

**New Knowledge and New Constraints:
The Case of NHS Direct**

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Abstract

Call centres have mushroomed as a new dominant paradigm for service delivery. This paper presents data from fieldwork into tele-nursing within the UK health service, NHS Direct, as 'nursing down the phone' can be seen as a new expression of this wider development. We argue that nursing as a category of work has not been *transformed* through the advent of tele-nursing, unlike the situation in commercial call centres. Rather tele-nursing has appeared and developed as one further specialism within the nursing medical repertoire. Furthermore, the organisation of NHS Direct, as a nurse-led and dominated service, may have permitted nurses to expand their knowledge and professional power. But we are not suggesting either an up-skilling or knowledge worker thesis as two developments put pressure on nurse's work. The first is the *call centre* pressures operating within NHS Direct, despite its' non-commercial and information/referral character as a health advisory service and the presence of a discourse of transformation with management. The second is the operation of a Clinical Assessment System (CAS) that nurses are obliged to use when responding to caller/patient enquiries. Our conclusions point towards the interplay between occupational autonomy and organisational control within a new service that has not yet finalised its design for the job of a tele-nurse.

Introduction

Call centre research has rightly focussed on the majority of call centre work in which new routine white-collar jobs are performed within commercial settings (Bain and Taylor, 1999, 2000; Taylor and Bain, 1999, 2001; Holtgrewe, et al 2002; Deery and Kline, 2004). The terms of debate within this literature are the familiar ones of control, autonomy, resistance and work intensification as signified by this 'industrialisation' of white-collar work as the unit size of workplaces increase and technology and modern bureaucracy intensify (Callaghan and Thompson, 2001; 2002). A central feature of call centres is their *novelty* and *discontinuity* as organisational spaces with a facility to spatially disaggregate customers and service delivery. As a transformative organisational typology, it signals disruption to occupational formation with task and career discontinuity between pre-existing forms of white-collar work (in banking, telecommunications retailing, etc) and the activity of call centre workers (Deery and Kinnie, 2004). The work setting, the nature of the work and the workers are different in the High Street bank and the tele-bank. Work has been stretched spatially and temporally, as work moves to 24-7 access and labour reserves are sourced by price on an increasingly global scale as relationships between customers and service employees are made virtual. Critical to this relationship is the computer-mediated interaction between caller and worker. Through this process, workers are tied to computer generated scripts and work-knowledge could be

said to be within the machine and not within workers as an occupational group. In classical labour process terms, the conception of work (design, planning, scheduling, intellectual content) has been concentrated within technology controlled by management and their allies, while workers become 'operators' of tasks where their knowledge is fragmented, specialised and curtailed, and any formal sense of an occupational community engaging with holistic work processes eliminated (Braverman, 1974).

Moreover, job ladders, career structures, training and development, as well as the nature of the labour process within call centres has become fractured and transformed from traditional direct service provision, such as through banks. While new skills especially emotional labour, communication and inter-personal social skills have been *intensified* (Callaghan and Thompson, 2001) - not simply developed as they were present in the former jobs - technical or craft based knowledge of an occupational or industrial field (such as banking) has been polarised between a mass of very narrow tasks acquired on-the-job without formal and continuing training, and a minority of more specialised jobs. Batt and Moynihan (2002) have called this the 'mass' model of the call centre, drawing a parallel with mass production in manufacturing. The spread of the call centre organisational category and the huge academic literature on its consequences, is witness to the transformational effects the new form of labour process organisation has had on white collar workers (see Mandelbaum, 2004 for the most comprehensive cataloguing of the field)

However, not all workers in call centres are in this 'mass' situation or are working within a transformed labour process. For some workers, providing advice through the phone is similar in kind to providing the service face-to-face. In this paper we look at one such group, nurses, who have recently moved into call or contact centres to offer health advice and referral as part of the UK government's commitment to modernise the delivery of social services. Empirically, we can see a number of differences between call centres for nurses and those for the commercial sector, although we are not suggesting that there is a functional (public-private) split between call centres as suggested by some writers (Glucksman, 2004), as this misses rationalisation forces within the public sector which are intensifying work (Bain et al, 2005; Fisher, 2004).

Expert labour and call centres

That there is a more complex interplay between expert labour and call centre rationalisation forces is evident in the case of nurses for several reasons. Firstly individual nurses move *between* face-to-

face and tele-nursing, and tele-nurses are not a qualitatively different occupational category in the way that Customer Service Representatives (CSRs) are a different category of labour from bank tellers and other white-collar occupations transformed by the expansion of call centre work. It is an obvious fact that ‘tele-nursing’ is not a *replacement* for face to face health advice; it is rather an adjunct service. It is more typically provided for specialist services or on a local basis, and NHS Direct remains comparatively unique because it is a national service (O’Cathain et al 2004: 281). However NHS Direct nurses moved *between* conventional nursing settings and tele-nursing, and as such they were not dedicated *specialised* workers in the same way as CSRs in a commercial setting. In this way they retain contact with different nursing spaces, and retain their broader occupational expertise. The total number of nurses in call centres in England is a fraction of the total nurse population. Moreover, ‘tele-nurses’ are not a separate grouping of nurses only doing tele-health work. Rather, from our research and that of others (Hanlon et al, 2005), tele-nurses increasingly work part-time, with work split between call centres and face-to-face settings with patients (such as hospitals and health centres). Where they work full time, it might be for a short period, in which they use NHS Direct as a stepping stone into management or into different nursing specialisms (Gabe et al 2005).

Secondly, the size of nurse call centres is small by call centre industry standards. While there has been no comparative multi country research of differences in nurse experience of call centre settings, only two country research (Collin-Jacques, 2004; Collin-Jacques and Smith, 2005), what individual country cases reveal is that the units size of call centres varies, with a range between 16-80 in the 22 English sites, and a mean average of 46 nurse advisors. While in Scotland NHS24, has larger 3 sites, with 280 the biggest. Size in commercial sector also varies, as Poster’s (2005) sophisticated analysis of 3 Indian call centres shows, but average unit size is bigger than for tele-health – although this may be transitional in the case of NHS Direct, as Scotland’s NHS24 is looked to as the future by NHS Direct national planners (interview national manager NHS Direct). The Scottish case has the largest numbers, reflecting the later development of the service, the perceived efficiencies of size, and the longer experience of call centre working in Scotland (Smith and Wise, 2006)

Thirdly, nurse call centres, such as NHS Direct, are ‘nurse-led’ services, and the conventional medical division of labour between nurses and doctors is different, as nurses are the dominant group in the call centre, and interact hierarchically with nurse *managers*, and not doctors, and therefore operate in a new authority space. While calls between nurses and caller-patients are routinely monitored by doctors (clinical directors) to ensure that nurses are not dispensing clinical advice, but

are rather following the protocols of the Clinical Assessment System (CAS). In practice monitoring of calls by clinical directors has not been found to be a major issue within NHS Direct. This is partly a work load issue, given that there is only one doctor per site. But more importantly monitoring, was found to be mainly used as a training not surveillance tool, and the use of CAS has been found to be a much bigger area of concern for the medical division of labour. Nurses are the dominant agent, with a short occupational hierarchy in the UK tele-nurse centres, consisting of Nurse Managers, Nurse Advisors, Health and Information Advisors and Call Handlers. Although a clinician is present in England and Scotland, for day-to-day control and organisation of the labour process, they have little role.

