



On behalf of the Norwegian Directorate of Health, PA Consulting Group has carried out a survey of experiences with organizations of alarm reception in Norway, Denmark, Sweden, the United Kingdom and the United States.

We would like to thank the representatives from Norwegian, Swedish, Danish, British and American organizations who welcomed us and shared their experiences of welfare technology.

Oslo 15 September 2014

ORGANIZATION OF ALARM RECEPTION IN NORWAY AND ABROAD

Surveys and recommendations

October 2014



PREFACE

On behalf of the Norwegian Directorate of Health, PA Consulting Group has carried out a survey of how emergency reception for welfare technology solutions is organized in Norway, Sweden, Denmark, the United Kingdom and the USA. In addition, an overall survey has been carried out of how welfare technology is implemented in the various geographies.

The purpose of the survey is to give Norwegian municipalities insight and inspiration in the further work of organizing emergency reception and implementing welfare technology on a larger scale.

We would like to thank the representatives from Norwegian, Swedish, Danish, British and American organizations who have shared their experiences.

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Oslo, October 2014

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SUMMARY

The challenge picture for the health and care sector is linked to a higher number of elderly, demented and people with other chronic diseases. This entails an increasing need for home nursing and practical help. Norway is facing a significant undercoverage of the need for resources within health and care. These challenges place demands on innovation from the authorities and the municipal sector.

The National Welfare Technology Program is a targeted initiative to further develop the care sector with the help of welfare technology. An important part of the user experience of welfare technology is that the welfare technology works. This requires a focus on well-functioning practical organization in the municipalities, including the organization of alarm reception. PA Consulting Group has, on behalf of the Norwegian Directorate of Health, prepared a report as a basis for further work on organizing emergency reception in Norway.

The report describes the organization of alarm reception and other aspects related to the implementation of welfare technology in other countries. Experiences and case descriptions have been mapped in the United Kingdom, the United States, Denmark, Sweden and Norway.

British municipalities use dedicated response teams and the involvement of relatives in the service chain. This reduces the burden on the home care service. Extensive use of personnel without a health professional background reduces wage costs associated with the emergency rooms. The data from the alarm receptions is well utilized. The use of statistics enables efficient resource planning. Screening of incoming calls is carried out with the help of good information and knowledge about the user, and good systems that support the alarm reception services. Welfare technology is an integrated service offering in the British municipalities.

In Denmark, decentralized solutions are used where the home service has direct contact with the user, and the alarm reception has been removed. This leads to increased security and an individual approach for the citizen. Low screening rate of incoming calls puts a strain on the home care service.

Central solutions for alarm reception in Sweden ensure critical user base and efficient operation. The Swedish model can also handle a high volume. The municipalities focus on their core tasks, rather than the operation of alarm reception. The central receptions are larger units that can establish robust technological solutions, a strong competence environment, high security and redundancy. The actors are also able to professionalise the work and ensure high quality of the services. The central receptions generate a comprehensive data base, and make statistics available that can be used in municipal planning. Nevertheless, central receptions are far from the user, and challenges may arise related to perceived security by the citizen. In addition, the interface between the alarm reception and the home care service can be more challenging than where the reception is located locally.

concentration around a few, large suppliers.

In Norway, even small municipalities operate their own alarm reception centers. This is perceived as inefficient and results in varied quality of services. Small and medium-sized municipalities are experiencing challenges related to the future organization of alarm reception when the volume of signals from welfare technology solutions increases. The use of personnel with a health professional background entails high wage costs and challenges related to future access to resources. The low screening rate of incoming calls creates a stressful situation for the home care service in some municipalities. Involvement of emergency services can also lead to challenges related to prioritizing emergency reception. Lack of use of statistics prevents effective planning and makes municipal decisions challenging. This, together with the lack of integration with the municipality in general, prevents the focus on a comprehensive user process.

The choice of future model for organizing alarm reception in Norwegian municipalities should take into account the following important factors:

- Degree of burden on the home service and emergency
- services Ability to handle high signal volume
- Opportunity to achieve critical user base
- Opportunity to meet high demands for network capacity and security
- Opportunity to maintain user orientation

There are six possible models for future organization of alarm reception:

- **Model 1 «Own reception»:** Each municipality operates its own alarm reception.
- **Model 2 «Regional solutions »:** Regional alarm reception is established with a minimum of five participating municipalities.
- **Model 3 «Without reception»:** Municipalities are cutting the use of alarm reception, and the signals go directly to the home service.
- **Model 4 «Central alarm reception»:** Two to four central alarm receptions will be established. Central operators handle 1st line response. The municipalities' home service functions as a 2nd line response.
- **Model 5 «Common IT solution»:** A central technical solution is established that municipalities can connect to. The alarm reception is located locally in the municipality.
- **Model 6 «Central alarm reception and common IT solution»:** A combination of Models 3 and 4 is established, and the municipality is given the opportunity to only use a common IT solution.

