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Qualitative Data Analysis

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1. Introduction

This resource pack is designed for researchers working in health and social care who have in mind, or have already embarked upon, a piece of qualitative research. Qualitative methods, using narrative and observation rather than numerical data, are increasingly being used in health care settings where they are seen to 'reach the parts other methods cannot reach' (Pope and Mays 2006), and they are now seen as part of the mainstream of methods in health services research (Holloway 2005). However, as qualitative analysis is still new in some fields of health research, it is relatively common for the qualitative researcher to disappear under a sea of interview transcripts or field notes, with little in the way of guidance as to how to proceed. Confusion and de-motivation is the usual result!

If you are not already familiar with the basics of qualitative research, we suggest you first read the The NIHR RDS EM / YH Resource Pack in this series entitled 'Introduction to Qualitative Research' by Beverley Hancock, Elizabeth Ockleford & Kate Windridge (Updated 2007), or the relevant chapters of a text on research methods such as Bowling (2002).

We assume you already have some knowledge of qualitative data collection methods such as participant observation, or in-depth interviewing. However beyond that we make no assumptions. If you have a large pile of tapes, field notes, or transcripts sitting on your desk waiting to be analysed, this pack is probably for you! Better still, if you are still at the stage of designing some qualitative research, a knowledge of your proposed methods of analysis will improve the design and save you a lot of trouble in the later stages.

After the introductory sections, you will find a brief theoretical review of the different ways of analysing qualitative data, and you will be encouraged to decide which level of analysis is the right one for you. Then we take you through the various stages of analysis, using some sample interview transcripts to let you try out the various processes for yourself. A discussion of processes that can help ensure rigour follows. Finally we address some of the practicalities of qualitative analysis, including use of computer software programmes.

LEARNING OBJECTIVES

- To discuss some of the theoretical models within which qualitative data can be analysed, and select the most appropriate one for a particular piece of research.
- To understand the stages involved in qualitative data analysis, and gain some experience in coding and developing categories.
- To assess how rigour can be maximised in qualitative data analysis.
- To apply practical solutions to the process of qualitative data analysis.

2. What is qualitative data?

You are probably familiar with the basic differences between qualitative and quantitative research methods, and their different applications in dealing with research questions posed in health care research. Qualitative research is particularly good at answering the 'why', 'what' or 'how' questions, such as:

- Why are some patients with diabetes reluctant to comply with dietary advice and insulin regimes, despite their experience of diabetic complications?
- What are the perceptions of carers living with people with learning disability, as regards their own health needs?
- How is the work of an Accident and Emergency Department affected by frequent physical and verbal abuse towards staff ?

Each of these questions could be addressed using quantitative techniques such as structured questionnaires, attitude scaling, measurement of standard outcomes such as mortality, morbidity or staff absence rates. All of these can be readily analysed statistically, and you will get some sort of answer to the question. For instance, you may find that older people are more likely to report compliance with dietary advice than younger ones, or that episodes of violence and staff sickness rates are significantly correlated. But that would only answer part of the question, or may lead you to make assumptions about causes and effects that are invalid. The problem may be quite different from how we conceptualise it. To find out more about the connection between age and compliance, or between sickness and abuse, or to really "get into the shoes" of a carer, you will probably need to talk with people in some depth, or observe their behaviour over a period of time.

Exercise 1

Look at the last research question above, about abuse in an A&E department. What kinds of qualitative data collection methods could be used to investigate this topic? List four different sources of data that could be used by a researcher.

You have probably listed some of the following:
Transcripts of individual interviews with members of staff in the department
Focus group transcripts
Field notes from observation of staff meetings
Copies of diary entries that staff members have been asked to complete each day
Critical incident recordings from specific episodes of violence or abuse
Researcher memos and reflections
Video recordings

How do we go about making some sense of these sorts of collections of data? Qualitative data tends to take up many pages of typescript, or lots of megabytes on a disc! It is usually in the form of words and narratives, but may include visual images, videotape, or other media. Where do we go from here?

2.1 What do we mean by analysis?

Quantitative research techniques generate a mass of numbers that need to be summarised, described and analysed. Characteristics of the data may be described and explored by drawing graphs and charts, doing cross tabulations and calculating means and standard deviations. Further analysis would build on these initial findings, seeking patterns and relationships in the data by performing multiple regression, or an analysis of variance perhaps. Advanced modelling techniques may eventually be used to build sophisticated explanations of how the data addresses the original question. But many quantitative research projects would never need to go that far; the question would be answered by simple descriptive statistics.

So it is with Q*ualitative* data analysis. The mass of words generated by interviews or observational data needs to be described and summarised. The question may require the researchers to seek relationships between various themes that have been identified, or to relate behaviour or ideas to biographical characteristics of respondents such as age or gender. Implications for policy or practice may be derived from the data, or interpretation sought of puzzling findings from previous studies. Ultimately theory could be developed and tested using advanced analytical techniques.

There are no 'quick fix' techniques in qualitative analysis. Just as a software package such as the Statistical Package for the Social Sciences (SPSS) won't tell you which of the myriad statistical tests available to use to analyse numerical data, so there are probably as many different ways of analysing qualitative data as there are qualitative researchers doing it! Many would argue that this is the way it should be – qualitative research is an interpretative and subjective exercise, and the researcher is intimately involved in the process, not aloof from it (Pope and Mays 2006).

However there are some theoretical approaches to choose from, which will be explored in the following section. Furthermore, there are some common processes, no matter which approach you take.

Analysis of qualitative data usually goes through some or all of the following stages (though the order may vary):

- Familiarisation with the data through review, reading, listening etc
- Transcription of tape recorded material
- Organisation and indexing of data for easy retrieval and identification
- Anonymising of sensitive data

- Coding (may be called indexing)
- Identification of themes
- Re-coding
- Development of provisional categories
- Exploration of relationships between categories
- Refinement of themes and categories
- Development of theory and incorporation of pre-existing knowledge
- Testing of theory against the data
- Report writing, including excerpts from original data if appropriate (eg quotes from interviews)

These stages will be explored further in Section 3, giving you an opportunity to have a go at coding and developing themes from the sample transcripts you will find in Appendix 1.

2.2 What do you want to get out of your data?

It isn't always necessary to go through all the stages above, just as it isn't always necessary to use multivariate modelling in statistics! Let's take the example of the research question about the perceived health needs of carers.

- What are the perceptions of carers living with people with learning disability, as regards their own health needs?

You may simply be interested in finding out the community services that should be provided to meet these perceived needs. You might want to know what sorts of services are valued or requested by the majority of carers. Maybe several respondents mention that they struggle with depression and loneliness.

There are three broad levels of analysis that could be pursued here:

- One strategy would be to simply count the number of times a particular word or concept occurs (eg loneliness) in a narrative. The qualitative data can then be categorised quantitatively, and subjected to statistical analysis. Policy decisions could be based on the result. This kind of analysis (sometimes called content analysis[1]) is not truly qualitative, however, and will not be discussed in any detail in this pack.

- For a thematic analysis we would want to go deeper than this. All units of data (eg sentences or paragraphs) referring to loneliness could be given a particular code, extracted and examined in more detail. Do participants talk of being lonely even when others are present? Are there particular times of day

[1] However, please note that Beverley Hancock, in the introductory resource pack on qualitative research, defines content analysis more widely. Her definition is closer to what we are calling thematic analysis.

or week when they experience loneliness? In what terms do they express loneliness? Do men and women talk of loneliness in different ways? Are those who speak of loneliness also those who experience depression? Themes could eventually be developed such as ‘lonely but never alone’ or ‘these four walls’.

- For a theoretical analysis such as grounded theory (see Section 2) you would want to go further still. Perhaps you have developed theories as you have been analysing your data about depression being associated with perceived loss of a ‘normal’ child/spouse. The disability may be attributed to an accident, or to some failure of medical care, without which the person cared for would still be ‘normal’. You may be able to test this emerging theory against existing theories of loss in the literature, or against further analysis of the data. You may even search for ‘deviant cases’, that is data which seems to contradict your theory, and seek to modify your theory to take account of this new finding. This process is sometimes known as ‘analytic induction’, and is used to build and test emerging theory.

So some decisions have to be made by the researcher as to the questions she or he is asking of the data, and the depth of analysis that is required. It may even come down to the amount of time you have available, or your ease of access to adequate resources. Certainly there is no need to do more analysis than your question demands, but seemingly simple questions have a habit of becoming more complex along the way! In the next section we look at different theories and methods used in qualitative data analysis.

3. Theories and methods in qualitative data analysis

In Section 1 we looked at some common features of qualitative analysis. In this section, we will focus on distinct approaches to undertaking qualitative analysis. There is no one right way to analyse qualitative data, and there are several approaches available. Much qualitative analysis falls under the general heading of 'thematic analysis'. The common features of undertaking a thematic analysis of qualitative data will be outlined in Section 3. However, there are particular 'schools of thought', or theoretical approaches to qualitative analysis, which it is important to be familiar with, both for designing your own research and for critically appraising qualitative research evidence. The particular approach you take to any given study will depend on many factors, not least: the research question, the time you have available and funders' priorities. You will always need to consider the overall aims of the analysis –what do you want the data to contribute to, for example answering a specific policy-related question or generating new conceptual or theoretical understandings in a particular area.