However, there are also features of tele-nursing that makes it similar to other forms of call centre work. Firstly, nurses, like CSRs, follow a *script*, a Clinical Decision Support Software (CDSS) that guides nurse's questioning of callers and assesses the urgency of need and most appropriate course of action. Actions or outcomes are prescribed and limited, and nurses can suggest home care; emergency ambulance call out; GP now; GP routine or nurse advice. While nurses can deviate from this script and decision outcomes suggested (as we explore in this paper) there is the sense that they are encountering patients as 'caller/customers' through multiple, one-off interactions which focus on one problem (symptom), rather than through longer term relations with fewer patients taken through a medical process of illness, recovery and departure. In other words, tele-nursing work, like call centre work, is fragmented in a way that nursing in a ward is not (Smith and Wise, 2006).

Secondly, calls are be continuously streamed to Nurse Advisors who experience a sense of being 'paced by the machine' akin to a worker on an assembly line. Work scheduling of calls is not controlled by nurses and nurses have no choice of the calls they get – the *queue* acting as a production pressure and work intensifier (Collin-Jacques, 2003; 2004).

Thirdly although nurses are all Registered, they are not specialised to particular calls. So for example, although 40 per cent of all calls are paediatric in nature, about children, all nurses, not specialist ones, such as Registered Sick Children's Nurses, give advice on these calls. In this sense tele-nurses come from different backgrounds, and are *generalists*, with the Clinical Decision Support Software (CDSS) – known as CAS – supporting them in reaching decisions. Unlike the case elsewhere in the health service, specialised training does not correspond with specialised work practice, and in this sense, expertise is not being reinforced within a particular occupational niche along professional lines, and hence the link between knowledge, power and practice associated with

specialisation is broken. Non-specialisation of calls is possible because CAS compensates for nurses lack of knowledge outside of their specialists area and general experience, and structures the interaction between caller and nurse in ways which are not objectively dissimilar to other call centre work (O’Cathain et al 2004). However, being registered experts does make things different as this paper will show.

Fourthly, and related to the above, the non-correspondence between specialist knowledge and calls, and hence centrality of the CDSS to the nurse-caller exchange, invites the prospect of further rationalisation of knowledge through computerisation and automation controlled by non-nurses (management and IT specialists), and the possibilities of re-dividing nursing work and occupational knowledge through substitution and fragmentation. Had nurses controlled calls through specialisation, the prospects of such rationalisation would be more limited, but being generalists increases dependency on CAS and hence invites further breaks in the link between knowledge and action through technological not occupational control.

Fifthly, nurses, like CSRs work on their own in a fixed position at a desk; interacting with callers through a form of Automatic Call Distribution Switches (ACDs). In most roles, nurses have freedom of movement, and when based in one location, such as a doctors’ surgery or a ward, they are not physically locked in one controlled position, but will move around in the course of their working day. In NHS Direct, they are fixed behind a desk for the first time. Potentially, this allows management to regulate the realisation of their labour power in a more predictable way, as the worker is physically and technically monitored more closely – technical control being a central element of the call centre regardless of the level of skill of the call centre worker (Callaghan and Thompson, 2001). The point being that nursing labour is accessible as a fixed resource available for managerial imagination for new uses for down time, to fill out the minutes of the working day. This could be with ‘follow-up calls’, reminding patients of check-up appointments in hospitals, providing health information or other, more imaginative, uses.

We can see therefore, both differences and similarities between health and other call centre environments. However, what we suggest in this paper is that because nurses bring their expert knowledge into the call centre and interact with the CDSS using this knowledge as a reference and filter, their position is different from those CSRs who come into the call centre *without any* prior occupational knowledge pertinent to the work they perform. It is currently nurses, and no other group, that work as advisors. Medical knowledge does not solely rest with the computer/expert

system though, as the nurse is required to be registered with 3 (initially it was 5) years clinical experience as a prerequisite to being a tele-nurse and must have the expertise to *interpret* the dispositions from CAS. As we discuss below some nurses said that they could get the ‘disposition’ (outcome) they wanted by the way they used the CDSS, implying it is more of a tool they managed than a control device that was directing them. Nevertheless the CDSS was followed for most calls guides and suggests the dispositions given by nurses, and as such acts a kind of symbolic hierarchy and safety system to check nurses’ claims for clinical judgement. However, the way in which these operate in practice, and their effect on nurses’ knowledge acquisition and limitation, are unknown and require investigation, which is the subject of this paper. Although UK nurses did not design CAS they did not use it innocently or naively, but as experts, and as such there is an informed interaction between nurse’s know-how and automated knowledge that this paper will examine (Collin-Jacques and Smith, 2005).

In this paper we will therefore examine the role of the Clinical Assessment System (CAS) as a constraint and enabler of knowledge or know how of nurses in this new setting. We will then explore the space for co-operative forms of knowledge sharing and exchange within the call centre, against pressures for individualisation through nurses concentrating on their own ‘call load’ and operating in isolation from fellow workers. We will then make some conclusions about the scope offered by NHSD for nurses to advance their professional power and knowledge.

Background of the study

The development of NHS Direct reflects several forces: generic trends in call centre usage and application; a move towards customer-centred service provision in a 24-hour society; modernisation and rationalisation within the public sector pursued most rigorously by the current Labour government; local initiatives within health care services, such as nurse triage. Not all of these forces are moving in the same direction, and in many ways NHS Direct exhibits conflicting dynamics, with quantitative pressures on call times, information capture and storage of all types of illness, existing alongside empathetic patient-centred nursing provided on an individualised basis. Moreover generic practice in the commercial call centre sector is ‘leaking’ into public spaces, and meeting professional, expert labour, for whom health advice is distinctive and incommensurate with general call centre norms. NHS Direct as 24-hour tele-health help-line was a key part of the current Labour governments 1997 proposals to modernise the NHS in England (Department of Health 1997). The ambition to make NHS Direct the main ‘gateway’ into the NHS in England, responsible

for out-of hours booking, and eventually sending patient records electronically through the system, makes the service comparatively unique. As one of the members of the National Team interviewed in December 2004 indicated: 'there are different systems around... but really at this sort of scale, dealing with these volume of calls, and the portfolio business that we've got now, this is probably unique.' As the service is, according to a manager from the bigger of our two case studies, a manifestation of a more private and isolated form of society; a demand for professional or expert knowledge and advice and an attempt by the state to educate the public in the 'efficient' consumption of public services in order to make people, in true utilitarian manner, feel 'happier':

I think what's tended to happen with society as a whole is that people have become more isolated, they don't have the sort of support networks, such as extended families, that used to be in place for people. Now whether or not some of those support networks gave people the right advice, at least they were there, at least they gave them some advice, those infrastructures just aren't there now, and so I think we are moving to a situation where people feel more comfortable in being able to get some kind of professional support and to get the right answers, and I think that is the other side of things, which is that people now have an expectation, that they ought to be able to get the right answers, not just some answers, not just somebody saying something to them and then believing it just because somebody's said it, I think there's a sort of belief coming in that you need to be able to get the right answers, and that somebody ought to be providing that Service, so here we are doing that, and yes I mean it is very 'Nannyish', but at the same time I think if we can point more people in the right direction, if we can stop people wandering down for a five hour wait into an A & E Department, get them treatment in fifteen minutes at a Primary Care Centre, I mean that's got to be good news for everybody, because it makes everybody happier. *Manager NHS Direct A*

