Exploring good care with surveillance technology in residential care for vulnerable people

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Chapter 5

Exploring benefits and drawbacks of surveillance technology: An ethnographic field-study of the practice of nurses and support staff in residential care for people with dementia or intellectual disabilities

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ABSTRACT

Background The use of surveillance technology in residential care facilities for people with dementia or intellectual disabilities is often promoted both as a solution to understaffing and as a means to increasing clients' autonomy. But there are fears that such use might attenuate the care relationship.

Aim To investigate how surveillance technology is actually being used by nurses and support staff in residential care facilities for people with dementia or intellectual disabilities, in order to explore the possible benefits and drawbacks in practice.

Method An ethnographic field study was carried out in two residential care facilities: a nursing home for people with dementia and a residential care facility for people with intellectual disabilities.

Results Five overarching themes on the use of surveillance technology emerged from the data: continuing to do rounds, alarm fatigue, keeping clients in close proximity, locking the doors, and forgetting to take certain devices off. Despite the presence of surveillance technology, participants still continued their rounds. Alarm fatigue sometimes led participants to turn devices off. Though the technology allowed wandering clients to be tracked more easily, participants often preferred keeping clients nearby, and preferably behind locked doors at night. At times participants forgot to remove less visible devices (such as electronic bracelets) when the original reason for use expired.

Conclusions A more nuanced view of the benefits and drawbacks of surveillance technology is called for. Study informants tended to incorporate surveillance technology into existing care routines and to do so with some reluctance and reservation. They also tended to favor certain technologies, for example, making intensive use of certain devices (such as DECT phones) while demonstrating ambivalence about others (such as the tagging and tracking systems). Client safety and physical proximity seemed to be dominant values, suggesting that the fear that surveillance technology will cause attenuation of the care relationship is unfounded. On the other hand, the values of client freedom and autonomy seemed less influential; informants often appeared unwilling to take risks with the technology. Care facilities wishing to implement surveillance technology should encourage ongoing dialogue on how staff members view and understand the concepts of autonomy and risk. A clear and well-formulated vision for the use of surveillance technology—one understood and supported by all stakeholders—seems imperative to successful implementation.

INTRODUCTION

T he proportion of older adults in the world's population continues to rise, with some experts predicting it will reach 22% by 2050, (WHO, 2012) and in many countries this is contributing to a "care vacuum."(Astell, 2006). Residential long-term care facilities are faced with the challenges of caring for expanding numbers of people with dementia or intellectual disabilities— while simultaneously dealing with workforce shortages (Astell, 2006). In light of these developments, health care professionals are turning to technology for help, in particular surveillance devices and systems that can monitor and safeguard residents from harm, such as that caused by wandering, excessive locomotion, and hyperactivity (Hope *et al.*, 1994; Robinson *et al.,* 2007).

The use of surveillance technology — electronic equipment that allows the visual and acoustic monitoring of people or registers their activities (or both), (Frederiks *et al.,* 2009; Boekhorst *et al.,* 2013) — could be a potential solution, aiding or replacing human supervision and reducing staff stress (Niemeijer *et al.,* 2010). Another perceived benefit of this technology is that it could increase clients' freedom and autonomy, preserving their safety while serving as an alternative to the more physical forms of restraint traditionally used to manage wandering (Wigg, 2010; Boekhorst *et al.*, 2013; Zwijsen *et al.,* 2012).

Several forms of surveillance technology have already been designed for and tested among people with dementia and other cognitive impairments (Boekhorst *et al.*, 2009; Bharucha *et al.*, 2009). These include video and audio monitoring devices, environmental sensors (such as motion sensors) that can send alerts to staff, tagging systems that use wearable transmitters, and tracking systems that use the Global Positioning System (GPS) (Boekhorst *et al.*, 2009). Indeed, in a report published in 2009, the Dutch Health Inspectorate estimated that 91% of residential care homes for people with dementia or intellectual disabilities in The Netherlands were using some form of surveillance technology (Dutch Health Inspectorate, 2009). It cited reduced workloads for staff and more autonomy for clients as reasons for application.