Some approaches to qualitative analysis are probably more familiar to you than others. For example, many studies in the health field, in particular nursing, state that they take a 'Grounded Theory' approach to analysis. The aim of this section is to introduce you to two distinct approaches to qualitative analysis. Firstly Grounded Theory, and secondly Framework Analysis, which is increasingly commonly used in health-related research.

The key features of each approach will be outlined in turn. You will then be asked to consider what approaches might be suitable for particular research projects and to think about how your choice of analysis might affect how you go about your research.

3.1 Grounded Theory

Grounded Theory evolved out of research by sociologists Glaser and Strauss (1967). Glaser and Strauss were concerned to outline an inductive method of qualitative research which would allow social theory to be generated systematically from data. That is, theories would be 'grounded' in rigorous empirical research, rather than produced in the abstract. What is a theory? In this pack we take this to mean a generalisable idea or concept, gleaned from data, that helps to understand the social world in a new or more sophisticated way, and that can be tested in different settings.

Grounded Theory is a methodology; in other words, it is a way of thinking about and conceptualising data. It is an approach to research as a whole and as such can use a range of different methods. However, researchers frequently use the analysis procedures outlined in grounded theory without taking on board the whole methodological approach to research design. Grounded Theory analysis is inductive, in that the resulting theory 'emerges' from the data through a process of rigorous and structured analysis.

It is important to emphasise that what distinguishes grounded theory from many other approaches to qualitative analysis is this emphasis on theory as the final output of research (Strauss and Corbin, 1998). Whereas other forms of qualitative analysis may legitimately 'stop' at the levels of description or simple interpretation, the aim of grounded theory is theoretical development. Its focus then is clearly on what has also been called 'analytic induction'

What do grounded theorists mean by theory? A 'grounded theory' consists of '*plausible* relationships' (Strauss & Corbin, 1998) among sets of concepts, which are directly developed from data analysis. Theory, in this sense, provides a set of testable propositions that help us to understand our social world more clearly, rather than an absolute 'truths'.

The appeal of grounded theory analysis is the structured and detailed procedures for the generation of theory from data. Grounded Theory starts with a clear, but often broad, research question. This question identifies the general area to be studied. The research then traditionally proceeds in stages, with the analysis performed after one stage of fieldwork determining what or who will be studied next and which methods will be used. As a result, qualitative and quantitative methods can be used within the same study at different stages.

In terms of analysing qualitative data generated, at the heart of grounded theory is the idea of the constant comparative method. In this method, concepts or categories emerging from one stage of the data analysis are compared with concepts emerging from the next. The researcher looks for relationships between these concepts and categories, by constantly comparing them, to form the basis of the emerging theory. The researcher continues with this ***process of constant comparison*** until they reach what is called 'theoretical saturation', that is no new significant categories or concepts are emerging.

In terms of the process of doing grounded theory analysis, the researcher typically goes through several procedures. These are not linear stages, rather the process of grounded theory is cumulative and can involve frequent revisiting of data in the light of the new analytical ideas that emerge as data collection and analysis progresses:

- open coding (initial familiarisation with the data)
- delineation of emergent concepts
- conceptual coding (using emergent concepts)
- refinement of conceptual coding schemes
- clustering of concepts to form analytical categories
- searching for core categories
- core categories lead to identification of core theory
- testing of emerging theory by reference to other research and to social/cultural/economic factors that affect the area of study.

Grounded Theory analysis requires 'theoretical sensitivity'. This is described as an ability 'to see the research situation and its associated data in new ways, and to explore the data's potential for developing theory' (Strauss and Corbin,

1990:44). This is a creative process but must be grounded in a scientific approach. In Grounded Theory texts, there are also discussions of how to distance oneself from assumptions before the fieldwork and from the emerging analysis, in order to return repeatedly to the data. All theoretical developments are to be seen as provisional until proven by the data and by validation from others. There is a strong tradition in grounded theory that 'how to do it' can only be learnt from experience. Mentoring and working in teams have been seen as important in developing research skills and in ensuring rigour of analysis and theory generation.

An example of how Grounded Theory analysis proceeds in a research project is given below. The example comes from a published study (Kendall 1998) of families of children with Attention Deficit Hyperactivity Disorder (ADHD). The full reference for the article is given in the reference list at the end of this section. In their reporting of methodology, the author(s) outline how they went about conducting grounded theory analysis:

'All interviews were audio taped and transcribed. Transcriptions of the interviews were analysed using the constant comparative method (Glaser, 1976, 1993; Glaser and Strauss, 1967). Data analysis was iterative with data collection. Data were analysed as they were collected through the process of coding. Through open coding, common themes of everyday life were identified and examined in relation to the context, meanings, and circumstances of living with ADHD or with an ADHD family member. Interviews were coded by conceptualising underlying patterns in the data. Initial data analysis guided further and more focused data collection, leading to further conceptualisation of the data and refinement of the coding schemes. As part of the analysis, similarities and differences about the compiled codes were clustered together to create categories. Conceptual saturation was reached when no new categories were generated.

Through the process of open coding and theoretical coding, the basic social psychological problem (or core variable) and the basic social process emerged. Theoretical memos were written throughout the coding process to track conceptual decisions and ideas as they were occurring. Theoretical memos also were coded using theoretical coding and served as the basis for writing the grounded theory during the final phase of the analysis. A computer software package, The Ethnograph 95, was used to manage the data.

Credibility of the data was established using the techniques of persistent observation (recurring observations of family members during and between individual and family interviews), peer debriefing (presenting analyses and conceptual abstractions of the data to other expert qualitative researchers to explore inquirer biases and to clarify the meanings and the basis for interpretations), and member checks (presenting the analysis of the data to informants for their confirmation or revision) (Lincoln & Guba, 1985). In addition, two health professionals who were considered 'experts' on ADHD, and who also had children with ADHD, reviewed the theoretical codes and grounded theory and verified that the findings reflected their experience.' (Kendall J, 1998).'

There have been many developments in Grounded Theory since the original text in 1967. If you are interested in pursuing Grounded Theory research, these can be explored in the suggested further reading. Strauss and Corbin (1990) in particular have produced new approaches to, and details of, coding and guides on how to do grounded theory analysis. Grounded Theory has also been hugely influential in generally changing the way that qualitative analysis is undertaken. Most approaches to qualitative analysis, for example, stress the importance of interpretation being 'grounded' in detailed data analysis.

Suggested Further Reading:

Holloway I and Todres L (2006) *Grounded Theory* In Gerrish K and Lacey A (2006) *The Research Process in Nursing* Oxford: Blackwell.

Kendall, J (1998) 'Outlasting disruption: the process of reinvestment in families with ADHD children' *Qualitative Health Research* 9:2, 166-181.

Glaser, B and Strauss, A (1967) *The Discovery of Grounded Theory*. London: Weidenfield & Nicolson.

Glaser, B (1978) *Theoretical Sensitivity*. California: Sociology Press.

Strauss, A (1987) *Qualitative Analysis for Social Scientists*. New York: Cambridge University Press.

Strauss, A and Corbin, J (1990) *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. London: Sage.

3.2 Framework Analysis

A second, more recent, approach to qualitative analysis is gaining popularity in health – related research, namely Framework Analysis (Ritchie and Spencer, 1994). In contrast to grounded theory, Framework Analysis was explicitly developed in the context of applied policy research. Applied research aims to meet specific information needs and provide outcomes or recommendations, often within a short timescale. Framework Analysis shares many of the common features of much qualitative analysis which were outlined in Section 1, and of what is often called 'thematic analysis'. The benefit of Framework Analysis is that it provides systematic and visible stages to the analysis process, so that funders and others, can be clear about the stages by which the results have been obtained from the data. Also, although the general approach in Framework Analysis is inductive, this form of analysis allows for the inclusion of *a priori* as well as emergent concepts, for example in coding. This can be important in many applied studies, where there are specific issues that the funders or other stakeholders want to be addressed.

Framework Analysis has 5 key stages. These can be undertaken in a linear fashion and therefore all data can be collected before analysis begins, although framework analysis can equally be used when data collection and analysis occur concurrently.

Key stages of Framework Analysis

- Familiarisation
- Identifying a thematic framework
- Indexing
- Charting
- Mapping and Interpretation

- **Familiarisation:** whole or partial transcription and reading of the data.

- **Identifying a thematic framework:** this is the initial coding framework which is developed both from *a priori* issues and from emerging issues from the familiarisation stage. This thematic framework should be developed and refined during subsequent stages.

- **Indexing:** the process of applying the thematic framework to the data, using numerical or textual codes to identify specific pieces of data which correspond to differing themes (this is more commonly called **coding** in other qualitative analysis approaches –see Section 3).

- **Charting:** using headings from the thematic framework to create charts of your data so that you can easily read across the whole dataset. Charts can be either *thematic* for each theme across all respondents (cases) or *by case* for each respondent across all themes.