Based on the mapping and assessments in relation to the important factors for choosing a solution, the Model for central reception and joint IT solution is recommended.

Strengths of the model:

- The degree of burden on the home care service, emergency services and emergency services is limited and the municipality can focus on core tasks
- The municipality can handle high signal volume
- Alarm reception achieves critical user mass and is operated efficiently. A strong competence environment is ensured
- The services are professionalised and quality is maintained
- Robust technical solutions are established with a high degree of redundancy, which meets high requirements for network capacity and security
- User orientation is ensured through the use of a rich data base
- Municipalities are guaranteed freedom of choice to maintain alarm reception locally

Model weaknesses:

- Challenging to create a well-functioning interface between the central reception and the municipalities' home service
- The reception is far from the user using a central solution
- The model can create a few, dominant suppliers

Recommendations for further work:

- The Norwegian Directorate of Health, KS and Norwegian municipalities should jointly evaluate possible models. The recommended model should be detailed before purchasing processes and implementation start
- The detailing should address recommendations for a total operating model for alarm reception, including central and local user travel, central and local staffing and expertise, information flow, technological standards, infrastructure and facilities, as well as requirements for processes, reliability, measurements and control.
- The Norwegian Directorate of Health and KS should further prepare proposals for how Norwegian municipalities can implement the recommended model

BACKGROUND

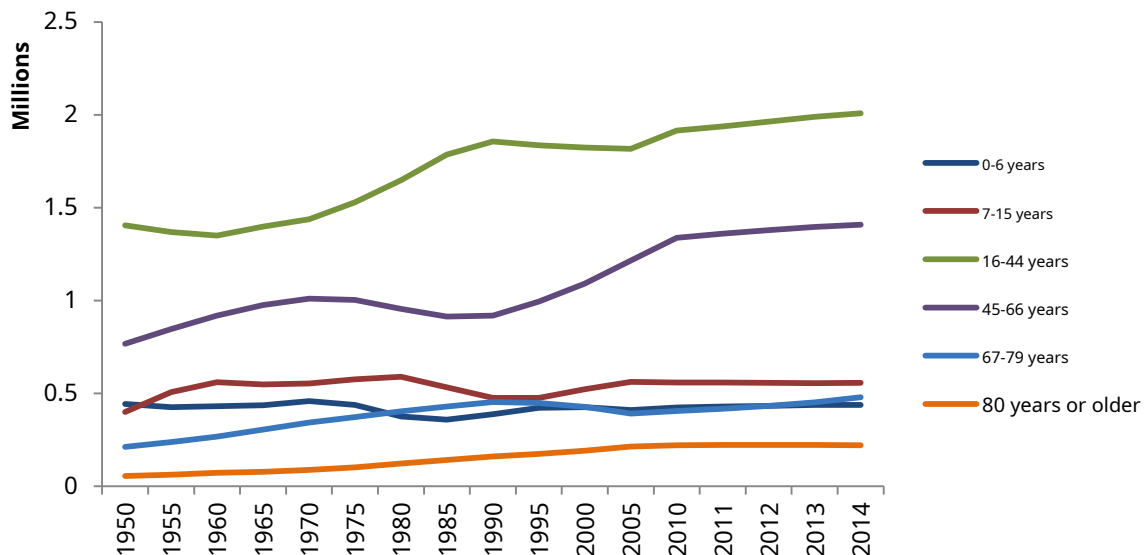
The challenge for health and care services in Norway

The background for the investment in welfare technology is related to the challenge picture for health and care services in Norway. With an increasing proportion of the elderly and those in need of care, there is a need to think new about service production in the health and care sector.

Increasing proportion of older people in society

Norway's population exceeded 5 million in 2012, an increase of over 1.7 million since 1950, and today amounts to just over 5.1 million inhabitants. The graph below illustrates the development in the population composition by age from 1950 until today.

Figure 1 Development in population composition by age, 1950-2014¹



The graph shows that already today you can see weak tendencies to the aging wave in Norway. Figures from Statistics Norway show that while in 1950 just over 8% were 67 years or older, the current share is around 13%. In addition, the number of people in the category 45-66 years has grown significantly during the period. This can also be read from the table below.