But while many policymakers and providers welcome surveillance technology's potential benefits, it's not known whether it fulfills its promises in practice. Moreover, there are potential drawbacks to its use. Some ethicists and patient advocacy organizations fear that surveillance technology could attenuate the care relationship if it's used as a substitute for comprehensive patient care or human contact—a particular concern with regard to vulnerable people for whom human contact is viewed as indispensable (Alzheimer's Society, 2013; Hughes JC *et al*, 2008; Hughes R, 2008; Perry *et al.,* 2008). Similar concerns have been expressed by professional caregivers, who understand the role of human contact and connection in providing optimal care (Niemeijer *et al.* 2011;

Sävenstedt *et al.,* 2006), and fear that technology could lead to "dehumanized" care (Sävenstedt *et al.,* 2006). And as Hughes *et al* noted, there are concerns that the use of surveillance technology "might distract organizations from the need to provide more staff and better training" (Hughes *et al.,* 2008). Moreover, the introduction of new technology could create new risks, such as false positive alarms, increased alarm fatigue, and equipment failures (Perry *et al.,* 2008; Schikhof & Mulder, 2008); and addressing those issues might increase the demands on staff time (Zwijsen *et al.,* 2012).

In reviewing the literature, we found scant research exploring how the envisaged benefits and drawbacks of surveillance technology take shape in practice. To learn more, we decided to conduct an ethnographic field study on the ethics of using surveillance technology in residential care facilities, which had two aims:

- to investigate how surveillance technology is actually being used by nurses and support staff in long-term residential care facilities for people with dementia or intellectual disabilities, in order to explore the possible benefits and drawbacks of surveillance technology in practice; and

- to explore how clients in such facilities experience and make use of the possibilities that surveillance technology offers, in order to assess whether and how surveillance technology might increase the client's autonomy.

In another article, we report our findings on the experiences of clients (Niemeijer *et al.,* 2014). Here we report on our findings with regard to nursing and support staff.

METHODS

Design
An ethnographic design was chosen, which involved observing informants and conducting formal and informal interviews with them to gather data. Observing study informants allows researchers to reach a more thorough understanding of both the informants and the culture of the research setting, as it enables researchers to observe behaviors occurring in their usual environment. And good insights can be gained into the local or contextual logic of a care practice. "Local logic" has been described as the manner in which the daily actions of caregivers in their work settings occur within a set of considerations that aren't always in accordance with theoretical norms, existing policies, or projected ideals and goals (Hak *et al.,* 1997).

Settings

Because the Netherlands has one judicial framework that pertains to the rights of both of these institutionalized groups, specifically with regard to freedom restriction and surveillance technology, two different residential settings were chosen. One was a dementia special care ward (43 clients) in a nursing home in the north of Holland; the ward consisted of six small-scale living units and one large-scale living unit. The other setting was a residential care facility for people with intellectual disabilities in the southwest of Holland; here research was conducted in four small-scale living units (28 clients). Two of these units housed clients ages 45 and older who had severe intellectual disabilities or dementia or both and two units housed clients between the ages of 18 and 40 who had moderate to severe intellectual disabilities. (See Table 1). Both settings were selected based on the following criteria: they used multiple forms of surveillance technology; surveillance technology was used as an alternative to other means of physical restraint; and the responsible application of surveillance technology was integral to their care policies (the nursing home had a specific surveillance technology protocol; the other care facility had a special committee for restraints, including surveillance technology).