Examples:

Thematic Chart

	Case 1	Case 2	Case 3 etc
Theme			

Case Chart

	Theme 1	Theme 2	Theme 3 etc
Case			

In the chart boxes, you could put line and page references to relevant passages in the transcripts. You might also want to include some text, eg key words or shortened quotations as a reminder of what is being referred to. For example, the case chart below is from a qualitative study of complementary therapy provision via primary care, which used Framework Analysis (Luff and Thomas, 1999). The themes boxes contain both paraphrases of key issues as well as snippets of data, to 'jog' the researcher's memory about the content of the themes. Alongside this text, there are page and line references to aid easy retrieve of the original data in the transcripts:

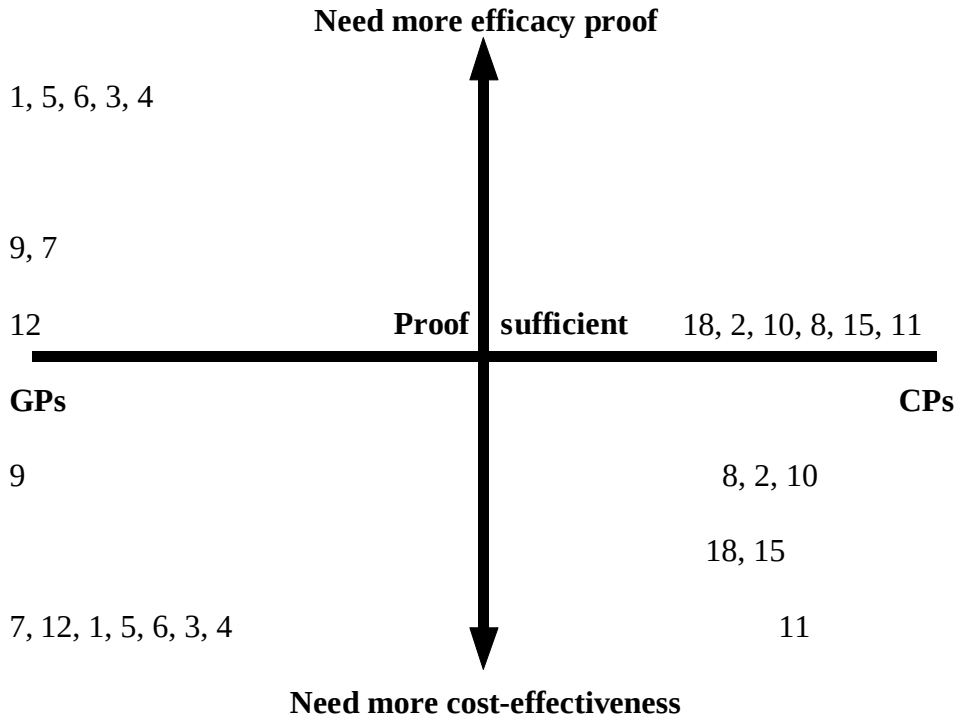
Example Case Chart

	Theme: *Service rationale*	Theme: *Role of complementary therapies*	Theme: *Limits to integration*
GP Number 1	Public wants them (2:25) Providing choice for patients (4:5)	For conditions 'orthodox medicine fails' (5:12) Allowing patient to take responsibility (5:22) Treating the whole person (6:1)	'Conceptual differences' (7:15) Range of and differences between therapies (7:31) Money (7:17, 8: 8, 9:24)

- **Mapping and Interpretation:** this means searching for patterns, associations, concepts, and explanations in your data, aided by visual displays and plots. Ritchie and Spencer, (1994) suggest that at this stage, the qualitative analyst might be aiming to define concepts, map the range and nature of phenomena, create typologies, find associations within the data, provide explanations or develop strategies. They emphasis that which of these areas the analyst chooses to focus on will depend both on the themes that have emerged from the data and the original research question. Ritchie and Spencer acknowledge that 'this part of the analytical process is the most difficult to describe' (1994:186). They offer several examples from their own research, including diagrams they have used to visually present their ideas, to try and demonstrate this process. Miles and Huberman (1994) also offer a wide range of display ideas, which may be useful for exploring your data in the context of Framework Analysis. The central aim of these techniques is to enable you to visually display ideas from the data as an aid in developing and testing interpretations.

For example, using the study of complementary therapy provision in primary care mentioned above, we were interested to see if there were significant differences/patterns in attitudes among GPs and complementary practitioners in some areas (i.e. to *look for associations* between professional group and attitudes). The need for, and type of, research required to back up complementary therapy provision was one such area of possible association which emerged from analysis of the data collected. To aid us in exploring this area, we visually plotted our respondents 'positions', using their identification number, on the current state of 'proof' in two key areas of research (efficacy and cost-effectiveness).

A shortened version of our working diagram is presented below:



The diagram seemed to confirm our ideas, which had developed from our charts, memos and the raw data, that GPs were more likely to think that more research was needed, particularly in the area of efficacy, than complementary practitioners. It also suggested this tendency, but within a more mixed picture, in relation to cost-effectiveness research. This diagram was used by the researchers as a starting point to explore other possible patterns or associations, for example, were there further similarities among the clustered GPs or CPs like age, sex, type of general practice in which they worked, other attitudes etc.

Suggested further reading:

Richie, J and Spencer, L (1994), 'Qualitative data analysis for applied policy research', in Bryman and Burgess, eds., Analysing *Qualitative Data,* London: Routledge, p173-194.

Miles, MB and Huberman, AM (1994) *Qualitative Data Analysis; An expanded sourcebook.* London: Sage.

Exercise 1

Consider the following research project. Which of the two approaches to analysis might you take and why?

1. The problem of non-attendance in an out-patient department

2. A study to explore the organisation and integration of an acupuncture service within a primary care team from the perspective of professional participants.

1. A grounded theory approach would be appropriate. The research project is broad and exploratory in nature. There are few or no a priori issues or necessary starting points suggested (eg a specified sample) for the research beyond the out-patient setting. Such a study could easily be concerned with generating theory about non-attendance behaviour, which could then be tested across a range of settings concerned with DNA patterns. It could provide hypothesis for subsequent deductive approaches as well.

2. Framework analysis seems most appropriate here. The question is specific and suggests a pre-designed sample (professional participants) as well as some a priori issues (organisation and integration), which will need to be explicitly addressed. The study may generate theories that could be tested elsewhere, but the primary concern appears to be with description and interpretation of what is happening in a specific setting.

Exercise 2

You have chosen one of the analysis approaches for the research projects above. Now consider how you would go about each of the studies, given the analysis approach you are using:

1. The problem of non-attendance in out-patients.

- *You could begin in several ways. You might for example want to talk first to hospital doctors, nurses and receptionists to get their perceptions of reasons for non-attendance. You might try and contact people who have not attended directly or instead ask the general public for their views, for example in focus groups.*

- *Grounded theory analysis of your first stage of fieldwork data should then determine where you decide to look next and the methods you employ.*

- *As your research progresses, you will be constantly comparing the concepts and categories emerging from each stage of the analysis until you feel satisfied that you have covered the question as fully as possible, in other words that you have reached theoretical saturation.*

- *In developing and testing your emerging theory about why people do not attend scheduled appointments with hospital doctors, you will also want to bring in existing research evidence in the area and consider the social organisation of hospitals.*

2. A study to explore the organisation and integration of an acupuncture service within a primary care team from the perspective of professional participants.

- *You are likely to have already identified the primary care team in question, but if not you would need to find a team which offers an acupuncture service who are willing to participate.*

- *You would then identify who were the relevant professional participants (GP/s, acupuncturist/s, practice nurse/s etc) and think about how you might access their perceptions.*

- *Interviews seem an obvious choice of method, but you might also consider focus groups or observation instead of, or as well as, interviewing. You might develop a semi-structured interview schedule based on existing literature in the area and the a priori organisation and integration issues.*

- *You would then pilot the schedule with similar professionals if at all possible.*

- *Depending on the constraints on your project (time etc) you would then aim to do some analysis as the interviews progress or you may conduct all the data collection before undertaking the analysis.*

- *Your initial familiarisation and coding stages would draw on the a priori issues as well as identifying emergent themes from the data. As you move through the stages of Framework Analysis, you will develop these themes by charting and mapping exercises, as well as referring back to the original transcripts.*

- *The output from your analysis might be a largely descriptive piece on the service, but will probably aim to offer interpretation of the key issues that have emerged so that the research can inform future developments of this kind.*

4. Stages in Qualitative Analysis

Having looked at the general principles of qualitative analysis (Section 1) and then two specific approaches (Section 2), we now turn to the practicalities. What practical processes are involved in actually carrying out qualitative data analysis? How long does it all take?

The answer to the last question is probably ‘how long have you got?’ As discussed in Section 2, a framework analysis approach is much more suited to a limited time frame than a grounded theory approach. But there’s no denying that any qualitative analysis is a very time consuming and demanding process. In this section we will take you through some of the early stages in qualitative analysis, following a general thematic analysis approach. We will also highlight points where framework analysis and grounded theory would take a separate route.

4.1 Transcription

Almost all qualitative research studies involve some degree of transcription – the data may be tape recorded interviews, focus groups, video recordings, or handwritten field notes. It is not appropriate, usually, to write up summary notes from a tape recording – unless the words are transcribed verbatim, the researcher is likely to bias the transcription by only including those sections that seem relevant or interesting to them. Many researchers would also include some non-verbal cues in the transcript - silence may communicate embarrassment or emotional distress, or simply a pause for thought. Words such as ‘well…. er……I suppose …… are important elements of a conversation and should not be ignored. Laughter or gestures may also give added meaning to the spoken word. If someone else is transcribing your material, it is important to tell them how much of this non-verbal matter to include. If you have never transcribed material, it is a useful exercise to do a little yourself.

