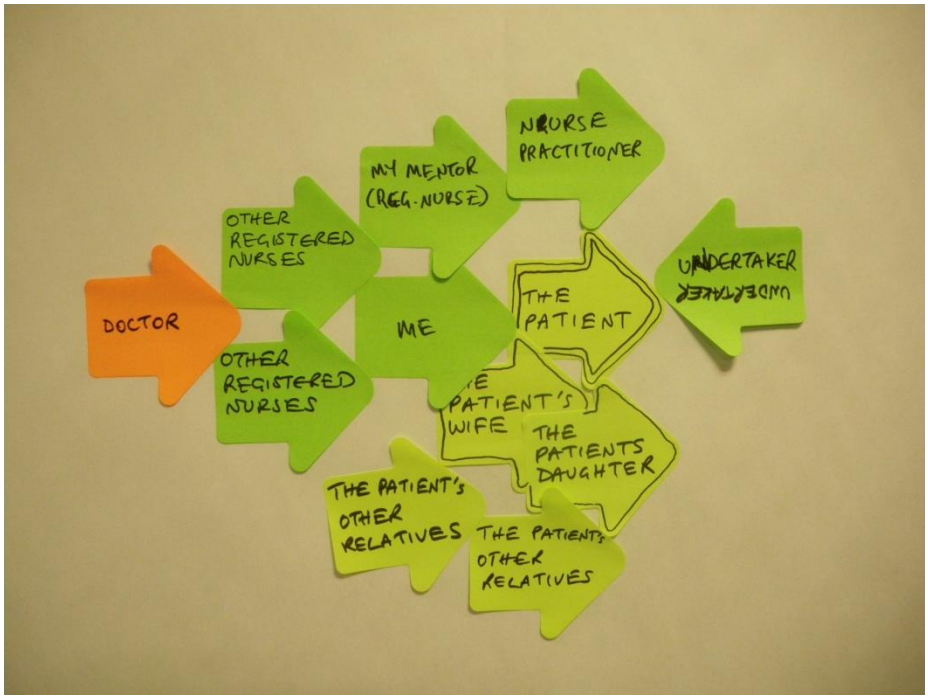

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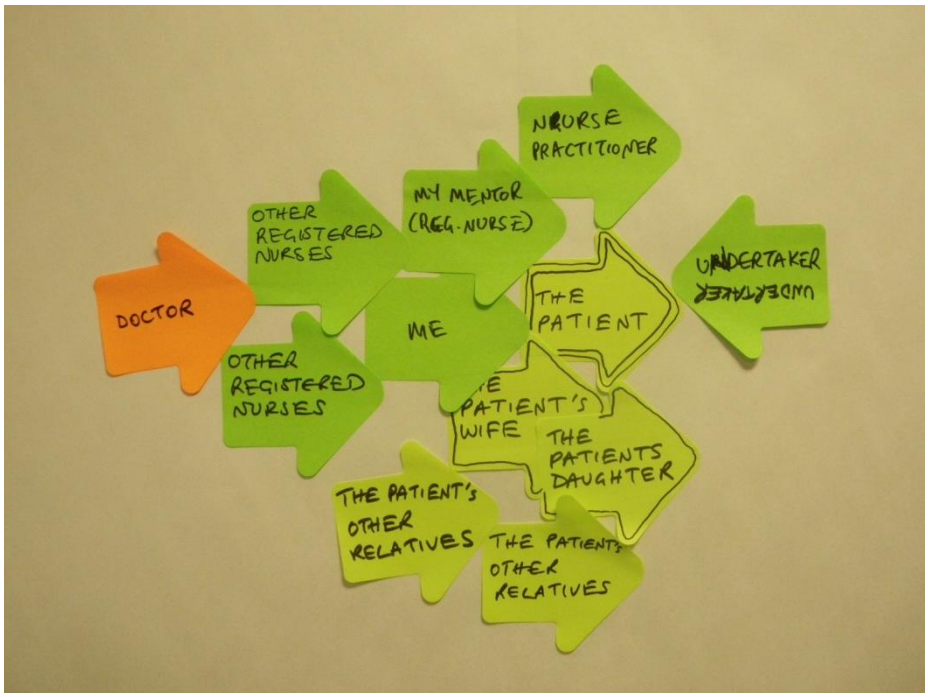