¹ Statbank. Oslo: Statistics Norway (2014).

Table 1 Development in population composition, 1950-2014²

Befolkning	Antall 2014	Vekst 2013-2014	Vekst 1990-2014	Vekst 1950-2014
Samlet	5 109 056	1,14 %	20,22 %	55,75 %
0-6 år	437 990	0,20 %	12,96 %	-0,99 %
7-15 år	555 871	0,22 %	16,99 %	39,37 %
16-44 år	2 007 750	0,91 %	8,15 %	42,91 %
45-66 år	1 408 723	0,87 %	53,34 %	83,74 %
67-79 år	477 962	5,83 %	5,68 %	125,36 %
80 år eller eldre	220 760	-0,37 %	38,47 %	297,74 %

Calculations carried out by Statistics Norway on future population development show that the proportion of the population aged 67 or older will increase further from 17% in 2030 and 21% in 2050. This is mainly due to the fact that the large birth cohort from the post-war period is now entering old age, as life expectancy is expected to increase.

Increasing number of dementia and people with other chronic diseases

Changes in the demographic composition of society lead to an increasing number of people with chronic diseases. Increasing the number of people with dementia is one of the main challenges for the health and care sector.

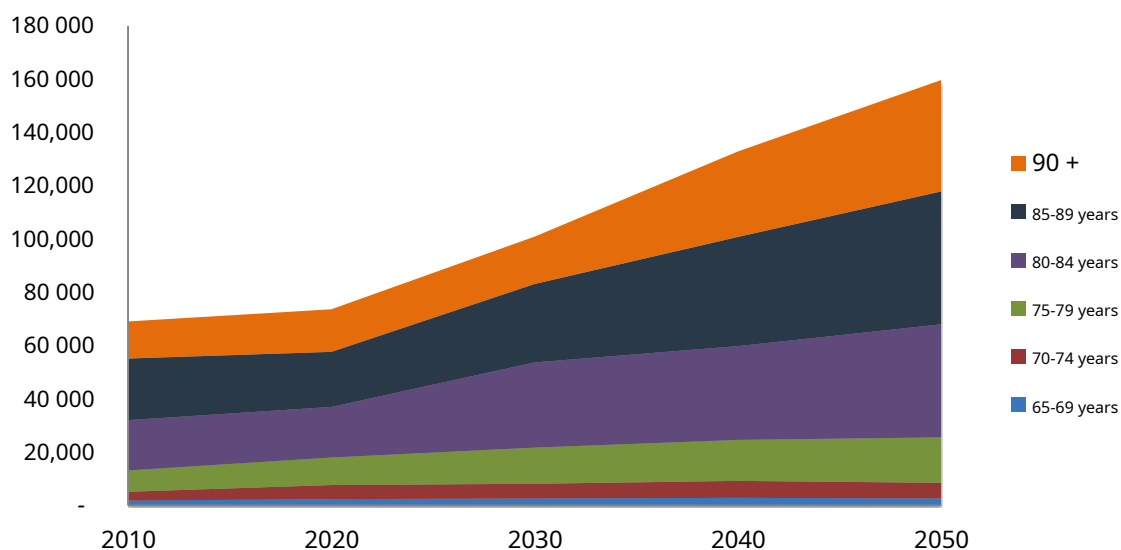
The graph below shows a projection of how the number of cases of people with dementia will develop until the year 2050³.

From around the year 2020, we see a sharp increase in the number of inhabitants over 80 with dementia. From a number of approx. 70,000 cases of people with dementia in 2010, then there will be approx. 160,000 cases of people with dementia by 2050. This is an increase of 131%. Dementia is thus growing rapidly in Norway, and this development must be taken into account in the planning of care services.

² Statbank. Oslo: Statistics Norway (2014).

³ Ministry of Health and Care Services (2006): *Dementia plan 2015 "The good day"*. Sub-plan to care plan 2015.

Figure 2 Number of cases of dementia, 2010-2050 ⁴



Increasing need for home nursing and practical help among the population

With an increasing proportion of the elderly in the Norwegian population, the need for nursing and care services will increase.

The need for nursing and care services for residents over the age of 67 will probably come at a somewhat later stage in life compared with previous generations of the elderly. Figures from KOSTRA show somewhat declining use of nursing and care services among residents over the age of 67. This is particularly clear for the age group between 67 and 79 years, where an ever smaller proportion of the inhabitants need assistance due to age. For the group between 80 and 89 years, there has been a similar trend for several years ⁵.