Exercise 3

Find a willing volunteer – perhaps a member of your family, or a friend or colleague. Ask them to take part in an informal interview with you, lasting perhaps ten minutes. You could choose to ask them about their definition of a healthy person, then try and probe what it is for them that makes that person healthy. Tape record the interview, then transcribe it into a word processing package in your own time, including as much non-verbal material as you can.

- How long did the transcription take you, compared with the original interview?

Unless you're a very skilled typist and have a particularly clear tape, it is likely that the transcribing process took at least four times as long as the interview. It may have taken even longer. You will probably have found that your first attempt at transcribing was amazingly time consuming. However you will be pretty familiar with the data by the time you finished!

- Highlight the non-verbal communication you were able to include. What does it tell you, in addition to the words you have recorded?

Depending on the fluency or otherwise of your volunteer, you will probably have a few 'er's and 'um's, but this adds to the realism and credibility of your data, as well as giving clues as to how the respondent was feeling. Recording laughter, movements and 'asides' also helps to make the data live when you re-read it several days or weeks later.

- Look at the questions you asked, and any comments you made. Have you led the respondent in any way, or missed important clues that they gave you?

You may well find you have interrupted your respondent, or asked an inappropriate question; transcription is a salutary experience in evaluating your own interview techniques.

- Listen to the tape again, with the transcript in front of you. Have you changed any of the words from the tape, perhaps just to make a sentence more grammatically correct? Have you transcribed everything accurately?

Changing words or phrases to make them grammatically correct is not necessary, and may inadvertently change the sense of what was said. If necessary, colloquialisms and odd usage of language can be explained in the accompanying text when you come to write a report.

4.2 Organising your Data

After transcription, it is necessary to organise your data into easily retrievable sections. You may wish to give each interview a number or code, or to break up field notes into sections identified by date, or by context. Interviewees will need to be given pseudonyms or referred to by a code number. A secure file will be needed that links pseudonyms and code numbers to the original informants, but as with any research this file is confidential and would usually be destroyed after completion of the project. Similarly names and other identifiable material should be removed from the transcripts. Narrative data needs to be numbered using line or paragraph numbers, so that any unit of text you use can be traced back to its original context. If you are using a software package to do the analysis, this may be done for you automatically by the computer, but you may need to decide upon your unit of analysis – whether you wish each word, each line, each sentence or each paragraph to be numbered. If you are working with 'hard' copies (i.e. type or hand written sheets) you would be well advised to make several copies of each at this point, to avoid losing data when the analysis stages begin. Similarly word processed files should be backed up and stored independently.

4.3 Familiarisation

The above procedures will have begun the process of familiarisation. By this we mean the researcher listening to tapes and watching video material, reading and re-reading the data, making memos and summaries before the formal analysis begins. This is an essential stage, and is particularly important if the main researcher has not gathered all the data themselves.

4.4 Coding

Before we start this section, it would be helpful if you read through the sample interview transcripts at Appendix 1 and 2. They are excerpts from a series of interviews carried out with people who had experienced a heart attack a year previously, to explore perceptions of health and of their own recovery. Interviews took place in the respondents' home, and lasted about an hour.

After familiarisation with the material, we need to do some preliminary coding (this would be called open coding in grounded theory). Lets assume we are interested in ideas of how the respondents conceptualise the heart attack, its cause and its impact on their lives. Certain ideas crop up in the transcript readily, and we can give these a preliminary code. For example, in Section 1 of Derek's interview, he talks about the 'shock' of having a heart attack.

Highlight those lines in Derek's interview which refer to the shock of having a heart attack.

You should have found two instances where Derek used this word (lines 14 and 16), and two from the interviewer (line 19). However there are other phrases that Derek uses that could also be interpreted as referring to the shock of the diagnosis. For example, you may want to highlight 'I were one of them people that never thought it could happen' (line 14) as also expressing shock.

You now have your first provisional code, called 'shock'. It is likely to be modified later, but serves to begin the process of categorising and analysing the data. Codes can be identified by 'in vivo' terms that the respondents themselves use. For example 'just plod on' (lines 28 and 159) typifies Derek's description of his attempts to live with his disability. Or codes may be named by the researcher, to include a variety of ways that respondents express an underlying concept. An example of this from Derek's interview might be 'confusion', a code that would include Derek's comment 'I just can't work it out sometimes' (line 75).

If you are using framework analysis, you may at this stage have *a priori* concepts you wish to use as codes. You may want to know, for instance, about how people who have had a heart attack conceptualise the causes of the attack. From existing literature, you may know that these can be divided into physical causes, psychological causes, ideas of luck, genetic inheritance and so on. You could then search the data for material that could be coded under these headings.

- Using highlighter pens of different colours, or codes in the margin, read through the rest of Derek's transcript, developing codes from the data.
- Do the same with Sue's interview, noting which ideas are similar to those in Derek's interview, and which you have to develop new codes for.

You will have found some codes that can be applied to ideas in both interviews. 'Fear' crops up in both, particularly in the context of having another heart attack. Both interviewees talk about not taking enough exercise, and having to cut down on work activity. Both discuss lifestyle changes they have made since the heart attack. But you will have found some ideas in each that are not mirrored in the other. Derek talks about chest pain, and taking medication for it. Sue doesn't mention pain at all, but does mention medication.

You may well have noticed a difference in the way the two respondents talk about their medication – Sue sees it as a way of actively controlling her disease and promoting health, Derek sees his angina spray as a last resort, to be used if he can't manage any other way. In looking at these differences, you are beginning to refine your codes – after using 'medication' as a preliminary code, we could now begin to analyse this concepts further. Maybe we decide to place the code

'medication' into a category called 'managing the symptoms', 'taking control of the disease', or 'coping with chest pain'.

However you may then notice that other data also falls into these new revised categories. 'Managing the symptoms' could also includes Derek's comment 'as soon as the pain comes on I stop ….I don't mess about' (line 62). So some degree of re-coding now needs to be done, and many units of data will fall into more than one category.

- Look through the data again, with the idea of forming these broader categories.
- Write down, on a separate piece of paper, four or five broader ideas and, underneath each, a list of codes that could contribute to each.

One such category could be 'coping with returning to work'. Codes that contribute to that may be:

- *Taking more time*
- *'I'll do them tomorrow'*
- *Struggling with physical work*
- *Cutting down on stress/heavy work*

4.5 Themes

You have now begun to identify themes or emergent concepts, and will engage in re-coding to develop more well defined categories.

One of these categories could be 'physical causes of the heart attack'. Both respondents discuss this at various points, but this category could also have been identified *a priori* from the literature in framework analysis.

Look through your list of codes, and identify those that would inform this category of 'perceived physical causes'. Then look back through the interviews and see if there are any other references that you have missed.

Derek expresses bewilderment that he should have had a heart attack at all, given his physical fitness and activity (lines 13-16). He wonders whether a change to more mechanisation at work may have precipitated that attack, as he was walking less. Sue expresses her belief that she is now fitter that she was at the time of her heart attack (lines 82-83), and states that she was not taking any exercise in the years before she had her heart attack. She also stresses the large workload she was carrying in her job.

With a framework approach, it would be likely that some of the themes emerging from the data would also be the identified issues with which you began your research. Your data would confirm their importance, in this case, and enable you to explore them further.

If, on the other hand, you are taking a grounded theory approach, you would try to ensure that all the emergent themes were generated from the data itself, although you might later incorporate other theoretical ideas in your analysis. A grounded theory approach would also be prepared to test ideas generated in early data analysis in further data collection.

How do the two respondents conceptualise 'health'? What theories about lay perceptions of health could you test further in later data collection?

In lines 92-95 Sue expresses something about being healthy despite having a diagnosis of heart disease. She also defines health as having a balance between work and rest (lines 102-103). Derek defines health in functional terms, being able to climb hills without symptoms (line 111). Maybe the differences are related to gender – are women more likely to define health in complex, holistic terms, whereas men relate it more to physical functioning? You could test out this idea in future interviews with both genders.

Obviously we cannot go very far with the process of analysis with the sample transcripts provided here. Normally you would have much more data to analyse, and the processes described above would generate many themes and categories, which would need refining and developing. Using grounded theory, early data would be subjected to preliminary analysis, then emerging theory tested in subsequent data collection. Collection of data would continue, ideally, until 'saturation' is reached – i.e. no new themes are emerging, and theoretical ideas have been tested satisfactorily. Using framework analysis, indexing would be followed by mapping and charting. In practice, research studies are often bound by constraints of time and resources, and analysis has to be brought to a close when specific questions have been answered. Framework analysis is an approach more suited to research asking specific questions and with limited timescales than grounded theory.

5. Ensuring Rigour

Reliability and validity are important issues in all research including qualitative research. Demonstrating that your qualitative data analysis is rigorous is especially important given a common criticism (from those less favourable to qualitative research) that qualitative results are anecdotal. Increasingly, journal editors and funders are using 'checklists' of criteria or questions for assessing the reliability and validity of qualitative research sent to them (see for example, the British Medical Journal guidelines for qualitative research on http://www.bmj.org.uk/). On many levels then, it is important to address these issues in your analysis.