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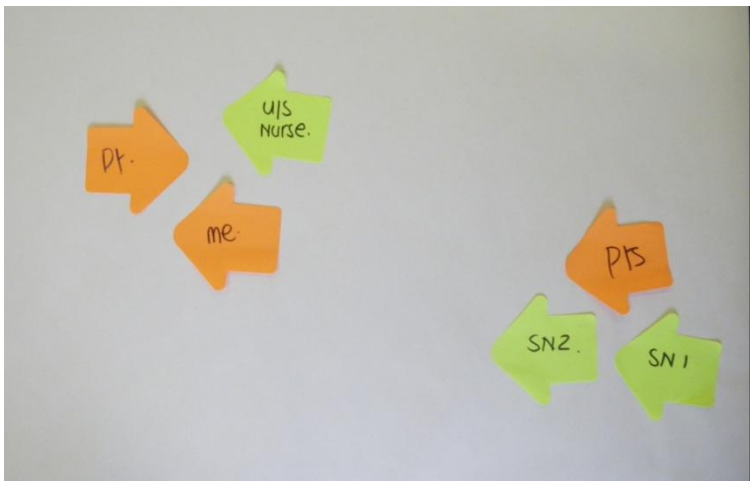

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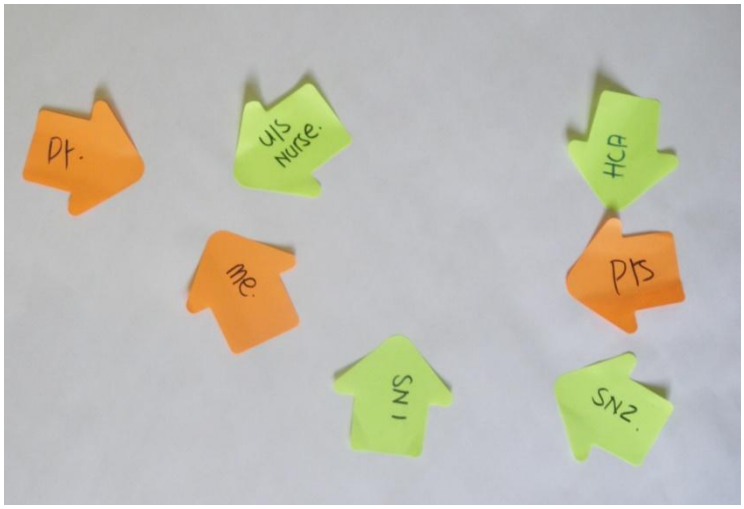

Beverley, Chart 3

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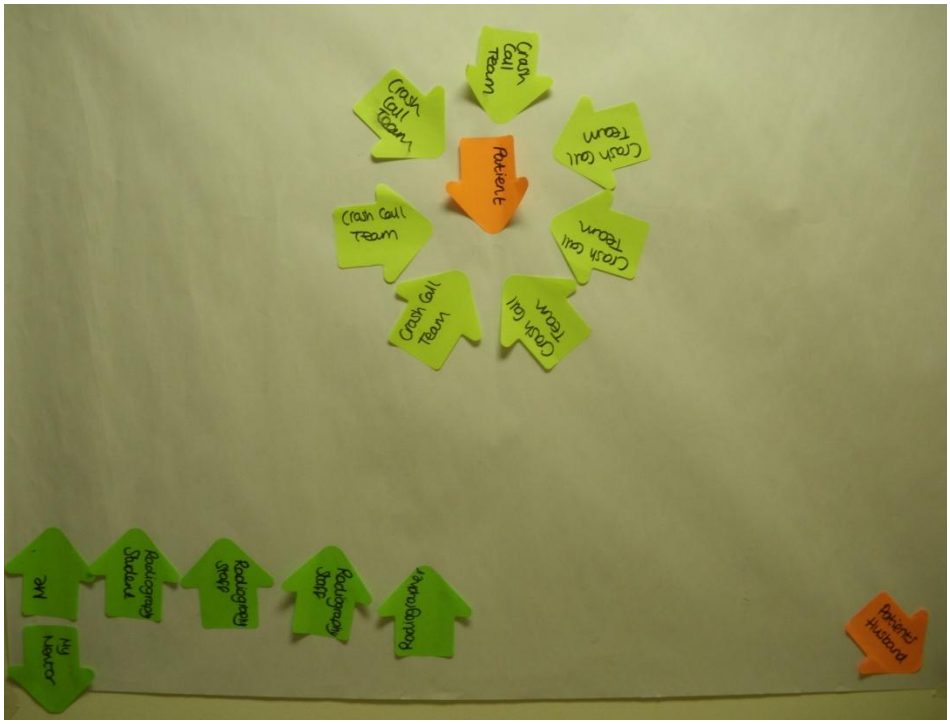