Ethical issues

People with dementia or intellectual disabilities may not be able to give valid informed consent to participation in research. This was the case in our study. Therefore, the researcher (ARN) was specifically instructed by the management of both facilities to stop gathering data if a client showed any signs of stress or disapproval of our presence. All family members and proxies were informed of the research study through information leaflets and gave their consent to the study. A preliminary informational meeting about the study was held at each facility for staff. All staff on the participating units were asked twice for to provide consent for their involvement in the study. First, during the preliminary informational meetings, all staff present were asked whether they objected to participating. Nobody objected. Second, during the course of the study, a few days before each shift in which the researcher (ARN) was scheduled to conduct research, staff members were individually approached by their supervisors and were again asked to provide consent. During the whole study, only one nurse assistant objected, stating that she preferred not to have someone "looking directly over her shoulder," and

Table 1: Characteristics of selected care facilities.

Facility characteristics	Dementia care unit in nursing home	Care facility for people with ID
Area	Semi-rural	Urban
Number of units (where research took place)	7 in total: 6 small scale units + 1 large scale unit (all in 1 location)	4 residential small scale units
Number of nursing and support staff involved in the study	22 in total: 6 registered nurses; 11 nurse assistants; 5 nurse aides	16 in total: 14 support workers; 2 trainee support workers
Number of clients (who were involved in the study)	43 in total (6 clients per small scale unit, 13 clients in the large scale unit)	28 in total (7 clients per residential unit)
Order for ST	Given by team supervisor and elderly care physician in consultation with family or proxy	Given by team manager, ID physician and psychologist in consultation with client or family or proxy
Physical restraints used	Nursing blankets, bedrails, wheelchair table tops and safety belts in the wheelchair, locked doors	nursing blankets, bedrails, safety belts in the (wheel)chair, seclusion areas, locked doors

consequently a different shift was found for the researcher. The boards representing clients and their relatives or proxies were also formally asked to give their approval, as were the management teams of both facilities. Once all of these steps had been completed, the Medical Ethics Committee of the VU University Medical Centre gave final authorization for the study. All data were anonymized in order to ensure confidentiality of all informants.

Surveillance technology devices

Table 2 provides an overview of the surveillance technology devices being used in the research settings. Most devices were used in both facilities, with the exception of acoustic surveillance and GPS technology, which were only used in the residential care facility for people with intellectual disabilities.

Table 2: ST devices and their use in the selected care facilities

Device	Use
DECT phone	Each nurse or support worker was equipped with a DECT phone, enabling them communicate with each other and to 'listen in' on any room of their unit. An alarm on the DECT phone could be triggered by acoustic or motion sensors which were present in each room. In the dementia care unit (DCU) the DECT phone was used 24 hours per day, in the care facility for people with ID (CFID) only during the day and evening shifts, but not during the night.
Movement sensor(s)	Depending on each individual case, these were switched on or off in the client's bedroom.
Acoustic sensor(s) and acoustic surveillance	In the DCU, depending on each individual case these were switched on or of. There was no central surveillance, but signals went directly to the DECT phones. In the CFID, all the clients were under audio surveillance during the night from a central location. The room sensors transmitted sounds to a computer, and a night nurse listened through headphones.
Electronic bracelets	In the DCU, 8 clients wore electronic bracelets to which the electronic, automatic doors were programmed to respond.. The bracelets allowed the clients to walk within specific areas with set parameters, known as 'living circles'. There were 3 living circles: the small scale living unit, the hallway that led to the units and an extra walking area. Each client was assigned to a specific living circle or circles. In the CFID 4 clients within the residential facility wore bracelets which only opened to 1 extra-large corridor, outside the living unit.
Automatic doors	Each door had an access code that was know only to staff and regular visitors. But the doors would open to those clients with electronic bracelets.
GPS tags	In the CFID 2 clients had a GPS tag, which was sewn into their coats. Each tag was linked to the staff computer in the office area of the living unit. The tags allowed clients to walk around outside on their own, on the facility grounds.
Video surveillance	In the DCU a camera was used in the hallway connected to a monitor of the night nurses' station. In the CFID, individual cameras could be placed in clients' rooms, and be monitored from a central location. During the study, one CFID client with severe epilepsy received camera surveillance during the night.