In this section, we will discuss the issues of reliability and validity in the context of qualitative data analysis. If you are familiar with quantitative research, you will see that these terms are interpreted somewhat differently and have different implications in qualitative research. We will then look at other ways of demonstrating the robustness of qualitative analysis, namely triangulation and respondent validation.

5.1 Reliability

In terms of assessing qualitative research the emphasis is on the reliability of the methods employed. You need to demonstrate to the reader that the methods you have used are reproducible and consistent. However, unlike in quantitative research, external replication may not be the most appropriate measure. Instead, in demonstrating the reliability of your analysis you would need to consider the following:

- Describing the approach to and procedures for data analysis
- Justifying why these are appropriate within the context of your study
- Clearly documenting the process of generating themes, concepts or theories from the data audit trail
- Referring to external evidence, including previous qualitative *and* quantitative studies, to test the conclusions from your analysis as appropriate

5.2 Validity

Here the emphasis is on the validity of the interpretation. The ability of the findings to represent the 'truth' may not be appropriate if we accept the existence and importance of multiple 'truths'. Rather, validity will be judged by the extent to which an account seems to fairly and accurately represent the data collected. In terms of presenting the analysis then, reflection is required on:

- The impact of your research design and approach to analysis on the results you present.
- The consistency of your findings, for example has analysis been undertaken by more than one researcher (often referred to as inter-rater reliability).
- The extent to which you represented all relevant views, for example checking for 'negative' or deviant cases to test your interpretations.
- Adequate and systematic use of the original data (for example using quotations, and not all from the same person!) in the presentation of your analysis so that readers are convinced that your interpretations relate to the data gathered.

5.3 Other ways of demonstrating reliability and validity

Triangulation

Evidence that the qualitative researcher has undertaken 'triangulation' is frequently seen as demonstrating rigour. Triangulation means gathering and analysing data from more than one source to gain a fuller perspective on the situation you are investigating. This may be more or less important, or possible, depending on your research question and setting. For example, consider the hypothetical study of an acupuncture service in primary care, discussed in Section 3. In this study, triangulation might mean that you conduct observation of the operation of the service and a review of service records in addition to semi-structured interviews, as a way of gaining different insights into the same situation. However, triangulated data should not be simply used to 'check' the conclusions from one data source against another. Often the data from one source will contradict or question the findings from another. This is not necessarily a failure of the research in itself, as 'real' life research situations are inevitably complex. Indeed a key strength of triangulation is the possibility of uncovering this complexity and of finding different views. The contradictions and differences within the data collected should spur the researcher on to further analysis, and sometimes, to further investigation until some 'sense' can be made of what is happening. Evidence that the analyst has used triangulation in this way and has effectively drawn the analysis of different forms of data together demonstrates rigour, rather than simply the use of different sources.

Researcher perspective

Feminist researchers such as Reinharz (1992) have highlighted the necessity to make clear the perspectives of the researcher themselves in demonstrating the validity (they would call it credibility) of the research. Because qualitative analysis is an interpretative process, the preconceptions, assumptions and 'worldview' of the researcher are likely to influence the process and any emerging theory, despite use of rigorous approaches such as we have described. This needs acknowledging, by making the researcher more 'visible' in the analysis process. Other writers call this *reflexivity'*, A reflexive account is an honest attempt by the researcher to declare their conceptual journey through the research, perhaps by including sections of their own reflective diaries as they undertook the research.

Respondent Validation

Qualitative researchers frequently feed back the findings from their research to their participants in some way. The range of feedback to respondents varies. In some cases transcripts or quotations may be sent back simply to check accuracy or consent for use, in other cases respondents may be asked to comment on the interpretation or drafts of the report. Feedback to respondents has been seen as important in involving participants in the research process and, for some critical social scientists, in addressing concerns about the researcher having sole power of interpretation. Many funders and reviewers consider 'respondent validation' of qualitative research to be a mark of quality, and evidence of respondent validation' of findings is increasingly seen as a way of demonstrating rigour. However, the decision to involve respondents in feedback or validation may legitimately vary from study to study. It might be more helpful in terms of assessing rigour to concentrate on evidence that the researchers have:

- Considered the issue of feedback to respondents
- Provided reasons for their decision to provide feedback or not
- Explained how they have gone about any feedback, the type of feedback provided, and why
- Explained how any feedback from respondents has been used in the analysis and interpretation.

Respondent feedback generates important issues for the analyst to consider, not least what to do about competing interpretations. It is important to consider that, for reasons of confidentiality, individual respondents may not have access to the full range of views that the researcher has found; that respondents may have competing perspectives (for example, doctors and receptionists may view the same situation differently); and that they may have particular personal, professional or political reasons for disliking the researchers interpretations, however legitimate these interpretations may be. It is important to consider how far it is the researchers' job to question 'taken for granted' assumptions or particular views, even when this may be unpopular with some respondents.

Exercise 4

Write down brief notes in response to the following questions:
Think of a qualitative project you would like to undertake:

1. What would be the advantages of feedback to respondents in your proposed research?

These will vary with the project, but common advantages include:

- *It can be used to check the accuracy of both the recording of data (by giving respondents transcripts or quotations) and the analytical interpretations.*

- *Some qualitative researchers are concerned about the power of the researcher to interpret people's words or actions. Feedback to respondents is seen as one way of redressing this power imbalance in the research process.*

- *External reviewers increasingly see it as one way of demonstrating the validity of your research.*

2. What issues would you need to consider when planning respondent feedback?

Again this list is not exhaustive, but includes common issues.

- *Respondent feedback will generate new 'data'. It is important to consider how, and at what stage of the research, feedback will be incorporated into the analysis or final report.*

- *Respondent disinterest –respondents may have differing levels of interest in and commitment to the research and you may end up only getting feedback from those who have a particular perspective. It is important to discuss feedback with respondents during the initial stages of the research, so that they have a clear idea of what is expected of them, and to gain their consent to take part. It is also worth considering the most appropriate and engaging way of feeding back results to respondents –would verbal or written formats or seminars/conferences be most helpful? A final question is how far researchers should go in 'chasing' those respondents who do not take part in feedback. To what extent is it acceptable to pursue people for feedback that they may not want to give?*

- *Seeing or hearing their words or actions fed back to them may cause respondents to reconsider what they have said or done and what they are happy to see reported. They may also not agree with the way you have interpreted what they or other people have said or done. Before beginning the research it is important to think about the kind of feedback that you want from*

respondents and how far you are willing to change your analysis, beyond factual inaccuracies, in light of this feedback. This also needs to be clearly explained and agreed with respondents.

- *Finally, when using verbatim quotes, it is quite common for respondents to feel that they appear inarticulate! It may be helpful to tell participants how you will be presenting their words in advance so as to pre-empt negotiations about 'tidying up' quotations.*

6. Practicalities

You will by now be aware, if you weren't before you started this pack, that qualitative analysis is a complex and time consuming business. It is no easy option for those who don't fancy getting to grips with statistics. Neither is it a journalistic enterprise for seeking overall impressions from the data – the last section on rigour demonstrated the importance of ensuring adherence to a systematic and scientific method.

So how is such a process to be managed, without sinking beneath a pile of transcripts and field notes?

- **Be organised**. Identify each set of data as you generate it. Interview transcripts, field notes, photographs, videos, documents, and any other items of source material need to be given an identification code that makes them readily retrievable. All data should include a date, some indication of context, and an anonymised identifier that will enable the researcher to identify the source. A complete list of data sources can then be compiled and used for reference throughout the analysis.

- The business of **coding** is managed in a variety of ways by different researchers. It is possible to buy computer software packages that will manage this process electronically, and there will be a short discussion of these in section 6. Assuming you are doing this process manually, or by using an ordinary word processor, there are two main systems used by most qualitative researchers:

    - *Cutting and pasting* – literally or electronically dividing up your transcripts (having previously made copies!) into bite-size pieces for analysis. So you may have phrases, sentences or paragraphs as your main unit of analysis, and these can be arranged physically in groups or electronically in computer files according to initial coding. Some people do this by pasting the text units onto index cards, which can then be sorted and re-sorted easily. Others do it by pasting text units onto large sheets of paper representing codes or larger categories and themes. Obviously each text unit needs to be traceable back to its context, hence the importance of organisation as described above. Also, many items of data will carry two or more codes; in this case several copies will need to be made so that the item can be contained in several codes or categories. A cross-referencing system may also need to be developed.

    - *Colour coding* – highlighter or felt tip pens can be used to do the same process, using separate colours for each code or category. Obviously there is a finite number of colours available for such highlighting, and this method would not be suitable for complex analyses where many hundreds of codes were being used. Problems may also be encountered where a piece of text needs to be coded under two or more colours – confusion may result! However the advantage of this method is that the text does not need to be cut up, and so text units

remain in context. For relatively straightforward and pragmatic analyses, it may be the preferred method.

A combination of the above methods can also be used, perhaps cutting and pasting into initial categories using a word processing package, then printing out each category and colour coding to look for over arching or recurring themes.

- **Keep a record** of your thoughts and theories as you go along, often called a journal or memo keeping. Define your inclusion criteria for particular codes, record why you decided to re-code a particular set of data, write down emerging theories and questions that can be tested later. This record will form the basis of your narrative analysis for your final report, and will enable you to follow your thought processes when you feel you have lost your way.