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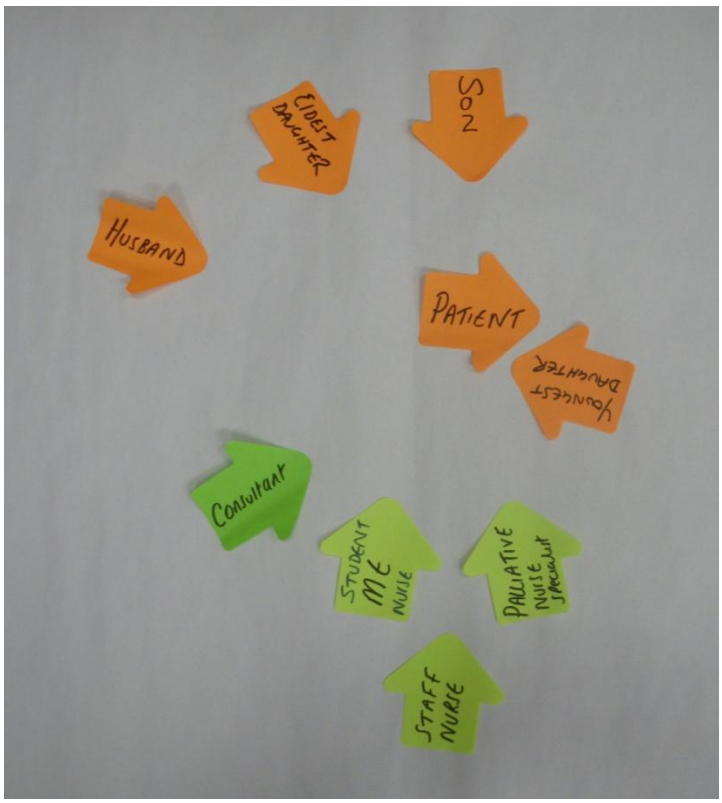

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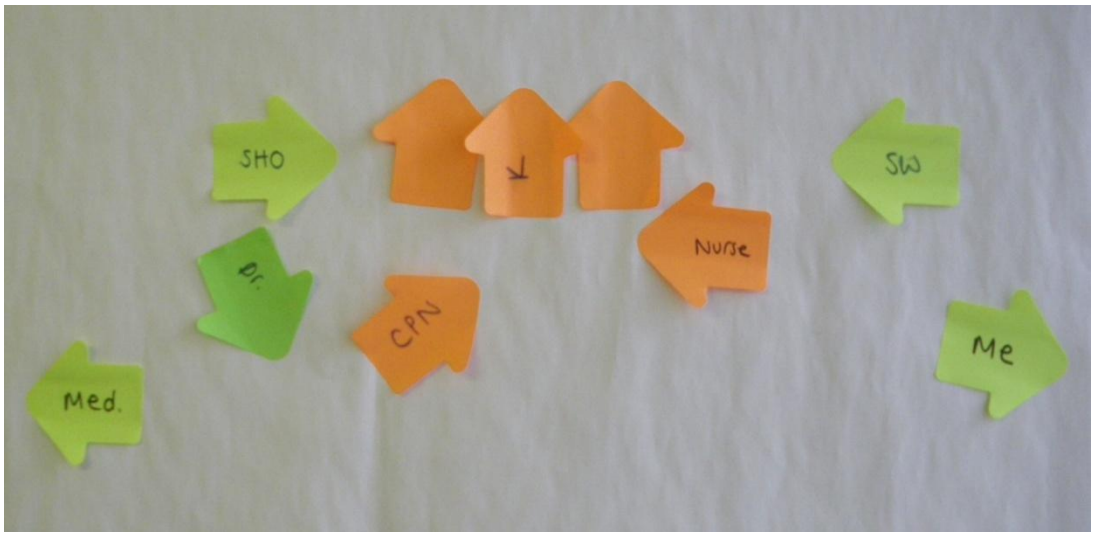