Data-collection

Data were collected by the first author (ARN) during two different periods: from April 2010 to July 2010 in the nursing home and from November 2010 to February 2011 in the care facility for people with intellectual disabilities. During both periods, the researcher (ARN) had informal conversations with numerous key informants, including nurses and support staff, physicians specializing in intellectual disabilities and elder care, and all other professionals he encountered, as well as clients and families. The informal conversations were intended both to afford a better understanding of staff experiences with surveillance technology and to clarify what had just been observed. The researcher also conducted eight formal interviews in the nursing home and five formal interviews in the care facility for people with intellectual disabilities. The formal interviews each lasted from between 45 minutes to an hour and were transcribed verbatim. The interview guide was based on the researcher's field notes. It was designed to allow key informants to add meaning to the researcher's observations; to elicit their perceptions about working with surveillance technology; and to offer them opportunity to elaborate on the meanings they gave to their own actions in certain situations as well as the meanings they thought that others gave. See Table 3 for more details on data collection. Field notes included not only the researcher's observations but also his reflective comments and information from clients' care plans, which he was given temporary onsite access to in both care settings.

Data analysis

Data analysis took place during the same time periods as data collection and involved the constant comparison method developed by Glaser and Strauss (Glaser & Strauss, 1967). The data were first read in order to refine the research question and guide further data collection; then the data were re-read for the purposes of searching for and identifying patterns; then the data were compared and analyzed for differences and similarities (Glaser & Strauss, 1967; Corbin & Strauss, 2008). Thus the field notes and the interview transcripts were first coded concurrently, using open codes and writing initial memos. After identifying relevant core themes, focused coding was conducted with the second author (MD), using integrative memos, elaborating on ideas and linking codes and data to each other, in order to allow categories to emerge. To examine for variance and consistency among these categories, contrasting examples were examined more closely. Then the dimensions for each category were investigated, to outline how to interpret the informants' perceptions of their reality. Finally, themes were identified and discussed with the second and third authors (MD and BF, respectively). The entire analytic process was augmented

by feedback and discussion with the other research group members and, through interim reports on findings, with a panel of experts of varying relevant disciplines (For more on overall methods, see Niemeijer *et al.,* 2014).

Table 3: Data collection

	Dementia care unit (DCU)	**Care facility for people with ID (CFID)**
Period	April 2010 to July 2010	November 2010 to February 2011
Participant observation in the facilities	14 weeks 3 days a week 200 hours of observation Participating in various shift (day, evening, and night)	12 weeks 2 days a week 140 hours of observation Participating in various shifts (day, evening, and night)
Also present at	3 rounds with the doctors; 2 information meetings with family; 2 half hour ST instruction trainings for new staff; many shifts tranfers; day time activities with the clients.	Fire safety instruction training for staff; exercise session with clients and physiotherapists; ethics committee meeting, many shift transfers; day time activities with clients.
Formal interviews	1 member of the board representing clients 2 night nurses 1 nursing assistant 1 elderly care physician 2 team leaders 1 occupational therapist (n=8)	2 two relatives of one of the clients. 1 night care manager 1 ID physician 1 cluster (regional) manager 1 occupational therapist. (n=6)

RESULTS

The following themes on the use of surveillance technology emerged from the data: continuing to do rounds, alarm fatigue, keeping clients in close proximity, locking the doors, and forgetting to take certain devices off. Each theme, with supporting quotes from field notes and interviews, is described further below.

Continuing to do rounds. In both facilities, in addition to monitoring clients with surveillance technology, the night nursing staff continued to do rounds, rather than

remaining at the nurses' station and checking clients individually when prompted by signals. The practice of doing rounds continued even though management had reduced the number of staff present at night and now viewed rounds as superfluous. This meant that staff had to make some adjustments. For instance, in the nursing home, clients were still checked on as regularly as they had been before the introduction of the surveillance technology system, but now the night nurse did it by herself. As one nurse said,

Previously we used to walk the rounds together, but now during the night you are primarily on your own.