There are currently 22 NHS Direct call centres covering the whole of England, with each site having a catchment area of between 1.3 and 4 million people (NHS Direct: A New Gateway to Health Care, 2001: 5). The call centres are hosted in a variety of health care organizations, such as ambulance services, Primary Care Trusts, NHS Trusts A&E departments and GP-Co-ops. During the year 2000-2001, NHS Direct received approximately 3.5 million calls (National Audit Office, 2002:19). NHS Direct calls have been growing steadily and, according to the new strategic document of the Department of Health, *Developing NHS Direct* (2003), new investments will facilitate almost a threefold expansion in NHS Direct capacity over the next 3-4 years. Current levels of capacity are 6 millions calls per year. By the end of 2006, it is expected that NHS Direct will be able to handle 16 millions calls per year (DoH, 2003).

Methodology

We researched two NHS Direct sites serving different kinds of localities with respect to population and patterns of service provision: provincial/urban area (NHSD A) and metropolitan area (NHSD B). We also took into account the size of each call centre by considering the number of staff in post,

for both NAs and CHs. We selected a medium sized call centre, NHSD A -which counts 52 full time Nurse Advisors (NAs) and 24 full time Call-Handlers (CHs) and a small sized call centre, call NHSD B -composed of 24 full-time NAs and 14 full-time CHs. In total, we conducted 64 interviews with nurse advisors, managers, clinical directors, call handlers, health information advisors, librarians, GPs and pharmacists. The interviews took place between April 2003 and February 2004. Interviews lasted between forty-five minutes and one and a half hours and were tape-recorded and fully transcribed. The interviews with the NAs and managers focused on how nursing 'on line' differed from conventional nursing practice; how the work is organised and the level of autonomy that NAs can exercise over their work; the level of interaction between NAs, CHs and health information advisors, and to what extent inter- and intra-occupational knowledge is reinforced or transcended.

Non-participant observation was undertaken at both the case study sites for two 2 week periods approximately 6 months apart. The purpose behind doing two fieldwork investigations into the same sites was to capture changes due to the rapid evolution of this new service within the NHS. The observation involved sitting close by and listening to conversations between nurse advisors and callers, observing work dynamics within the call centre and sitting in on training sessions and nurses' assessment days. Nurses' interactions with other nurses, CHs and managers in the *bureau* (the term used to describe the work space) were also observed.

The aim of these observations was to capture the interaction between the NAs and the CDSS, how they used their professional skills and shared their specialist knowledge and how they coped with stressful situations. As NHS Direct provides a 24 hours service, observations were conducted during different periods (conventional working days and week-ends) and different times (mornings, afternoons and nights). Detailed field notes were taken during and after the observations took place. Observations have been initially recorded by means of 'jotted notes' developed into 'full field notes' as soon as possible after the researcher has left the site.

Younger, single, better qualified nurses found mainly in Site B were more likely to work part-time, and these nurse dominated Site B, the Metropolitan site; whereas more full-time and older, less formally qualified, married with children nurses were more present in provincial Site A. There appeared to be an interaction between the profile of nurses and labour market opportunities in the two sites, indicating that a 'one size fits all' strategy for recruitment would have difficulties in this service.

The Clinical Assessment System (CAS) and Labour Control

CAS, the main working device utilized by NAs, is based on a series of algorithms which nurses must follow for ensuring safe telephone advice. CAS forces nurses to ask the caller one automated question at a time by following a logical order. The questions that nurses must ask take one of two forms: either a leading question with a “Yes”, “No” or “Uncertain”, or a list of symptoms that the callers should answer. Nurses cannot bypass the list of the questions, even when the NA realises that the algorithm is leading to an inappropriate medical track. The CDSS also includes a ‘Free Text’ box where nurses can add further notes relating to the questions asked; however NAs have little freedom in the assessment process itself.

Evidence revealed that at first sight CAS protocols restricts and prescribes NAs’ autonomy rendering their work repetitive and routinised. Previous research on NHS Direct (Collin-Jacques, 2004) suggested that CAS reflects the third principle of Taylorism (Braverman, 1974) according to which management directly control the labour process and its mode of execution. Within Taylorism these directives were conveyed in a top-down manner on written instruction cards. According to this analysis, within NHS Direct the rigid and scientific algorithms embedded in CAS determine in a precise manner in which NAs should execute their tasks. Thus, CAS, through the algorithm based logic, fragmented the assessment process by prompting one question at a time, meticulously coordinated by the algorithms. Thus CAS restrains nurses’ clinical knowledge by preventing them from seeing ‘the whole picture’ of the assessment and narrows down their clinical reasoning.

For management, control was facilitated by steering communications through CAS. This allowed electronic and remote capturing of data as rich information about the length of calls, types of calls, frequency of calls during the day, week and year; and variability between NAs in terms of call times. This information created or served to produce ‘objectivity’ to management control – the centralisation of work-flow information – and the possibility (perhaps illusion) for an underlying rationality of management planning and operational control. This in turn generated new management posts of ‘operations managers’ or ‘planning managers’, (sometimes from the Call Centre industry, sometimes from within the Health Service) and rich, factual information for local and central management teams to remotely plan the labour process of Nurse Advisors and Call Handlers. CAS, as a central part of the call centre character of NHS Direct fed into ‘discourse of transformation’ that had occurred in other industries, changing labour processes through dilution of skills and labour substitution. However, as we shall see, NAs and other discourses (around safety,

health values and the specific character of the NHS) were in competition with this agenda. In an interview with a member of the Central NHS Direct team, the unique position of a ‘data rich’ NHS Direct was stressed:

NHSD is unlike any other part of the health service that I’ve ever worked in, in that we are incredibly data rich. I can tell you almost anything about this organisation, there is so much data out there and the problem is that unlike working in a ward, here I can tell you to the second how long it takes to do various functions and it’s grown into an industry and to some extent that’s a response to the need to get into capacity improvement and productivity, we need to understand what’s going on. So there has been a growth in the use of data. (Manager Central NHS Direct team)

Therefore, in some ways the apparatus of the call centre environment comes into NHSD. However, this does not mean that performance and production values necessarily dominate management discourse to the exclusion of other voices. As we have argued elsewhere, safety and service are very strong values, and can be used by Nurse Advisors at those times when management or the pressures of the ‘queue’ may push the values of output and quantity (Mueller et al 2003). The same manager made this point:

We do seem to talk a lot about productivity but what we are actually really about is delivering a patient service, these are patients, it’s not like the rest of the call centre industry trying to get as many calls out of it as possible because that’s where they make profit. This is actually about patients and that’s a message we are having to push really hard because I think it’s been forgotten. (Manager Central NHS Direct team)

From the Nurse Advisor’s perspective the contrast between the call centre and the ward was seen in business and productivity terms:

I would say it’s very different when they start talking to you about call times, numbers of calls and things, because you know coming from working on a Ward to NHS Direct is very different. *NHS Direct seems to be run a bit like a business.* They’ve started sticking up graphs now with our call times and the amount of calls. And it’s just like you can’t, you can’t, I know there are some calls you can get through really quickly that are straightforward, but you can’t, you can’t, with Mental Health calls, or elderly people, you know you can’t put a, you know “I must get this person off the phone in seven minutes, or nine minutes, or whatever”. (Nurse Advisor NHSD A)

While the Lead Nurse below stresses the differences in the values between the ‘commercial’ call centre environment and NHSD:

There are certain problems that we’d have with adopting [the practice of] Commercial Call Centres. You know there would be a great deal of difference between what a person that takes

calls in a Commercial Call Centre earns and what our Nurse earns, but there are some similarities. ... With Nurses, because they're such a valuable resource to the NHS, we're trying to keep them in a career, so those kinds of approaches that might be usable in a Commercial Call Centre, there would be constraints on us adopting some of those Strategies, but I think it's a happy medium, I think we can learn from the way that the good Commercial Call Centres do manage to achieve their objectives. (Lead Nurse Advisor NHSD A)

Occupational knowledge and CAS

A central part of the dialogue between those stressing the uniqueness of NHS Direct and those stressing its embedding within the call centre industry was the way nurse's clinical skills and knowledge interacted with CAS, through which calls (and nurses) were directed. Initially Nurse Advisors needed a minimum of five years' post-qualification experience before starting to work for NHS Direct (National Audit Office, 2002: 15). This was later reduced to three years. During these years NAs acquire clinical knowledge and experience, which is not diminished during their phone consultations, however they revealed that on some occasions they find it difficult to utilise their previous expertise. Although NHSD management allows NAs to use their clinical knowledge during the phone consultations, the system itself limits the use of previous clinical skills. As these NAs pointed out:

I think it's good that we have the CAS as a framework, but if we are supposed to be using our Clinical skills, then we shouldn't have to follow them so rigidly. You know you've already asked the patient once whether they have any breathing problems, they say "no", there's no need to keep going through you know "so you're breathing normally, you don't have blah, blah?". So as a framework fine, we do need a framework to be safe I think, and to give us that bit to go on, but there should be a bit more scope I think to use our Clinical judgment and skills. (Nurse Advisor 6, NHSD B)

It [CAS] has its moments. ... it can be limiting sometimes, so sometimes you actually have to look at the broader picture and basically, not circumvent, but go through the Algorithm So it's not interactive from that point of view, but it's all right, it's improved since I've started, it's now at I think version nine or ten. (Nurse Advisor, NHSD B)

Similar to previous research (Collin-Jacques, 2004), NAs in our research claimed that CAS restricted their ability to use acquired clinical knowledge during their phone consultations. However, as NAs affirmed, other issues limit their ability to exercise clinical judgement. During semi-structured interviews NAs have been asked to summarise the most important skill required to work as tele-nurse. An NA replied that:

Having a very good broad based knowledge to start with, and obviously being able to use the computer and the Algorithms. They can be a bit awkward sometimes, they're not always 100%

the Algorithms, and obviously because we try to defend, we're a bit defensive. I think we're a bit defensive about the nursing, in the sense that we are afraid of litigation, and of anything going wrong. So even though we have a skill that can identify problems, most of the time we kind of feel we have to stick to the Algorithms, and it's hard for us to go outside the Algorithms and use our knowledge and our skills and things like to make decisions, because of the fear that if we go outside the Algorithm and something happens, we wouldn't be covered you see, so I find that a bit difficult sometimes, because I can tell clearly sometimes that there's no need to go in that direction, but that's the direction the Algorithm is taking me and so I go. (Nurse Advisor 7 NHSD B)

And another said:

I suppose that you're restricted in a certain way, because you're taught during Training that you have to respond in a particular way. You're supposed to work methodically through the Assessment and through the Algorithms, not skipping over anything, you're supposed to read the rationale. That can be quite difficult, because I mean obviously people work at a different pace, they read at a different pace, and sometimes the rationale is a huge page that comes up with, you know every time the computer screen changes, and you don't necessarily have time, well you don't have time to read through it all, you can only sort of skim very briefly over certain parts of it, but you're very, very conscious that you have to be reacting according to how you've been taught and what's expected of you. I think sometimes I worry a little bit about upgrading or downgrading the final disposition, because sometimes you literally get a final disposition of 'Home Care' come up and you've known, from the onset of the call that you're going to be sending them to Hospital. Or you might get, vice versa, the screen might come up with 'Immediate Ambulance 999', and you're thinking "no, 'Home Care's' okay on this". So it's a little worrying, particularly if you're downgrading from '999' to 'Home Care', you're wondering if you're going to be pulled 'over the coals', for that particular reason. (Nurse Advisor, NHSD A)

These examples demonstrate that the CDSS does not annihilate critical thinking, as both managers and NAs are conscious that the software is over-cautious. However, under certain circumstances, especially where they are outside of their prior specialist area (O'Cathain et al 2004), NAs decide to rely on the CAS decisions instead of their own judgement in order to protect themselves from litigation.

The national view was that NAs should be using the CDSS but critically, as this manager from the national team explains:

We saw that there was a tight correlation between the relatively few adverse incidents we've had and people not using the system at all. And so we've majored on that, people now are using the system to a far greater extent. But we accept that these are nurses and are allowed and expected to use their critical skills, so we do see this range of raising the outcome or lowering the outcome and we'd expect to see somewhere around 15% - 20% changes. If it's lower than that, then people aren't thinking, they are just sticking to the system, so there has to be some variation. (Manager Central NHS Direct team)

The CDSS possessed a certain objective or formal rationality and certainty, whereas the clinical occupational judgement of the individual nurse by definition was subjective and context-specific. The need for the NA to formally justify all up-grading and down-grading (what the above informant refers to as raising and lowering the outcome) places an onus on the Nurse Advisor 'making a case', placing her judgement against the CDSS. This requires confidence, experience and an institutional climate of support, which is engendered by management policy and style, and we noted variations between our two sites in the frequency of challenges to the CDSS, as did Collin-Jacques (2003) in her fieldwork. However, technical control through driving down call times was not seen as part of the NHS Direct mission, but because the nurse were monitored through the system, but also working autonomously away from the system (checking cases, consulting data bases, discussing cases within the team etc) this meant more direct forms of supervisory control were required. For the national team this meant rationalisation of the 22 centres into larger units along the model of NHS24 in Scotland as well as improving management controls. The same manager again:

We have this whole new range of instruments to look at what's going on. And what we tried to do is try to bring together the operational and the clinical sides at an optimum level for both and not doing one at the cost of the other, so we don't drive down call length and find that everybody sends everybody off to 999 because that's very easy, you can do that quickly, the call length is five minutes, but that's an easy solution, that's not what we are looking for, it's about the balance and getting right the whole range of things. And then into the whole area of productivity as well, if you take the sort of priorities we are looking at there, we are also now starting to look at what people are actually doing when they are working in the call centre i.e. when are they available to take calls, when they are doing other things, recognising that they do other things both nurses and call handlers when they are working, quite legitimately, looking things up, discussing cases etc. and there is also a section where we are not so sure about, but it's still significant, where we don't know what they are doing, so it's about managing that whole process as well, and that comes back to the bigger call centres and being able to manage that promptly rather than expecting people to just do it.(emphasis added) (Manager Central NHS Direct team)