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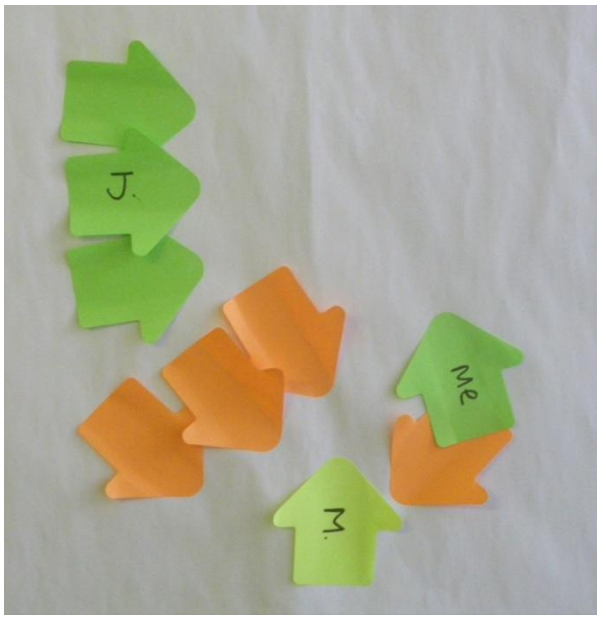

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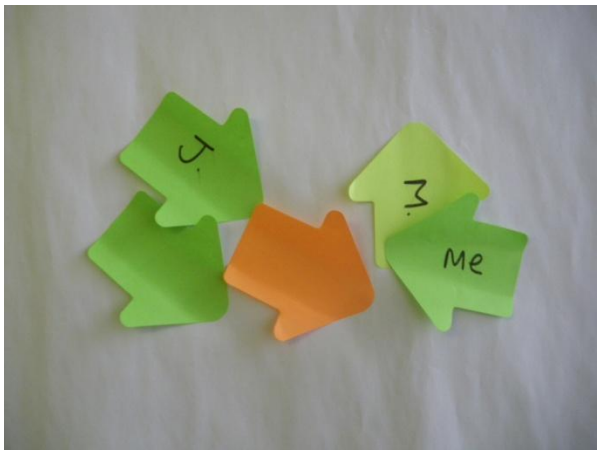

Lynne, Chart 3

MIDWIFERY STUDENTS:

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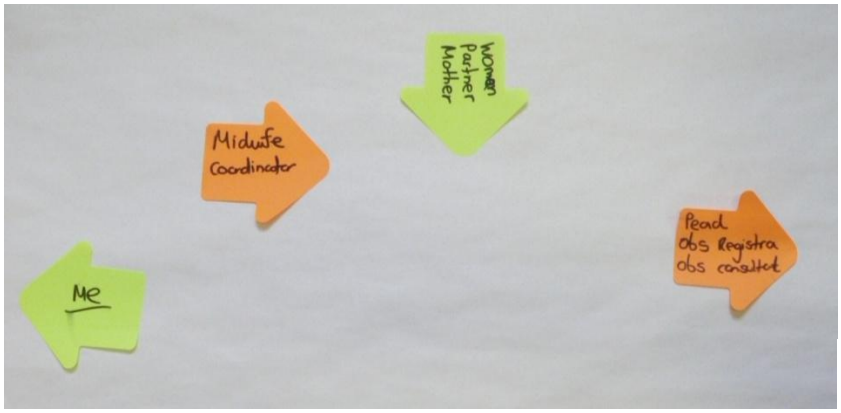
Jennifer, Chart 2