Several night nurses indicated that they felt they couldn't rely entirely on surveillance technology, and this was one reason they continued doing rounds. One night nurse brought up two more reasons: surveillance technology doesn't indicate how everything is left by the evening shift, and doing rounds kept her busy.

Certain errors are… how I can say this…things still go wrong during the evening shift… And ST doesn't tell you if the bedrail is still up or not or other things… It is still human labor, what we do… Plus, it also keeps me busy, you know? You might be able to use [ST] as an aid, but I do not think that is a substitute.

They [the management] assume that you should be able to rely on ST and that the ST system takes over from you as a kind of warning system. But I don't really believe in this idea. No. It is an aid.

Alarm fatigue. There were many instances when the surveillance technology produced a false-positive alarm—it issued a warning even though the client was unharmed and in no danger—and this contributed to alarm fatigue among staff, and sometimes led to staff turning this technology off. For example, at night false-positive alarms sometimes occurred when a motion sensor in a client's bedroom was repeatedly triggered because the client was walking around in the room or visiting the bathroom. In both facilities, when this occurred, the night staff would turn the alarm off and would let the client "walk around leisurely until he is tired enough to go back to bed" or "let him go and have a long pee." Twenty or 30 minutes later, the attending night nurse or support staff would check on the client to see if she or he was done walking or visiting the bathroom; once the client returned to bed, the nurse or staff member would quietly turn the alarm back on.

In the nursing home, one night nurse dealt with alarm fatigue by turning the alarm off, leaving the nurses' station, and positioning herself closer to the client (such as by sitting in the unit's living room). In this case, the alarm was being triggered by acoustic sensors reacting to (sometimes frightened) clients who tended to cry out frequently. As one nurse explained, "Yes, I sometimes do that [seats herself nearer

to a client]. This way I'm close by, and otherwise my acoustic alarm would go off the whole time." The nurse also felt that her clients could sense her nearby presence and were somehow calmer than they were when she remained at the nurses' station. But it wasn't always possible to leave the nurses' station, especially when some clients were allowed to roam the ward and when she also had to monitor the cameras.

Keeping clients in close proximity. In both facilities, at times, certain surveillance devices stopped working (notably the electronic bracelets, as well as the camera in the hallway of the nursing home and the GPS tags of one client). This tended to cause staff to keep their clients close by, and also may have kept staff from using surveillance technology to its full potential. For example, at the residential care facility, one client who had a tendency to run off and get lost had a GPS chip placed in his coat. This chip was linked to the office computer in the client's small-scale unit. But the support staff didn't often make use of this technology; it was not regarded as an improvement over the 'duo bicycle' (a bicycle with two side-by-side seats, one for a client and one for a support worker) that they were already using. According to one of the support workers, the duo bicycle was "a fine solution for this running away problem," because this client tended to "run off less when we're cycling." Furthermore, when the support workers were asked to demonstrate how the GPS chip works, the chip failed to emit a signal. One support worker asked another, "The chip is in [the client's] coat, isn't it? Have you turned the signal off?" The second worker said he had not, but there still was no signal. "Next time then, we don't use it that much and we've got the bike anyway." the first support worker said. Fifteen minutes later the client and the support worker used the duo bicycle to visit a therapist. The following week, the GPS chip still was not functioning. At the same facility, another client wore an electronic bracelet that was programmed to allow her to pass through the living room door into a spacious corridor. But the bracelet didn't always work properly, and when it didn't she couldn't pass through the door. When asked about this, one of the support workers said that the bracelet failure was "a hassle with these things," and added that "it is enjoyable having [this client] more around in the living room."

Locking the doors. A perceived benefit of surveillance technology is that it can afford clients more freedom of movement. Indeed, in both facilities, surveillance technology was adopted as part of an active policy to reduce the use of traditional physical restraints. But the staff continued to lock certain doors, most often during the night and at the beginning of or during rounds. Sometimes this included all doors—the front door of the unit, the door to the living room, and even the

bedroom door. One night nurse considered this practice necessary, protective rather than restrictive:

If people are for instance walking around in the units, well, then they could do all sorts of things, I mean, coffeemakers, cutlery, food…Everything is accessible, they could empty out the fridge… And there are people amongst our clients who, so to speak, would destroy the whole living room. And if you're busy tending to other clients and you came back and… well no, I don't think that this should be possible. So I can imagine why the living room is locked.