At the national level there was also an on-going conversation about the division of work, and whether experienced and qualified nurses were needed or whether the call could be divided up and given to different agents, not all of whom were qualified nurses. In other words, despite a formal commitment amongst NAs, lead nurses and managers at various levels of the service to stress the importance of nurses and the autonomy of their relationship with callers, the 'discourse of transformation' was evident. A system of prioritisation of calls had meant that Call Handler no longer routed all calls to nurses, but answered some directly, sent other to Health Information Advisors, and then ranked the seriousness of the call using a simple formula, before this was allocated to NAs. This was possible in NHS Direct because CHs took the initial calls and not

Nurses as was the case in Canada (Collin-Jacques and Smith, 2005) and Australia (Larsen, 2005).

One Manager from NHSD A said this could be taken further with *call screening*:

Instead of our Call Handlers just asking a few questions, they'll actually be having to ask several minutes worth of questions, but then, instead of jumping say just to the Nurse, you could actually go a whole range of other resources, and in fact, if it was urgent, instead of even going to the Nurse, they could send people directly to Accident and Emergency, without even going to the Nurse.... Or it could be looked at in a much wider context, such as calls going directly to GP's, or GP Out of Hours Centres, for example, and other calls coming into NHS Direct, and other calls coming into a Health Information Function. (Manager NHSD A)

Prioritisation and Call Screening are call centre industry strategies for managing volumes. The same manager also approached the issue of replacing nurses with another category of labour more cautiously. However the question is indicative of call centre managerialism, looking at labour substitution and costs, whereas the national manager stressed the embedding of NHS Direct within the institutional norms and values of the NHS:

In the future, at some point, we don't know obviously how long it's going to take, but I mean there are always discussions about "is it even possible, maybe, that we don't have to have Nurses doing the Clinical bit of calls, could it be done with Paramedics?"

And what's your view on that?

My view is that, conceptually, it is possible, because a lot of the Algorithms that we're working to at the moment are very scripted, and they don't need a lot of interpretation, but we need a lot more work on that to see how much interpretation is actually going into them by the Nurses, because Nurses can override them at the moment, and clearly if you've got somebody less qualified, you couldn't do that. It has to be very much more rigid in the way those are approached, but those thoughts are going on. (Manager NHSD A)

The above manager had an IT not medical background, and call centre rhetoric and ideas are always present in NHS Direct management at all levels. But while in play this 'discourse of transformation' (converting nurses' labour power along the lines of other workers in the sector) was in competition with operational practicalities of delivering 'safe' advice within a health sector context. Moreover, even IT managers were sceptical about the putting too much faith in the CDSS rather than nurses as the Trainer for NHS Direct B, comparing CAS with the earlier CDSS system TAS notes below. In both systems there was need for nurse's clinical knowledge, as they were programmed with medical data for the 'average' symptom, when caller/patients may present symptoms that are not average. In other words, interpretive knowledge provided by the nurse as 'expert' was required:

Maybe one system or another system, doesn't allow the person to contextualise the call. Certainly, I mean all of these systems are based on mean average presentations, and callers don't present in a mean average way, so the Nurse has to contextualise the call, but to what

extent does any given system actually enhance that contextualisation? Given the way it is, there's plenty more research required into that mean. (Trainer NHS Direct B site)

Nurse Advisors interacted with CAS in different ways which related to an 'attitude to risk', experience and age, that is, personal factors, as well as the climate created by management. On this latter point there were differences in management in the two sites, for example at NHSD B, the manager was proud of the fact that 'the site received the best record for sticking to protocols [which was] according to him, a mark for excellence'. But in addition to site variation there was internal variation by individual NAs. For all nurses their clinical knowledge, in fact, allowed them to change the CDSS disposition and under-ride and over-ride the algorithms of the and still provide a safe advice:

After all's said and done, when I sit at that desk with the software, that is an Assessment aid, and I only use my Clinical knowledge, and I can override that Assessment aid at any point. If I feel that the Clinical situation that I'm discussing with a patient warrants it, I can override that. As long as I can justify my decision, I can override it. (Nurse Advisor 9, NHSD A)

The practice of manipulating the software through the process of under-riding and over-riding was elicited by management, but both managers and NAs were aware of the limits of CAS. Thus, it became important to appropriately utilise previously acquired clinical knowledge to deviate from advice that appears on the screen. CAS in fact provided NAs with abstract and prescribed clinical advice but it did not consider the *context* in which the conversation took place:

Yes I think you have to [to over-ride/under-ride], because although it's there to guide you and help you, let's just say, for instance, the computer doesn't know that the person, let's say who's ringing up with sickness and diarrhoea, that that person is an Insulin dependent Diabetic, you know there isn't anything on the screen to say that, so you have to be aware that all the time that you're asking those questions, you have to remember that this man takes Insulin, is a Diabetic, whereas a normal diarrhoea and vomiting you can give them the care, what to do, you have to be aware, but that doesn't come up on the screen, so your clinical knowledge might have to come in to play on that front. (Nurse Advisor 13, NHSD A)

NAs, as experts, were able to see the context or bigger picture, whereas the CDSS was fragmenting and, as noted earlier, abstracting by de-contextualising in treating symptoms as average. Any deviations from the software necessitated recording and appeared clearly in the monthly productivity reports, which are distributed to each NA. These statistical data also made known to management which were the most commonly over-ridden and under-ridden algorithms. If a particular algorithm is under-ridden by several NAs, it means that there might be something wrong, thus the central CAS team can go back to the CDSS and review the system. Nurses, by using their

previous clinical knowledge for manipulating the software can actually change the main source of prescribed knowledge, i.e. CAS.

Tacit and codified knowledge?

The myth of CAS is that codified knowledge in some way provides self-evident information about all clinical conditions, when in practice the interpretation of the codified information depends very much on the knowledge of the agent (Johnson and Lundvall, 2001). Who's using the system will produce different outcomes. During initial recruitment managers said to us that nurses with A & E backgrounds processed callers quickly, while those with health information backgrounds spend the longest on the phone. Different clinical backgrounds pre-disposed callers to different interactions, although through training, the evolution of the service and accumulation of experience on millions of calls and cases, created more standardisation. However NAs remained generalists, and labour market pressures would probably maintain this situation.

That the system required nurses with 3 years experience to operate CAS underwrites the storing of knowledge within an occupational community, which when interacting with CAS, could arrive at safe dispositions. The knowledgeable community, and not only the CDSS codes on clinical conditions, interact in ways that are different from a community lacking in clinical training, which would be system-dependent (reliant on codified information alone) and hence unable to interpret, contextualise or revise CAS which is what nurses do.