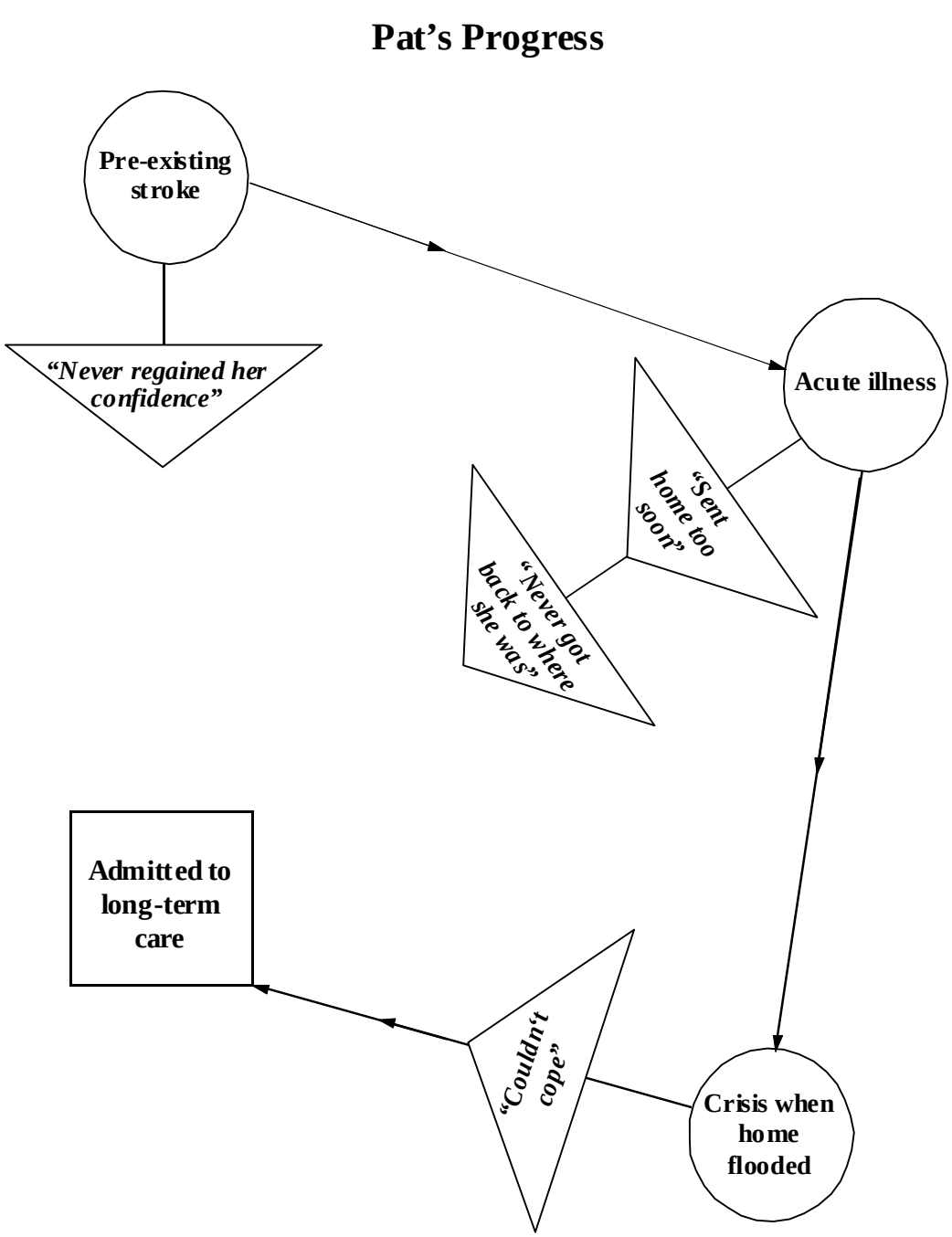
    - Whenever you write up draft sections of your analysis, include some examples of *verbatim data* that support your argument. This will save you searching for them later, and ensures you are grounding your analysis in real evidence.

    - Many researchers use *flow charts*, diagrams, tables and other visual means to support their analysis. If you sketch out any of these as you go along, keep it in your journal, no matter how scrappy it is. It may well be useful in the eventual analysis. An example of a flow chart is included at the end of this section (see Figure 1).

Finally, qualitative analysis is a lengthy process. You need to allow perhaps a **third of the total time** taken for your project for the analysis. It may take longer if you are using grounded theory, where analysis and data collection take place concurrently. It is also a resource intensive task, especially if you are using two or more researchers to do the analysis to improve rigour.

Reports of qualitative analysis tend to be wordy, and it is often difficult to pare the report down to the required word limit for a journal article. Journals which accept a lot of qualitative material have more generous word limits (usually up to 5000 words), but others (such as the British Medical Journal) may require you to reduce your article to 2000 words. This may feel like treachery, forcing you to omit much that gives richness and credibility to your analysis.

Figure 1


Pat's Progress
Pre-existing stroke
"Never regained her confidence"
Acute illness
"Sent home too soon"
"Never got back to where she was"
Admitted to long-term care
"Couldn't cope"
Crisis when home flooded

7. Computer software packages for Qualitative Analysis

Since the mid 1990s, various packages have been developed to aid the process of management of qualitative data during the analysis process. The earliest of these, Ethnograph, was developed before the widespread adoption of the Windows operating system, and was somewhat cumbersome to use because of the need to prepare data specifically for entry into the software. However, like all later packages, the system allowed the researcher to organise, code and search data using computer technology that saved a great deal of the 'paper chase' described in Section 5.

There are many popular packages now in use by health services researchers such as AtlasTi, NUD*IST and NVivo, and these will be discussed briefly below. However all computer software packages have basic similarities.

7.1 What will a computer software analysis package do for me?

Data storage and management

Software packages will allow you to enter your raw data directly into the package, and will then hold your documents securely, much as a word processing package does. It is possible in most of the packages to enter rich, formatted text directly; others will require a standardised format such as plain text. The newest packages will also handle visual material such as photographs, diagrams, video and links to WebPages. Most packages will also let you annotate and edit the material once it is entered, although the ease with which this can be done is variable. The package will generally have some form of automatic indexing of material, and will allow you to add your own identification information such as date and context. You can store huge quantities of data on the packages, provided your computer has sufficient capacity, but beware of being tempted to gather more data than you can analyse!

Data searching and retrieval

All packages can search textual data for particular words or phrases. If you wish to count frequency of certain words for content analysis, this can be done easily. Boolean operators such as AND, OR, NOT, NEAR can be used to refine searches and test out emerging theory. The packages will retrieve data with appropriate context – the word you are searching for needs to be seen in the context of the sentence or paragraph from which it comes. Retrieval also includes identification of the data – you will know which interview or field note the data came from, and whereabouts in the text it was sited.

Coding

The process of coding and re-coding is made a great deal simpler by using a computer package. Small sections of data can be highlighted and assigned to a pre-existing or new code in a matter of seconds. Items that have been coded are stored and can be searched in the same way as documents. Codes can be given titles and descriptions chosen by the researcher. They can also be combined with other codes, subdivided, or built into conceptual models to develop theory.

Developing and testing theory

Packages vary in the extent to which they allow theoretical modelling, but all will enable relationships between coded data to be explored and displayed. One of the most popular systems, NVivo, uses a hierarchical system which takes a 'top down' approach, dividing and subdividing major concepts into their constituent elements. This may be ideal for a policy orientated approach such as framework analysis but may be less good for grounded theory. AtlasTi, for example, is less prescriptive, and allows diagrammatic representation of relationships between concepts. This fosters a more inductive approach, allowing theory to be built 'upwards' from the data itself.

Writing reports

The software packages will produce reports as requested by the researcher printing out the entire dataset under one code, for example, or reproducing a section of a document. The results of a search as described above can be reported upon. This makes it quite easy to incorporate verbatim quotes or visual material into an analytical account or article. It is also possible to write a 'journal' within the package, enabling the researcher to record memos and ideas throughout the analysis process. This journal can similarly be printed out as a textual document.

7.2 What will a software package NOT do for me?

In common with most software, analysis packages are a tool that can aid the researcher, but they cannot replace the human element! A package cannot 'do' the analysis, because it lacks the capacity to think, reflect and analyse. Computer-aided analysis can be deceptively easy – coding and searching, for instance, is quick and satisfying, but it is then possible to keep the analysis at a superficial level, without the deep engagement with the data that is a hallmark of good qualitative research. At the end of the day, there are no short cuts to the demanding process of reading and re-reading the data, sorting, categorising and analysing the data and building and testing theories.

In making a decision whether or not to use a software package, it is worth asking a few questions:

- Do I have the resources to buy the package? (Most cost between £200-£500, but site licences may be available at a lower individual rate for universities and research units)
- Do I have the time and inclination to learn how to use the package?
- Will I be able to use the software again? If so, the investment of time and money may be more cost effective
- Do I have a lot of data to manage? (eg more than 6-10 hours of interview or equivalent). If not, it may be as easy to use manual methods
- Do I like working 'on screen' or do I prefer paper-based methods?
- Are others involved in the research able and willing to use the software package?

It is a good idea to visit the websites of the many packages available, and download the free demonstration versions available. This will give you an opportunity to go through tutorials and get a feel for the package before you decide whether to buy. Some web addresses are given below.