Hannah, Chart 1

Hannah, Chart 2



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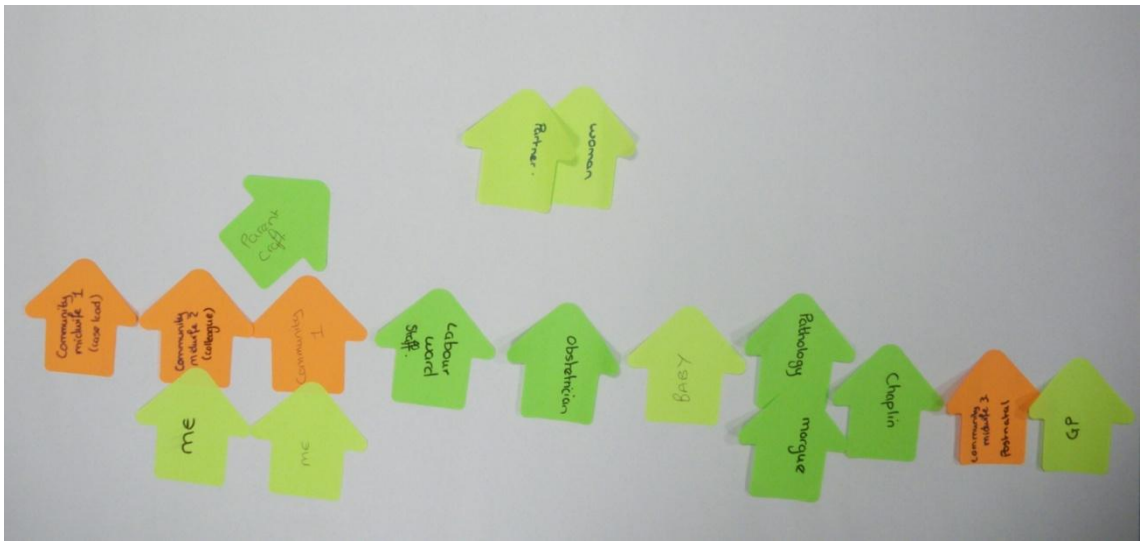
Diane, Chart 2

Diane, Chart 3

Lorna, Chart 1



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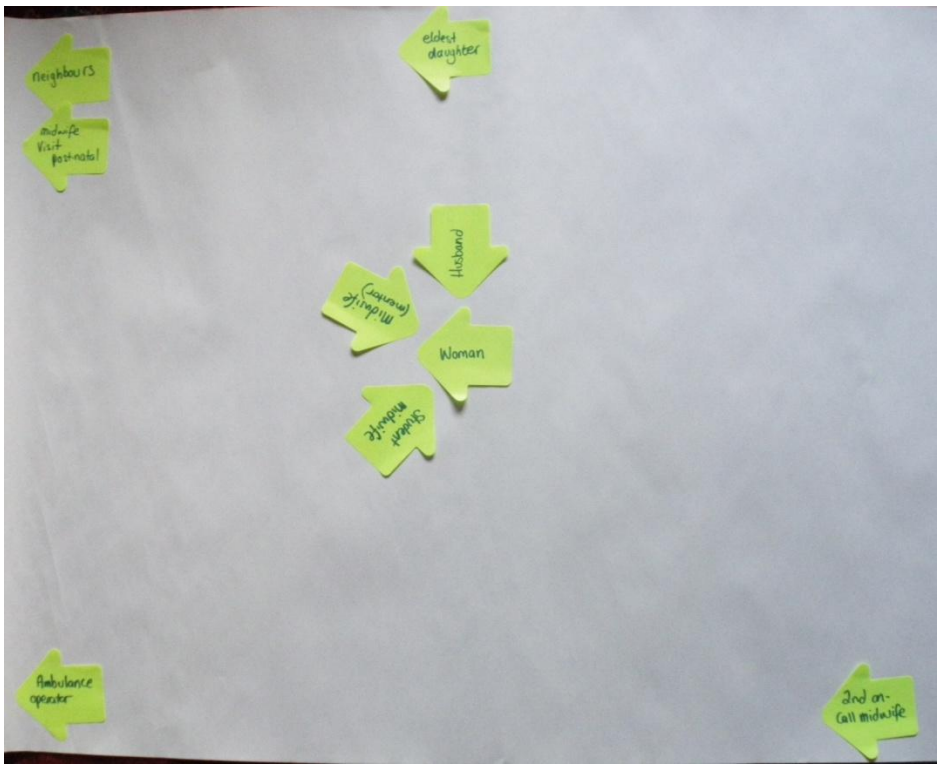
Cath, Chart 1