A nursing assistant felt that less freedom of movement for clients was a "safe idea," safer than allowing them to wander around in the communal hallway, because then "you wouldn't know where they would be exactly." She added,

Suppose a client went out of his room… and all the doors were open and… they started to wander around… and you're so busy, you couldn't respond immediately, and suppose someone falls somewhere. They could be lying there, cold on the ground!

Forgetting to take certain devices off. Yet at times, surveillance technology continued to be used even after the original reason for its use had expired. This happened most often with the electronic bracelets and GPS tags, perhaps because they were relatively unobtrusive. As a team supervisor pointed out,

A bracelet is also different [from] a table top, for instance, which is much more visible, in your face, bigger… it's more of an obstacle in itself. A bracelet, well… clients are far less affected by a bracelet I think.

In the nursing home, one client was originally given a bracelet containing a GPS chip because he tended to wander, and this bracelet let him do so within certain perimeters. But he sometimes slipped through these perimeters (as when a certain door was inadvertently left open) and got lost in the communal halls. When this happened, he became very confused or upset (or both). As a result, a decision was made to keep the front door of his living unit locked, but no one thought to take his bracelet off. After this client subsequently fell and injured himself several times, he was put in a wheelchair with a table top, to prevent him from standing up and walking off. Three months later, he was still wearing the bracelet and the door was still kept locked. When one of the nursing assistants was asked why all these measures were still in place, she responded that one doesn't "reflect on certain things, you just do them because it has been prescribed as such." According to the elder-care physician,

The responsible nurse, the physician and team supervisor are supposed to evaluate these measures every once or so. So I can imagine this issue was not in clear view and ignored in evaluation—or not seen as an issue at all.

And the team supervisor stated that "people are such creatures of habit, so that… at a certain point it becomes normal… that's what I think."

DISCUSSION

Our findings indicate that a more nuanced view of the benefits and drawbacks of surveillance technology is called for. While certain envisaged benefits and feared drawbacks did not emerge in actual practice, other benefits and drawbacks did indeed emerge. We also found that informants tended to incorporate surveillance technology by combining old care routines with new ones. For example, informants continued to do rounds and to lock doors, and they continued to prefer being in close proximity to their clients. They made intensive use of certain surveillance devices (such as the digital enhanced cordless telecommunications [DECT] phone), while regarding other technologies (such as tagging and tracking systems) with ambivalence and either not using them or forgetting to re-evaluate such use.

Benefits and drawbacks

In both facilities, with regard to the envisaged benefit of reduced workloads, the use of surveillance technology allowed management to cut nighttime staff. In the nursing home, for example, the staff was reduced from two night nurses to one. Yet in effect the new technology also added to the staff workload. For example, the night nurse continued to do rounds while also carrying the DECT phone and monitoring its signals. This was a skillful way to combine an old routine (personal monitoring) with a new one (electronic monitoring). It also ensured that vital nursing skills were retained rather than degraded. The many instances of false positive alarms at both facilities further added to staff workloads. But experience might help counter this effect. Depending on the client, an experienced nurse might decide to turn a certain surveillance method off, recognizing that in this case it was ineffective and possibly causing delayed responses to other clients.