The Computer Assisted Qualitative Data Analysis networking project (CAQDAS) at University of Surrey provides an excellent website where you can download very helpful information about the many packages now available. The project also runs training sessions on the most popular packages, and guidance on which package to choose.

http://caqdas.soc.surrey.ac.uk

The latest versions of software packages available in 2006, and websites, are listed below

ATLAS.ti (Version 5)
http://www.atlasti.de

HyperRESEARCH
http://www.researchware.com

MAXqda2
www.maxqda.de

NVivo7 (supersedes NVivo and N6/NUD*IST)
http://www.qsrinternational.com

QDA Miner
http://www.provalisresearch.com

QUALRUS

http://www.qualrus.com

TRANSANA2 (specialises in audio and video data)
www.transana.org

8. Summary

We hope that this pack has introduced you to the basics of qualitative data analysis. Although demanding and time consuming, we hope you will discover, through analysing your data, that qualitative research is a rewarding and satisfying experience.
It remains true that it is a process best learned by doing, and, where possible, by working alongside others more experienced in the art. If you are truly trailblazing and working alone with qualitative data, we suggest you forge some links with a local university department where there are staff who are experienced in qualitative analysis. Staff at your local RDSU should be able to point you in the right direction.

This pack should have enabled you to:

- Understand the differences between various approaches to qualitative analysis, particularly grounded theory and framework analysis.
- Decide on the level of analysis necessary for your project.
- Work through the early stages of analysing qualitative data by transcribing, coding and developing themes and categories.
- Become aware of processes that can be used to improve and demonstrate rigour in qualitative analysis.
- Understand the practicalities and resource demands of qualitative data analysis.
- Become familiar with the functions of qualitative data analysis software, and know where to access further information and demonstration copies of three packages.

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Websites

http://cagdas.soc.surrey.ac.uk

http://onlinegda.hud.ac.uk/Introduction/index.php

Glossary of Terms

Coding This is the process of deciding how to conceptually divide up raw qualitative data. Sections of text transcripts, for example, may be marked by the researcher in various ways (underlining in a coloured pen, given a numerical reference, or bracketed with a textual code in the margin). These sections contain data which the researcher is interested in exploring and analysing further. In the early stages of analysis, most if not all sections of the text will be marked and given different 'codes' depending on their content. As the analysis progresses these codes will be refined or combined to form themes or categories of issues. (NB: In Framework Analysis this process is referred to as '**indexing**').

Familiarisation The process of becoming increasingly familiar with the data you have collected. This initially takes place in several ways, for example through undertaking transcription, reading the transcripts, field notes or observation notes gathered, producing summaries of interviews, or re-listening to tape recordings.

Framework Analysis An approach to qualitative analysis which was developed in the context of applied policy research. It provides systematic analysis stages which are clearly defined and easily accessible to others (eg funders). It is particularly well suited to qualitative research where there are pre-set questions that need to be addressed (*a priori* issues) and where the timescale is short.

Grounded Theory A highly influential approach to qualitative research and analysis which has been widely adapted and used in the health and social sciences. In a 'classic' grounded theory study, data is simultaneously collected, coded and conceptualised throughout the project. Grounded Theory offers a rigorous approach to generating theory from qualitative data. It is particularly well suited to exploratory studies where little is known and to research that is explicitly concerned with theory generation.

Inductive Research which is concerned with uncovering meanings, explanations or hypotheses from within the data gathered, rather than testing pre-existing hypotheses (deductive research).

Inter-rater reliability	Used to refer to the process of checking the analysis and interpretation of qualitative data by having more than one researcher undertake some or all of the analysis stages. The aim is to provide a check on the consistency and transparency of the analysis.
Themes	A theme is generated when similar issues and ideas expressed by participants within qualitative data are brought together by the researcher into a single category or cluster. This 'theme' may be labelled by a word or expression taken directly from the data or by one created by the researcher because it seems to best characterise the essence of what is being said.

Appendix 1 – Sample Transcript (Derek)

Interview with Derek, aged 48, gardener, working for the local council. Wife (W) was present for the latter part of the interview and contributed. Derek had a heart attack one year previously.

SECTION 1

A: I just want to get you talking about what the heart attacks meant to you and if it's changed your life. But just to get you started, tell me a bit about how it happened.

DEREK: I've no idea whatsoever.

A: You don't remember it?

DEREK: Yes, Oh, yes. As though it were yesterday, but, I mean I were one of those people who nobody ever thought.....it was such a shock to everybody. I were one of them people who never thought it could happen, I'm a six-footer, twelve and a half stone. I were an active...at that time I were in an active job, all day every day. It were a shock.

A: A shock? Why was it such a shock?

DEREK: Why, all my family, they've had it, it's like hereditary type thing and that's always been. But with being on this job I always thought, well, I'm alright, you know, being fit, never fat I've always....I used to be in a steel firm and all that...I was a bit heavier then..... all my family died through it. So when it did happen...well, this is it, but when you think about it, I'm the only one what's had one but still here type thing.

A: Did it make you feel frightened, or worried, or....?

DEREK: At first, but then, I'd say no I just, you know....plod on, you know, carry on. I just don't know why it happened really. You know, I mean I'm walking ten mile a day, everything was physical on our job.

A: Yes, so you're very fit....

DEREK: So, just no idea. Apart from....

A: Go on

DEREK: I said, last six months, I've been on mowing machines, cutting....I've been on one of them for 15 years, then all of a sudden everything got automated like and we've gone on tractors, given vans to drive around in. That's how it is for last six months, but I makes me wonder if that's.....you know I wasn't....

A: What, that happened six months before your heart attack, did it?

DEREK: Yes, yes, you know, I weren't walking around as much or, ...still going out every day and having to dig, rake .....

SECTION 2

A: So a year later are there any changes in your lifestyle, or the way you think about your health?

DEREK: I'm a bit weary. Yes, no...I still get odd pains and it upsets me when I'm walking up hill, I get a pain. I don't take one of these sprays I carry on thinking it'll go away but it doesn't, so I finish up having to stop, take it, stand there for a bit and I feel daft just stood, you know, while the pain goes off. Then I'm all right, like.

A: What about at work? Do you do what you used to do?

DEREK: As much as, yes. But it's just that I do it....as soon as the pain comes on I stop, you know, or I say, right, that's enough.....At one time I would have carried on and wherever pain were you'd carry on and hope... ....like, but, now I stop now and I don't mess about.

A: So you are back to quite a lot of physical.....

DEREK: Well it still hurts, you know. There's no way I can go like I used to...like I used to go out...I'll dig this hole, I'll chop this tree down, I'll cut all this privet. You do it, but it takes a bit longer.

A: And you can go walking like you used to?

DEREK: No, walking doesn't worry me no. As I say, I have to take spray, pain'll come on, take the spray. It's just different things you think to yourself, why is it come on now, like, why didn't it come on yesterday when I walked about five mile? You know, you think things like that, I do anyway. I just can't work it out why I'll walk to town, about two mile and no trouble, yet another day I'll get to top of this hill, must be about 100 yards and I'll have to stop, I just can't work it out sometimes.

A: Have you cut down on things outside work?

DEREK: Some nights I....I' mean I'm working all day, come home have a cup of tea, go and have a shower, come back down , have my tea and I don't feel like moving, you know. Whereas at one time I would have gone out in garden, cut grass, now its....I have to think about it for a couple of days. I think its just idleness, I'm not sure.

SECTION 3

A: Do you feel, kind of back to normal health wise, compared with a year ago?

DEREK: Not really, no. Do you mean before the heart attack?

A: Before the heart attack

DEREK: No.

A: In what ways are you not back to normal?

DEREK: It's only these pains that's put me off, you know. They seem to be more regular than what they were before.
When I first come out of hospital, to be honest I didn't feel much, any different really, you know it were in here that it could happen again, like,.....but they found it, I'm lucky they're treating me like, so I were alright weren't I?
Then I, they got a bit more regular these pains, cause I were going .... wi' me dad, I mean, (father died of a heart attack) they gave me two or three of these sprays and I never used them. I don't think I used one for months. Then all of a sudden I'm using them three or four times a day. I don't take it every time I get pain I take it when I'm at work usually, when I'm struggling. Then it gives me a headache and....

A: Can you say what being healthy means, for you?

DEREK: Being able to walk up hills without getting breathless or pain.

W: He used to run up hills before

DEREK: Yes. Now I'm having to say to her, slow down.

W: He didn't though because a few months before he had this heart attack he started slowing down. I noticed a difference in him. He used to come up this hill, he'd be really, you know everybody's hot when you're coming up, but he'd be really fighting for breath and he were like that for quite a while before he had heart attack and then he put a fence up in the garden and that, he'd done it without....in fact, I think it were that that brought it on. Brought it to a head.

A: Yes, so you were having some symptoms before?

DEREK: No.

W: No. When you were putting that fence up you were forever...this....

DEREK: Indigestion

W: Yes. He were putting it down to indigestion. You know, when you've got a feeling, because I wanted to pay somebody to do it and - Oh, no I do it all day long at work...you know what I mean. But I think this had been coming on for a while.

DEREK: That's what I've just said, that it seems to, when I've been driving I've gone from walking every day all day, to driving, sat down seven hours, weren't I. It must be....after being, doing that and then a few weeks working....alright, you're still digging and that, but you're not actually getting breathless. As I've been walking, now I'm driving a tractor or driving a lorry, six months of doing that and then walking home, it used to take it out of you. Its like with football isn't it, if you've not played football for a few weeks you can't expect to go out and play football for an hour.