Cath, Chart 2



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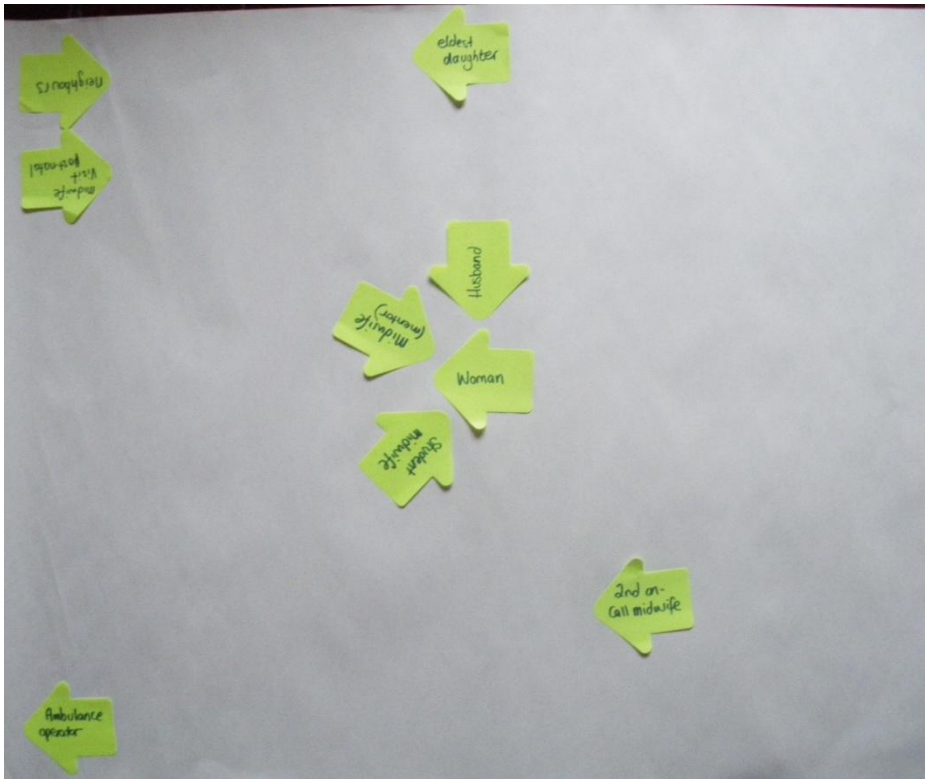
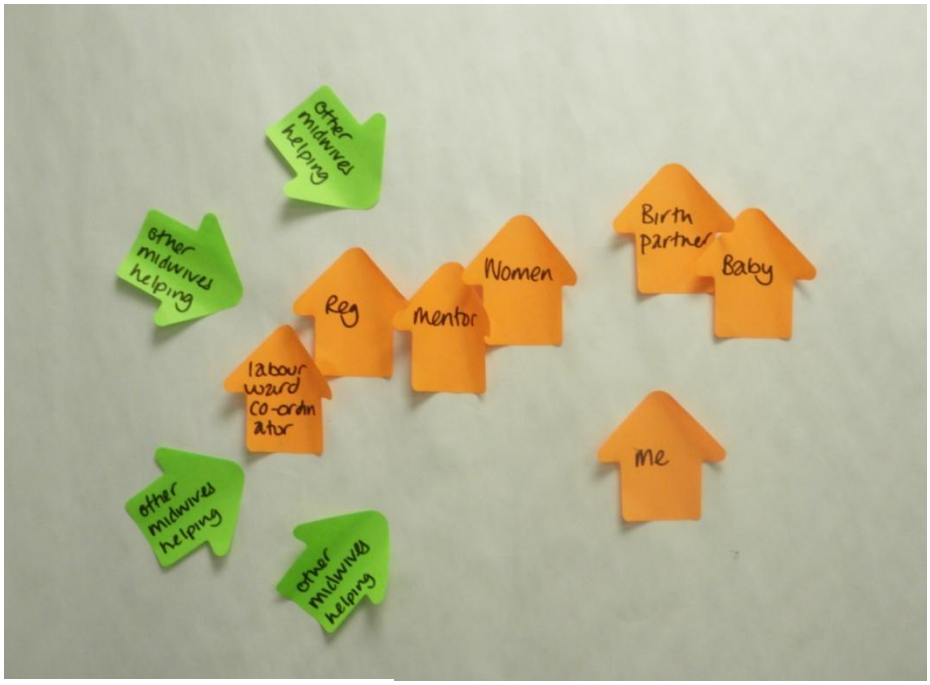