Table 2 Users of nursing and care services per 1,000 inhabitants, 2009-2013 ⁶

	2009	2010	2011	2012	2013
0-49 år	19	19	19	20	20
50-66 år	34	34	35	35	35
67-79 år	118	113	108	105	101
80-89 år	499	488	483	476	468
90 år eller eldre	872	867	864	869	866

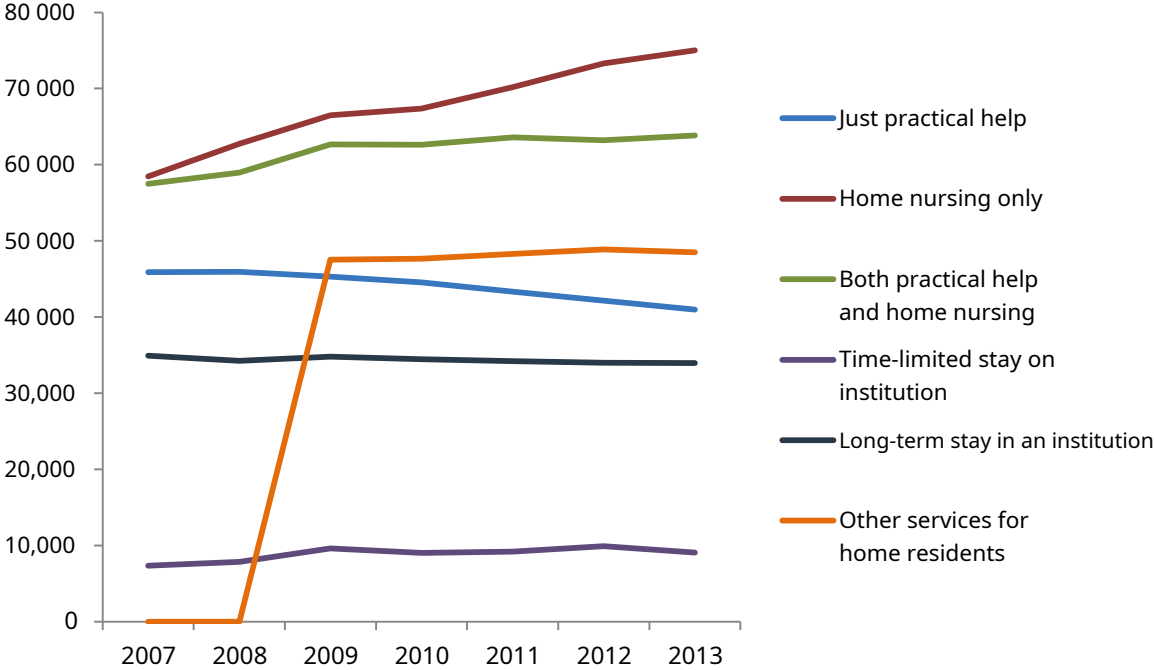
⁴ Statbank. Oslo: Statistics Norway (2014).

⁵ Abrahamsen DR (2006): *More home services for recipients under 67 years of age*. Statistics Norway, social mirror, 2006 / 5-6.

⁶ Statbank. Oslo: Statistics Norway (2014).

Despite the declining proportion of older people who need assistance due to age, the total need for nursing and care services is increasing. The graph below shows that the need for nursing and care services has increased by 33% in the period 2007-2013.

Figure 3 Development in the use of nursing and care services, 2007-2013⁷



The increase in the need has been highest for practical help and / or home nursing. A survey conducted by Statistics Norway shows that more and more people live at home longer, while institutional places are reserved for those most in need of care.⁸

Significant coverage of the need for resources

An aging population will put greater pressure on the nursing and care sector, and lead to an increased need for competence and resources.

The table and graph below describe the development in man-years in nursing and care services by education in the period 2007-2013.