W: We was away a fortnight ago at Newquay. We just went for a week's break and we walked, must have walked five miles one day on top of cliff and wind were howling and that takes your breath and he was right as rain.

DEREK: Another day I was struggling on the flat wasn't I?

W: Yes, we'd only gone a few yards and we had to stop.

DEREK: Its that what annoys, it does get to me does that, I've just no idea why. But I suppose you get used to it.

A: Do you see yourself getting better....?

DEREK: I hope so. I don't know what you call better. I mean I don't suppose anybody gets....fully .....

A: You expect to be able to do things...

DEREK: If I can just plod on like I'm doing, you know, if I can...I'd be happy enough.
If I could keep like this for twenty years I'll be really happy. As I say, its just odd bits, odd times you get a bit down and depressed sometimes.

W: And soon get tired don't you?

DEREK: Well, sometimes you forget, I'm saying that I'm out of breath, but sometimes you're walking as fast as what I used to be, then you think to yourself I suppose I ought to slow down.

W: He doesn't walk as fast as he did. Because I always used to have to tell him to slow down and used to have to run sometimes to keep up with him and now he tells me to slow down. Don't you? But...I mean we go at a fair pace, he's not dawdling, but I know I used to have to tell him to slow down, but now its boot on other foot.

DEREK: Well I get a bit behind sometimes when I'm at work and I can't do something, you know, or it really slows me down or if its come on really bad. It frightens you a bit and you think, I'm not going to do that, someone else'll.....so it gets you a bit down then. But then I'll think.....well if I were in an office, you know, just sat there writing or something like that. I don't think you'd even notice aught would you?

A: So its because you're doing a physical job that you notice it?

DEREK: Well, that's what I've put it down to. You know, I think, if I were sat at a desk, if I were sat here all night, or sat at a desk I don't think you'd feel anything would you because you're not really exerting yourself, so I come out of it then, thinking well, at least I'm getting a bit of exercise at work. I keep like I say, wondering whether to walk to work and walk back, but I don't know. I like me bed.

Appendix 2 – Sample Transcript (Sue)

Interview with Sue, aged 52, secondary school teacher. Heart attack 14 months previously.

SECTION 1

A: whilst you were in hospital, when you knew you've had a heart attack, how did you feel about it?

SUE: I was angry, I was angry that this could happen to me, somebody who'd not been ill. I'd done as much as I could have done to lead a healthy sort of lifestyle, so I was angry, I was frightened, I was worried, I was frightened about another one occurring, I was worried about the effects, long-term effects on the family and on myself. There were those sort of things going through my mind.

A: But now, a year later, looking back, how has your life been affected by that dramatic thing?

SUE: I've cut down on my work load. I don't do half as much as I used to.

A: Are you doing the same job?

SUE: I'm doing the same job. I'm trying to isolate my home life from my work life. Before I used to bring work home, now I go in early in the morning, I stay late at night. I say to myself, 'Well, I've not finished it, so what?' whereas at one time I would - I'd got a set of books to mark, say. They'd got to be marked …… now I'll walk away, think, 'It doesn't matter, I'll do them tomorrow.'

A: What else has changed?

SUE: I try to take more exercise, I don't worry about things as much now as I used to, er, I'm still in some ways scared of it happening again. If I get a bit a bit of a twinge I think, 'Oooh,' you know what I mean?
I think I'm a much calmer person now. I don't think I get as up tight about things as I used to. Mind you, bear in mind, just before this happened we'd had an OFSTED inspection, and I'd been for 2 years before had been asked to take over this job I'm doing now as Head of Science to allow one of my colleagues to retire. And I was told it was only for a year. I then discovered I'd got the job permanently, and the department needed a lot of work doing to it, and to prepare for inspection, I won't worry about that again.
There are more important things in life than getting a good report at the end of an inspection. Those sort of things.

A: But you have returned to the same job, you haven't changed, not reduced hours or anything?

SUE: No, no, no, I'm probably doing what the vast majority of people do now. I was, I'll admit I was a workaholic and a worrier, er, but I've got a department that is extremely supportive, and will say to me, 'What time are you going home tonight? You're not taking any work with you, are you?' and ask me how I am and let me know they're concerned about me. They were absolutely magnificent all the time I was off. I had visits nearly every day.
In fact it was like open house, you know, people were coming at lunchtime, they were coming after work and so on, because the school's only up the road. And er a lot of support from them, from my immediate colleagues, and the pastoral team said, ' Well, we're not going to give you a form, we'll attach you to a year,' so I haven't got form responsibilities.

A: So you've been able to cut down on some responsibilities.

SUE: Yes. And I used to be union rep, I've given that up. I used to be on the PTA Committee, I've given that up, er what else did I do? There were a few other things. In fact, my work was divided amongst 6 people while I was off. So I think that sort of told them just how much of a load I'd been carrying.

A: Um. Was it hard to go back then?

SUE: Yes. One of my colleagues said to me, 'You know, when you came back to school, you were scared.' So they picked up all those things and acted on them. And my husband had been very supportive, and my daughter very supportive as well. Although she was very very angry at what had happened when she was in the middle of doing 'A' levels.

A: Do you think it's changed your outlook about the future?

SUE: Yes, I try to think now, 'Well, do what we want to do. Don't put it off.' We've put off so much, we've put off going on holiday, we've put off having what you might call life's luxuries that we could have afforded, but well no we'd better save up for our old age. You think to yourself, 'There might not be an old age.' I've got a bit more, I won't say totally, a bit more of the sort of approach to life - well life could end tomorrow so make the most of it now. And I'm trying to do that - but breaking the habits of a lifetime is a bit difficult.

A: So your outlook is different?

SUE: Well, I feel I'm leading more of a normal sort of life now, not a life that's dictated by my work. Um I did a lot of things that I would never have had time to do before, I felt much more rested. I'd never ever had a complete rest. I'd never had a break, I mean the longest I'd ever been away from work was er from the end of January to the middle of June after my daughter was born.

SECTION 2
A: Now, a year afterwards, do you feel your health is back to normal?

SUE: Yes, in fact I'm probably more healthy than I was, than I was over the 2 - 3 years leading up to it because I was I'd not had any exercise, I'd not been active.

A: When you say I feel healthier than I was, how do you define healthy, for you?

SUE: Well, I'm having the exercise so that when I go up the hills I'm not as out of breath as I was. I feel I've got more stamina. I suppose that's fitness really rather than health.
And the fact that I'm taking medication, because I discovered my cholesterol level was high, so that's down. I'm taking the aspirins so my clotting time is down and er I'm taking the beta blockers, which I had done before, I'd taken beta blockers after my daughter was born because I started having high blood pressure after my daughter was born, that didn't come down. And I went to see the doctor.
I have to go 3, 4 times a year, and the last time I went she said to me, 'You know, I don't think of you as someone who suffers from heart trouble. I said, 'Well, I don't either, but it's nice to hear you say that.' That was sort of another 'well, yes, I am a healthy individual'. So it's, I think it's psychological as well as physical.

A: Psychological health? You think that's better?

SUE: Yes. I went to see the occupational health nurse and had a couple of sessions with her and I found what she had to say very beneficial as well. The thing that sticks out in my mind was 'You go to work, you do a good day's job, you give value for money, you come away and have enough energy and time to lead a life.' So that's another, looking at it from another healthy point of view that I'm now getting much more of a balance between work and rest and relaxation.

A: Do you worry about the future at all?

SUE: Only in as much as I would like somebody, and I daren't ask for it, I would like somebody to have a look at all the vessels in my heart and say, 'Well, yes, they are all all right, this was just a minor blip'. But I don't think they'll do that.

A: An angiogram?

SUE: Yes. No they didn't feel it was necessary and when I sort of, to a certain extent, trust the medical profession because I have a friend who is very into cardiovascular stuff and he said, 'Have you had an angiogram?' I said no and I didn't take it any further. Part of me wants to know and the other doesn't although if there was anything I'd be quite prepared to take prophylactic measures rather than waiting till something happens.
I feel that apart from somebody looking at the blood vessels, I'm doing -- I'm not getting as much exercise as I ought to because it has tailed off I must admit. I used to walk every single day, fast for half an hour. Now I might manage it 3 times a week. But still I'm doing the aerobics.

A: So you're feeling fitter.

SUE: Yes. I mean I do, I do everything that I have done before. But I was told by the people at the hospital that they would expect me to be back to normal, and I'm starting to learn what normal is to me - tearing down a corridor, leaping about in the lab trying explain things, you know. I work in a very physical way. If I'm going to explain to the kids how big the surface area of the intestine is, I'll leap down the lab, you know. I sort of leap down the lab and I think - 'Am I all right doing this sort of thing? Yes, yes you are because you do the aerobics.' You can do all that and keep up with people a lot younger than myself.

A: So it's been quite a positive experience?

SUE: Yes, I think so, yes. I mean there is the negative part, in that I know I've got some damage. I haven't enquired how much, because yes I can cope with the exercises so I must have a reasonably efficient pumping system. There is just that thing that always niggles at the back of your mind now and again - will it happen again? And yet I know so many people who have had a heart attack and 20, 30 years on they're still perfectly OK.