Liz, Chart 2

Paula, Chart 1

Paula, Chart 2

Karen, Chart 1



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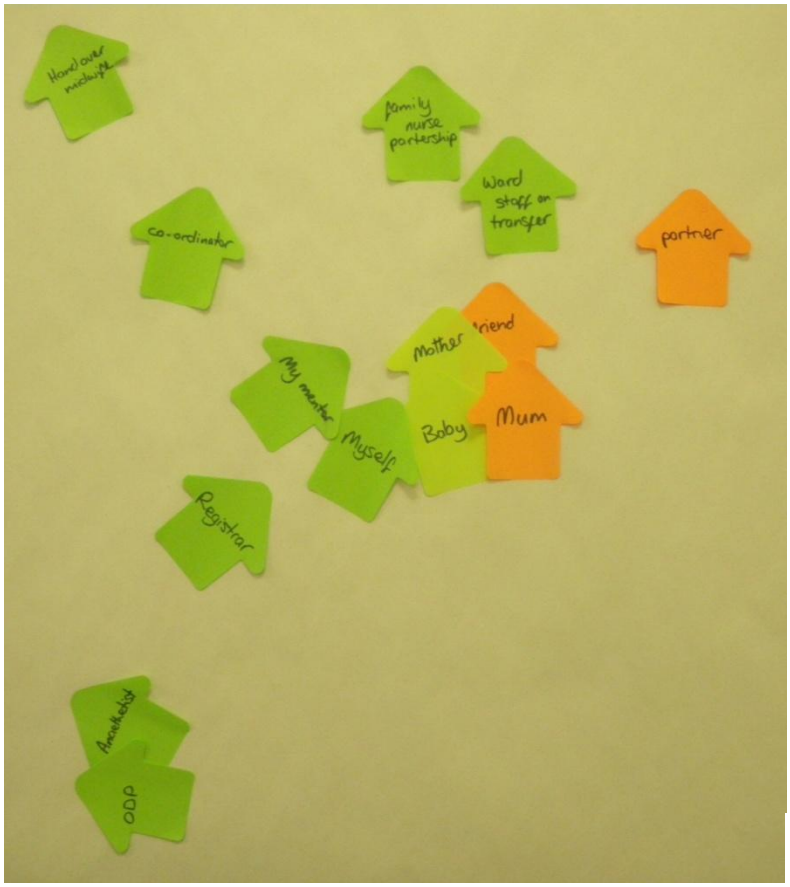