The envisaged benefit of greater client autonomy was one of the main reasons both facilities implemented surveillance technology. But the informants in this study appeared to make little use of the tagging and tracking systems. At night they preferred to keep the doors locked, and even during the day they weren't keen on allowing clients more freedom of movement. Informants reasoned that they

wouldn't be able to adequately oversee a situation, or might arrive too late, after an adverse incident had occurred. They also worried that having to watch over a bigger area would be problematic. Informants didn't seem to want to consider the devices' potential advantages for clients of enhanced freedom. When electronic bracelets were implemented to increase a client's area of movement, once she or he was perceived to be at risk in these "strange surroundings," informants reverted back to traditional methods of physical restraint, such as locked doors or wheelchair table tops. It's remarkable that, in such instances, informants either forgot to take off the bracelets or didn't see this as a concern, as if all such measures need not be properly evaluated and considered together.

Lastly, the use of surveillance technology did not seem to cause attenuation of the nurse–patient relationship. Informants still continued to do rounds (although obviously, where staff was reduced, this meant the remaining nurse had less time per client). During the day, informants also continue to use the duo bicycle. It seems that increased electronic monitoring will not automatically result in reduced personal monitoring and may even enhance it. Certain mobile devices (such as the DECT phone) can offer staff the advantage of greater flexibility, allowing the nurse to stay in closer proximity to one client while continuing to monitor others.

Local logic of 'safe autonomy'

The manner in which the nursing and support staff in our study incorporated surveillance technology into their care routines indicated that values such as safety and physical proximity were dominant. Facilitating or increasing clients' autonomy, one of the envisaged benefits of surveillance technology, seemed largely secondary to providing proximate and safe care, since informants were reluctant to allow clients more freedom of movement or to increase the physical distance between themselves and their clients.

This reluctant or reserved approach might be explained as a resistance to taking more risks, as several factors may have contributed to this. Equipment or systems sometimes broke or failed to work properly, as did one client's GPS chip; yet the reliability of any new technology is vital to its successful implementation (Margot-Cattin & Nygard, 2006; De Veer *et al.,* 2011). Indeed, the perception that a new technology increased risks to client safety has been reported as impeding its use (De Veer *et al.,* 2011). In our study, frequent false-positive alarms for some devices probably made it harder for informants to trust the technology; they frequently stated that surveillance technology was something one cannot rely on completely. Increased caregiver stress and altered logistics may also have caused resistance, as

when the technology resulted in staff cuts, leaving a night nurse with more clients and larger physical areas to cover. Yet, despite their reservations, informants also showed creativity in devising individualized solutions to problems, as when staff dealt with repeated false-positive alarms by turning surveillance off temporarily until an active client was tired enough to sleep.

In a study by Robinson *et al.*, professional caregivers favored client safety over autonomy "due to a fear of litigation." (Robinson *et al.,* 2007). They also felt "that society would regard them as negligent if they didn't operate a locked door policy in nursing homes." This likely reflects the fact that protecting clients' safety is not only an internal professional and institutional mandate, but is also influenced by external, societal pressures. Ultimately, taking risks is a necessary part of working with surveillance technology, in order to reap its benefits (Zwijsen *et al.,* 2012). Thus, how risk and "risky" behaviors such as wandering are perceived by staff is critical to how they are addressed in the facility (Wigg, 2010). For instance, instead of seeing wandering only as a problem behavior that must be controlled, it might be regarded as therapeutic and vital to a client's health, offering exercise and/or time outdoors (Wigg, 2010). This view allows for what Perske called the "dignity of risk," a necessary component of freedom and autonomy (Perske, 1972).

Of course, applying the concepts of freedom and autonomy to the actual living situations of people dependent on long-term care is anything but straightforward. Indeed, standard views of autonomy, which emphasize noninterference and independence, have recently come under more criticism as having only limited applicability for this population (Agich, 2003; Hertogh, 2005). For caregivers, these concepts are often too difficult or impractical to realize, because care inherently involves some degree of intervention (Niemeijer *et al.,* 2011) and is about meeting a responsibility rather than an obligation (Tronto, 1993). As an alternative, relational models of autonomy have been proposed that may prove more useful. These emphasize interdependence within the social context of a person's life, while still allowing for interventions aimed at empowerment and freedom (Moody, 1992; Tronto, 1993; Agich, 2003; Hertogh, 2005).