The common practice of under-riding and over-riding CAS entailed a process of setting the common sense, experience and knowledge of the nurse against the CDSS, and was a creative process. NAs' tacit and empirical knowledge is transformed, through their manipulation of the software, into a more explicit and encoded knowledge, via the management. In terms of conceptualisation of knowledge, Polanyi's (1958, 1967) most basic distinction between *tacit knowledge* and *explicit knowledge* has some initial appeal. Tacit knowledge is personal, context-specific and hard to formalise and communicate without discussion. Tacit knowledge is based upon the 'indwelling' of awareness and understanding by individuals- 'we know more than we can tell' (Polanyi 1967:4). Explicit or 'codified' knowledge, on the other hand, refers to knowledge that is transmittable through formal procedures such as writing or IT. However, when applying tacit and explicit knowledge to NHS Direct, the limitations of the terms become clear. CAS stores codified knowledge, but cannot be operated safely without experienced labour, who bring with them clinical

knowledge, but also have to contextualise each interaction with CAS as callers are not standardised. Clinical information is stored within CAS which is accessed by trained nurses, who also represent a knowledge community, and social agents who encounter CAS in a critical or interpretive way, as even formalised knowledge needs interpretation. Within work situations, such as NHS Direct, codification of knowledge is not simply within CAS, but the occupational community operating the CDSS - the trained nurses. The site of interaction of these two knowledge sources is through the workplace where interaction is further conditioned by the particular team of nurses on any particular shift (who may share information in different ways depending on team coherence); the time pressures of the work process (and how many calls are waiting); and the individual nurse advisor and her or his readiness to share information and or challenge the dispositions of the CDSS. In other words, dividing knowledge into dual categories of codified and tacit is not especially useful in a context where the condition for information sharing and challenging vary (Johnson and Lundvall, 2001).

Labour process theory would also suggest that due to the indeterminacy of labour – the absence of stable agreed standards of work effort between employers and workers – knowledge, skills, information and sharing exist within a terrain of conflict or contestation between workers and managers, and what is tacit and what is codified will depend upon outcomes of these struggles (Thompson, 1989; Smith and Thompson, 1998; Smith, 2006). As we have already noted, management actors held differing perceptions about the relationship between knowledge (in its broadest sense) held by the occupational group and embodied with CAS as a management controlled tool. The discourse of transformation was about removing the centrality of the nurse from the call through the use of CAS and labour substitution. However such a discourse is not unproblematic, and does not go uncontested, even within management. Cost-benefit analysis is applied to knowledge within commercial call centres; but moving off-shore or replacing nurses with lower grade labour are problematic in NHS Direct. Within tele-health, there is more a struggle over boundaries between different groups, and given the centrality of NAs to the service as it has been constituted, they are in powerful positions to challenge non-clinical intervention by operational managers with a call centre pedigree, as well as lead nurses with an inflated faith in technology over people.

The practice of manipulating the CDSS mainly relied upon previous NAs' empirical experience acquired in clinical settings. Although they refer to clinical knowledge, that is formal knowledge, they were also directed by additional contextual and empirical knowledge. For instance, during field

observations many nurses pointed out that they over-ride the algorithms about 'breathing problems' since they could perfectly hear that the patient was not out of breath. In addition, many NAs acknowledged that they under-ride the algorithm about back pain, because 'otherwise you would send everybody to 999, just because they have a bit of back pain'. As mentioned, all the practices of under-riding and over-riding needed justification. Through this process of justification NAs transform initial intuition or common sense into explicit knowledge: 'I can't send the caller to 999' becomes formal knowledge, by justifying that the symptoms were not too worrying or by claiming that CAS does not provide appropriate protocols. In particular cases, management by analysing these manipulations create new abstract knowledge, by adding new algorithms to the CDSS.

It appears that NHS Direct management gives nurses opportunities to exercise autonomy over their work. As mentioned, many nurses clearly pointed out that CAS is not as perfect as it appears, 'there are still an awful lot of conditions that aren't covered' (NA 8, NHSD, A). The ability to combine previous practical clinical knowledge with CAS becomes a prerequisite in order to provide safe advice. Thus management requires nurses' co-operation for improving CAS. Nurses' co-operation is achieved by letting them freely utilise their own clinical knowledge and their pre-existing medical 'intuition' during phone consultations.

Over-riding and under-riding are not the only way for manipulating the CDSS by using previous clinical knowledge and skills. Field observations revealed that NAs manipulated the software by re-formulating CAS questions, adding new questions, and dismissing irrelevant questions. These processes demonstrated NAs' ability to utilise and re-shape clinical knowledge for re-directing CAS. Observations in NHSD call centres showed that NAs employed words from our everyday language during their phone consultations in order to refer to clinical symptoms. For instance, NAs try to visualise a child's mucus by asking the mother: 'Is it frothy, like frothy coffee?' Such wording is not present in CAS and reflects NAs' ability of utilising their previous practical skills and experience for appropriately utilising the CDSS. Again, nurses' practical knowledge cannot be separated from abstract knowledge incorporated into CAS.

Field observations also revealed that the practice of reshaping CAS questions is mainly utilised during paediatric calls, which represent 40 per cent of calls made to the service. It was quite common to hear NAs utilising 'childish' words such as: 'Is she rubbing her tummy?' Through these processes NAs wanted to communicate that they are not 'robots' who provide advice simply by automatically repeating standardised questions (see also O'Cathain et al 2004: 283). Moreover, they

posit the issue of ‘educating’ or ‘empowering’ the callers. NAs said that only by using callers’ words could they help educate them. Through the re-elaborations of CAS questions, NAs claimed to transmit basic clinical knowledge back to the callers. The abstract CDSS becomes thus a source of ordinary clinical knowledge for the public.

In addition, for many nurses CAS even represents a source of new knowledge for themselves as well. Many NAs pointed out that by working for NHS Direct and using the software they increased their clinical knowledge: ‘a lot of things I didn’t know before, things I knew but like probably half of it and not the whole picture’ (Nurse Advisor 16, NHSD A). Or: ‘It (CAS) also makes you very aware that you had a big gap in your knowledge to do with the illnesses, because if you’ve been working in a surgical area, but somebody’s phoned in with something that was nothing to do with Surgery, with Hospital based stuff, then you realised there was a yawning gap there’ (Nurse Advisor, NHSD A). While in wards and other clinical settings, nurses acquired specific clinical competences, within NHS Direct nurses have to deal with a greater variety of clinical situations. According to some NAs, NHS Direct presents a valuable experience for gaining new clinical competences and progressing their career in other NHS clinical settings.