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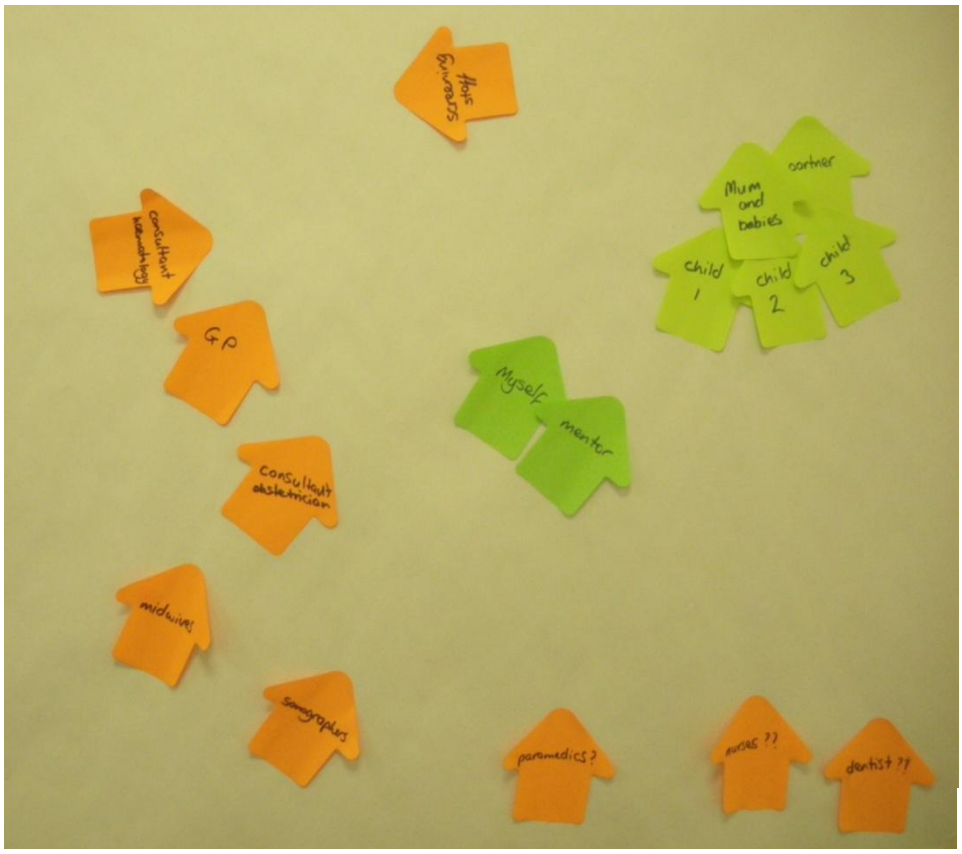

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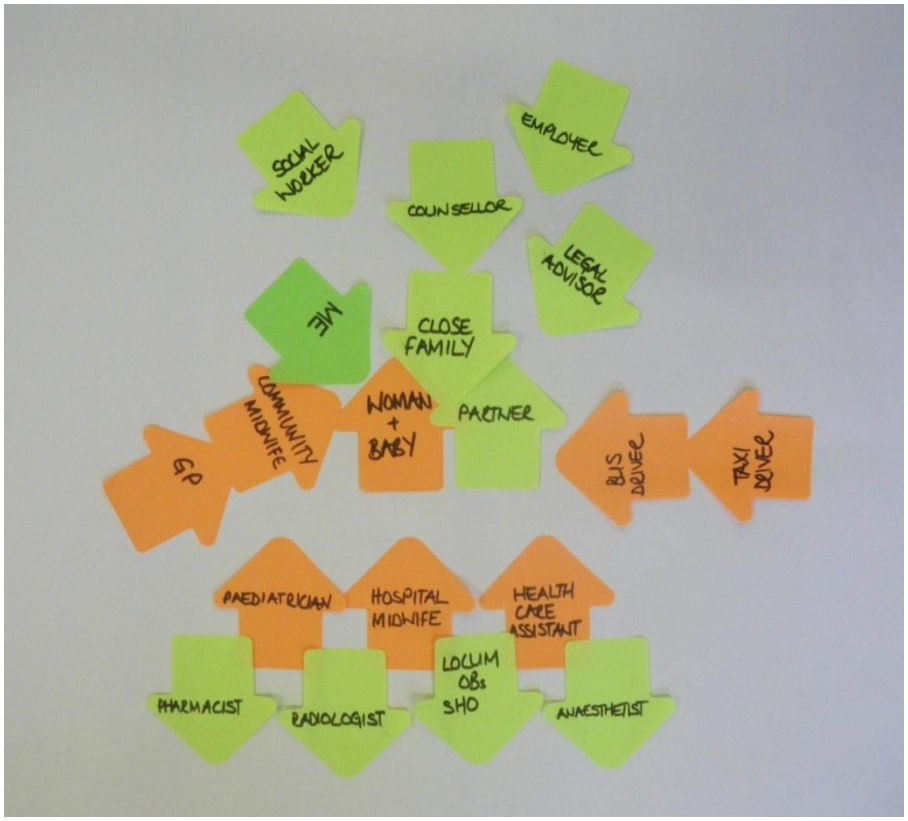

Anne, Chart 1

Anne, Chart 2