Implementation and the vision of care

In both study facilities, the implementation of surveillance technology was not embedded within a predetermined, internally supported vision of care. This led us to question whether informants' use of the technology would have differed had implementation been so embedded. For instance, none of the informants were consulted beforehand with regard to surveillance technology. And once it was

implemented, they weren't properly informed of its potential risks and benefits. For example, the instruction and training informants received in the nursing home in working with surveillance technology was limited to one 30-minute session. As a result, staff members held different views about how to work with surveillance technology: for example, the night nurses felt that continuing to do rounds was essential, while management saw this as superfluous.

Another result was that, despite usage protocols, there was a lack of regular evaluation for certain technologies, as when electronic bracelets remained in place long after the reason for use expired. This finding is in keeping with the Dutch Health Inspectorate's 2009 report, which concluded that few to none residential care facilities for people with dementia or intellectual disabilities in The Netherlands had formulated a vision of care for or conducted a risk analysis of surveillance technology, and that neither registering surveillance technology in a client's care plan or evaluating such technology was customary (Dutch Health Inspectorate 2009). Although an embedded implementation of surveillance technology wouldn't automatically ensure desired outcomes, experts agree that for the implementation of any care innovation to be effective, it should take into account the perspectives and prevailing values of all stakeholders (Leonard, 2004; Van den Ende, 2011).

Limitations

One possible limitation is that we found no notable differences in how surveillance technology was used by informants at the two facilities, even though the client populations were quite different. It may be that how surveillance technology is applied depends less on the care setting and more on how it is viewed and understood by those using it.

Another limitation may have been the potential effect of the researcher's presence on staff behaviors. Initially, the nursing and support staff in both facilities seemed acutely aware of his presence, often making remarks such as "What are you observing then?" But after several visits, the researcher's presence seemed to become part of the normal routine. To facilitate this, the researcher did not take notes in the presence of staff members, but instead did so in a separate private area after each shift.

A third limitation was that data collection was limited to two residential care settings in The Netherlands, thereby limiting the extent to which the findings are generalizable. That said, our study did not focus on frequency and statistical variance; rather, it focused on the extent of variation in which the observed situations occurred and on how exemplary these situations were (Glaser & Strauss, 1967,

Hertogh *et al.,* 2004, Corbin and Strauss, 2008). We believe the experiences our study informants described are probably common among staff in similar facilities elsewhere; but further study, especially in other settings, is warranted.

CONCLUSIONS

Our findings indicate the need for a more nuanced view of the benefits and drawbacks of surveillance technology. The nurses and support staff in this study tended to incorporate surveillance technology into existing care routines and to do so with some reluctance and reservation. They also tended to favor certain technologies over others, for example, making intensive use of certain mobile surveillance devices (such as DECT phones) while demonstrating ambivalence about others (such as the tagging and tracking systems). Client safety and physical proximity seemed to be dominant values for our informants; this suggests that the fear that surveillance technology will cause attenuation of the care relationship is unfounded. On the other hand, the values of client freedom and autonomy seemed less influential, as reflected by the ways participants used surveillance technology. Nursing and support staff often appeared unwilling to take risks with the technology, perhaps in part because they didn't always trust it to be reliable.

Recommendations

Before any institution decides to invest in and implement surveillance technology, the management should determine—in consultation with all its employees—what the institution aims to achieve with surveillance technology; which organizational requirements should be satisfied and what the potential risks and benefits are, both for the institution and for each individual client. Nursing homes and residential care facilities for people with intellectual disabilities, in particular, should also explore through ongoing dialogue how staff members view and understand the concepts of autonomy and risk. This will help not only in incorporating surveillance technology into clients' care plans, but also in enhancing staff engagement. Most facilities already conduct periodic risk assessments as a matter of policy, and surveillance technology should be included in such assessments. In short, a clear and well-formulated vision for the use of surveillance technology—one understood and supported by all stakeholders—seems imperative to successful implementation.

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