It’s definitely a big increase in my knowledge and that’s a big plus to me. It created opportunities in terms of primary care roles, which is something I would have never got into. It’s brought me back into general Nursing basically, because I started off in general, and went and did my Psychiatric, and I wouldn’t have been able to move back into general Nursing without coming to NHS Direct, so it’s opened up general Nursing back to me ... (Nurse Advisor 14, NHSD A)

NAs agreed that CAS was a valued source of clinical information, however, many of them also claimed that it only provided general, formalised knowledge. According to some NAs it would be difficult to come back to a traditional clinical setting because of their lack of practical experience. Nursing was more than clinical assessments, and as noted earlier, NHS Direct does fragment the nursing *process*. However, one can also claim that in the first case, nurses lose their practical skills, but they also acquire new ‘telenursing’ skills, such as computing skills, listening skills and multi-tasking. Instead of being ‘Ward nurses’ or ‘Casualty Sister’ they are ‘Tele-Nurses’ – however poorly constituted this specialism is. They do not lose their professional and clinical knowledge but they *reshape* it:

Yes I think they (clinical nurses) probably feel that we’re deskilled, because we haven’t actually touched a patient. But then again that’s their ignorance, because they don’t understand the knowledge that you build up, because of NHS Direct... you become an expert in telephone

consultation, which is a field, and not everybody can do it, which is proved by the amount of staff that we lose when they actually have to come on-line after their training. (Nurse Advisor 9, NHSD A)

Generating new knowledge through informal co-operation and existing resources

Observations in the field and conversations with nurse advisors suggested a significant level of co-operation and exchange of knowledge among nurse advisors in the *bureau*. These practices of knowledge-sharing and co-operation can take different forms and entail several objectives.

Informal information sharing

For instance, NAs are allowed to stop the phone consultation for a few minutes in order to ask their colleagues a second opinion about a particular clinical situation. In this way they critically use CAS and acquire new clinical knowledge:

Yes it tends to be on what I consider to be an informal basis rather than with me sitting there and saying, “right today I’m going to talk to everybody about Mental Health”. It’s more of an informal basis. If you’ve got somebody that you’re talking to, a caller, I don’t know somebody’s who’s pregnant, and they’re asking a question that I don’t know, I’ll see if I can find a Midwife, or a Health Visitor, in the Bureau. I mean that tends to be the way information’s shared around, on an informal - finding somebody who you know knows a bit more about it than you, and getting the information off them. (Nurse Advisor 14, NHSD A)

Quite often – I mean, as I say, my specialism would be very much babies, mothers, children, that sort of area. So a lot of times if other Nurses maybe had a young baby, or something like that, you know they’d put the caller on hold and come and maybe have a word with me. Similarly, I wouldn’t be terribly ‘au fait’ with maybe things like Orthopaedic or Fractures, or what to do with broken fingers. So anything like that, I would go to one of the Casualty Sisters, who would have information. (Nurse Advisor 9, NHSD B)

This process of sharing clinical knowledge takes place in an informal way within the *bureau* and was not prevented by the management. The level of freedom that NAs can exercise is atypical of a call centre environment. Commercial call centres are conventionally target-driven, and consequently CSRs (Customer Service Representatives) must take one call after another. Commercial call centres rely on ACD (Automatic Call Distribution) system, where incoming calls are automatically channelled to waiting ‘customers service representatives’ or ‘agents’, removing the need for switchboard operators. Recent literature on commercial call centres (Bain and Taylor, 1999) argues that information technology intensifies the labour process by forcing the agents to take call after call. NAs within NHSD do not have to deal with this time pressure. Although central

management indicates the medium time that a call should take (6-8 minutes), the length of their calls is monitored and statistical data appear in monthly reports, they are allowed to take longer for a difficult telephone consultation and to interrupt the call for asking further advice from their colleagues and shift supervisors. NAs do not receive calls automatically so that they can organise their work with more freedom.

With less time pressure, NHSD can thus become a place of learning. NAs can actually stop the phone consultations for a few minutes and get suggestions from more competent nurses regarding the algorithms that they should use or minor clinical questions. Informal co-operation is beneficial for both management and NAs. By allowing informal co-operation, experienced NAs can informally train new nurses, who are not familiar with the CDSS, this aspect was particularly important during the initial phase of NHSD experience. In addition informal co-operation allowed a further exchange of clinical knowledge, and NAs expressed their appreciation for being able to learn new knowledge and share previous practical experience with their colleagues.

Yes [NSHD provides] a general knowledge and learning off our colleagues. So I think that's where it's quite good, because we're not separated into a Maternity Department, or a Paediatric Department, we're all working together and basically everyone acknowledges everyone has different levels of experiences, knowledge and that we can use that to our advantage. I think that's what makes it work so well. (Nurse Advisor 7, NHSD B)

You consult them if you are unsure of something, and you want some extra information on something, and you probably know their specialty, because everybody lets everybody know, that's something that when I first started everybody can let everybody else know what specialty you came from, so like if there's a Midwifery query, and you're not too sure of things, you can go and speak to the Midwife. (Nurse Advisor 16, NHSD A)

The practices of co-operation and sharing of knowledge make the labour process more varied and less routinised, but at the same time it reinforces nurses' commitment and integration into CAS.

NHS Direct as a Learning Community?

Thus, if at first glance NHS Direct can be described as a place of learning and informal development, but as the service evolved these values came under pressure. Informal co-operation was permitted by management and according to several nurses, when NHS Direct started, management even facilitated this co-operation, however, during the second round of interviews NAs admitted that informal co-operation within the bureau was no longer easy, even if it was tolerated. Some NAs claimed that their new colleagues (who were being formally trained to enter a more mature, productivity conscious service) were more autonomous and self-driven. An NA

commented: 'Well, if we take time talking with our colleagues, we produce less'. It thus appears that NHS Direct, following the lines of the New Public Management is becoming more targets oriented.

In addition, a NHS Direct strategic document (Department of Health, 2003) envisioned an occupational re-division of labour, where nurses are reconfigured; health advisors possibly elevated; and CAS playing a more central role. Of interest to the occupational restructuring was the proposal to make Nurse Advisors specialists not generalists - a *specialisation strategy*, and secondly the proposal that callers should not automatically access a Nurse Advisor when they have a medical problem, but somebody with *lower* levels of nursing skills. According to several managers the creation and diffusion of informal general knowledge within the bureau is the 'big plus of NHS Direct' and specialisation would threaten this. Research on call time differences between specialist and non-specialist nurses for calls about paediatrics, revealed that the specialists in the field were quicker, but referral to triage outcome groups were with equal frequency (Monaghan et al 2003). In other words generalist nurses using CAS were delivering safe advice, but a bit slower than specialists. These call time differences are unlikely to mean call dedication, as this would pose labour market problems in finding specialist nurses, but rather lead to more training for generalists tele-nurses in specialist fields while in service. Thereby reinforcing the learning organisation nature of the service. Later documents moved against this position and in favour of the view expressed by a Senior Nurse in NHSD B:

The organisational view is that we're not going to have specialty Call Centres, and by virtue of the fact that Nurses do tend to be generalists and the training is very much a generalist training, but the Clinical Assessment software is there to ensure that no matter what experience the Nurse may have, if they're skilled in listening and assessment and critical thinking and use it alongside the Clinical Assessment software, then there is going to be no difference in the quality of the call (Senior Nurse 004 NHSD B)

Formal knowledge

Within NHSD call centres, clinical knowledge was not only spontaneously exchanged through nurses' informal co-operation, but it is also acquired through other formal methods of acquisition, such as training, personal development plans and the constant use of authorised books and internet sites. During the induction training, nurses learn new skills and clinical information. Part of the training focuses on learning CAS - however NAs were also asked to attend University lectures (NHSD A) or seminars about some specific clinical aspects, which are considered relevant for becoming a tele-nurse:

...we have a whole afternoon of Paediatric assessment with a Lecturer and Practitioner who comes in and talks about Paediatric assessment. Because again a lot of the generalist Nurses won't have been dealing with Paediatrics, so that one they may be actually learning, but in broader terms, things like women's health, men's health, A & E scenarios, and various other kinds of Clinical knowledge and skills is really much more broad based, because obviously we can't cover everything. (Training manager, NHSD B)

Previously I'd been a very specialised Nurse in Paediatrics, Intensive Care and Cardiology. In NHS Direct you have to become a General Practitioner. So there was a very steep learning curve in learning about Gynaecology and General Surgery that I hadn't done previously (Nurse Advisor 7, NHSD A)

Although, this new clinical information was mainly prescribed, NAs seemed to appreciate the chance and the time given to them for learning new things. As the NAs clearly express, training days became good opportunities to learn new clinical specialities:

I've got two study days in fact coming up in the near future on areas that I wouldn't have been specialist in, because my area as Health Visitor and Midwife would have been babies, mothers, young children, that sort of area. There's a training coming up on Ear, Nose and Throat problems and also on minor injuries, which will be very helpful for me, because I learn a lot from that, from the people who are actually doing the training. And they are study evenings; they'll have them in the evenings, to accommodate people who can't come during the day. (Nurse Advisor, 6, NHSD, A)

There's training days I think every month at the moment, and study days. ... And we have shut-down days as well where training's offered, and also via Appraisal and PDP (Personal Development Plan) you can identify things that you **want** to do, and from recognised Courses, and then negotiate the time off-line of things to do, so that's done very much on an individual basis. (Nurse Advisor 5, NHSD A)

Usually if you identify that you want to do something in your Personal Development Plan, you know like the Review, if you identify that you've got learning needs and you want to do something, then they will normally try, and this is for all the extra things, but then they also have Training Sessions in the Call Centre, which, if you're there, then you can go. (Nurse Advisor 1, NHSD B)

There's ongoing Training, but basically, again at the level that we operate we have to, not have to, but it's expected that we should identify our own Training Needs. ... A lot of it is self-driven though, identifying your Training Needs. (Nurse Advisors 7, NHSD B)

Training days and informal co-operation are not the only occasions where nurses could take time to learn, as they other sources of learning were through authorized books and web sites. NAs were allowed to stop their telephone consultation for consulting these resources. The practice of consulting a manual or a web site during phone conversation was quite common. As the quote below points out, NAs tend to mix the several chances given to them for learning within their daily work:

I think the thing about this job is I've been doing it now for three years, and I can honestly say that every day I'm here I learn something new. Because people are always phoning in with different problems and it's very much a case of if one doesn't know the answer, you either check with somebody else, or go to the Library. I think that the training really consolidated a lot of the information and knowledge that I had, but this is an ever-changing job really and you definitely learn something new every day. (Nurse Advisor 8, NHSD A)

As NAs are expert workers, managers cannot constrain them to follow tight productivity standards as Customers Services Representatives in conventional commercial call centres. In addition, tele-nursing can be considered a new type of specialised nursing, growing in a new developing work environment. Management strategy over the character of this labour process has not been settled and therefore controlling this new workforce remains contradictory.

Conclusion

Tele-nurses work in a call centre setting but as expert labour they cannot be associated with conventional CSRs. NAs have not been transformed into a category of dispensable and interchangeable labour as has occurred in tele-banking and other service work where call centre technology has been applied. NAs are registered nurses who move from face-to-face nursing to tele-nursing with previous clinical experience and knowledge, which represents a protection from the common de-skilling and work-intensification process experienced by CSRs. Moreover, many work part-time, and move between face-to-face and tele-nursing.

However, NAs are in a call centre environment within NHS Direct and this differs from conventional clinical setting. Interaction with callers is narrower, virtual and more frequent. In contrast to face-to-face nursing, NAs are subjected to new forms of technical control and monitoring represented by CAS. They are also within a medical/clinical setting, acting as referral and navigation agents, not one engaged in holistic nursing process. CAS limits NAs' autonomy, but observations and interviews also revealed that NAs can manipulate the system and can also acquire new knowledge from the CDSS. Supporting other research (Monaghan, et al 2003) we found NAs internalising the knowledge given through CDSS, and seeing their knowledge and experience and that of CAS as complementary, which underestimated the power of the software. However, NAs to a certain extent were free to utilize their occupational practical knowledge to reshape the abstract knowledge of the CDSS. In contrast to conventional call centre environment, NAs are also allowed to 'take time' during telephone consultations for discussing with colleagues and consulting manuals and web sites. Moreover, on-going training opportunities are regularly offered to NAs.

We have suggested that CAS needs to be seen as existing within a dynamic and evolving context where workers and managers develop a practice through daily interactions with the CDSS, and the choices it necessitates. In other words, NHSD is at the early stages of work organisation development, and has not codified and tightly prescribed rules of practice, but rather permits a range of actions within a permissive context of expansion, and hence allows space for a relatively autonomous group of workers such as nurses, to do a variety of work, some of which may put them in the driving seat, while others place technical constraints on their actions. CAS in one sense represents objective knowledge, but we suggested that the Polanyian division of knowledge into explicit and tacit forms is not helpful, and that more critical is knowing the agency that is doing the interpretation, and currently NHS Direct management are unable to move away from nursing control due to safety fears and the need for expert labour to contextualise information provided in the call. CAS may be made robust or fool-proof, and one logic of IT rationalization points in the direction of labour substitution, automation and deskilling. But NAs, managers (at local and national levels) are also active in challenging this discourse of transformation because of the autonomy of each clinical interaction; the reflexive or interpretive nature of healthcare (Hanlon et al 2005: 167) and the hazard of wrong advice and scepticism about technological fixes. In this sense CAS is simultaneously as a tool, control device and knowledge instrument, because a dominant practice has not been imposed or formulated, and is unlikely due to the interpretive nature of healthcare (Monaghan et al, 2003; O’Cathain et al 2004). What we have instead is a complex and hybrid picture, which clearly portrays the evolving nature of work organisation in the NHS Direct.

So how can we describe the labour process within NHS Direct? Well it is still an open question. What our research revealed is a fragmented, complex and hybrid picture, which clearly portrays the developing nature of NHS Direct service. The labour process has not been able to transform NAs into inter-changeable and flexible tele-nurses. Initially NHS Direct represents the ideal *niche* for the introduction of ‘managerialism’ as a key doctrine of New Public Management (Klein, 1989, DHSS, 1983; DHSS, 1987; DoH, 1989; Lapsey, 1994; Bolton, 2000). It is a target oriented call-centre; consequently it should embrace the neo-liberal ideology, which emphasises financial discipline, customer’s orientation and productivity. However, in reality managers have to deal with expert workers, thus at this stage (we do not know yet about the future) they consider it counter productive, in terms of work commitment and safety reasons, to restrict NAs ability to use their own knowledge. Tele-nurses are still nurses and tend to distance themselves from the counter negative image of conventional call centre work. However the question remains whether they are really

satisfied about their new profession and the chances given to them to acquire new clinical knowledge and skills or the rather that the positive comments revealed during the in interviews are just a way to distance themselves from low skilled CSRs?

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