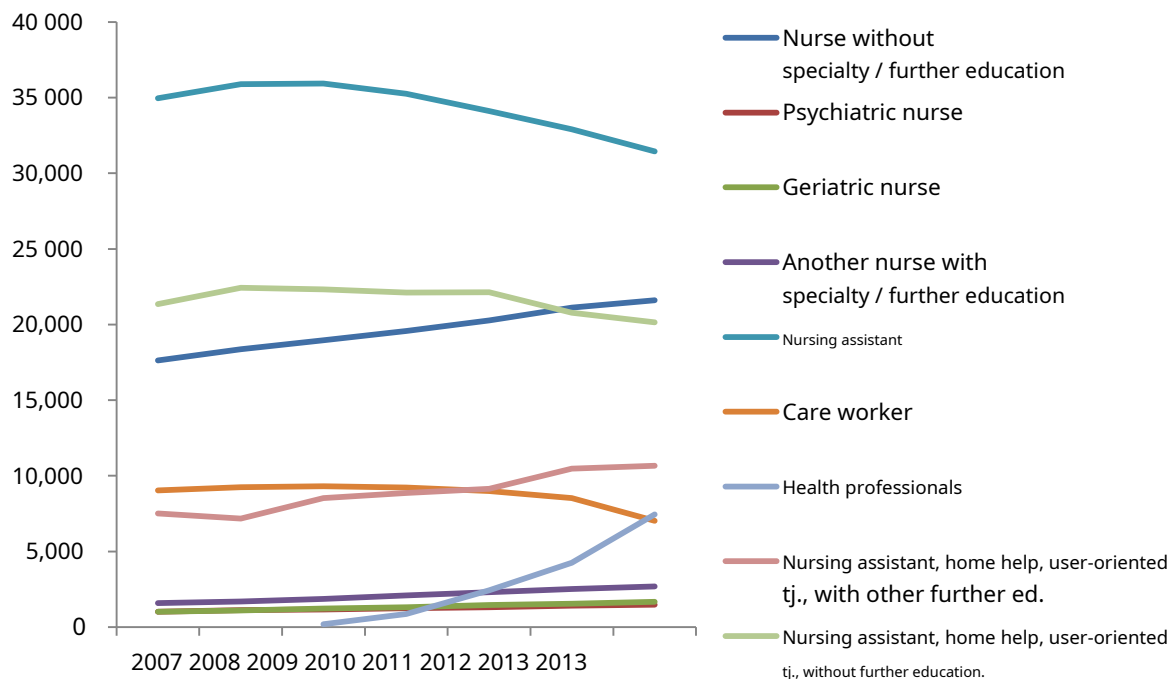
⁷ Statbank. Oslo: Statistics Norway (2014).
⁸ Statbank. Oslo: Statistics Norway (2014).

Overall, there has been a positive development in the number of nursing and care workers during the period. As can be seen from Table 3 and Figure 4 below, the number of nurses has increased during the period. On the other hand, the number of auxiliary nurses and care workers has fallen. This can be partly explained by the fact that health professionals, where the first batch completed their training in 2009, have increased significantly during the period.

Table 3 Man-years in the nursing and care services after education, 2007-2013⁹

Antall årsverk etter utdanning	2007	2008	2009	2010	2011	2012	2013
Sykepleier uten spesialitet/videreutdanning	17 620	18 367	18 962	19 569	20 263	21 114	21 606
Psykiatrisk sykepleier	1 020	1 119	1 164	1 255	1 323	1 417	1 476
Geriatrisk sykepleier	1 017	1 095	1 225	1 322	1 472	1 553	1 672
Annen sykepleier med spesialitet/videreutdanning	1 592	1 691	1 870	2 096	2 308	2 518	2 694
Hjelpepleier	34 950	35 894	35 924	35 248	34 114	32 896	31 447
Omsorgsarbeider	9 037	9 254	9 308	9 231	8 996	8 525	7 034
Helsefagarbeider			186	860	2 440	4 260	7 444
Pleieass., hjemmehjelp, brukerrettet tj., med annen videreutd.	7 515	7 176	8 527	8 858	9 143	10 473	10 662
Pleieass., hjemmehjelp, brukerrettet tj., uten videreutd.	21 356	22 430	22 327	22 107	22 136	20 789	20 140

Figure 4 Development in man-years in the nursing and care services after education, 2007-2013¹⁰



⁹ Statbank. Oslo: Statistics Norway (2014).

¹⁰ Statbank. Oslo: Statistics Norway (2014).

However, the increasing number of man-years will not be sufficient to cover future resource needs. Calculations made by Statistics Norway in the report "The labor market for health and social personnel towards the year 2035"¹¹ shows that there will be an undercoverage of close to 57,000 health professionals (including former auxiliary nurses and care workers) in the year 2035.

The private unpaid care work has an important role in the care of the elderly. Today, the municipal care services account for the majority of the total care work¹². Nevertheless, the private helpers are important to count on. Many elderly people in need of help receive care from family and other private individuals in addition to municipal services.

Summary challenge picture

In summary, the statistics in this chapter show a demanding picture of challenges:

- Increasing proportion of older people in society
- Increasing number of dementia and people with other chronic diseases
- Increasing need for home nursing and practical help among the population
- Significant undercoverage of resource needs

The outlined challenge picture can actually be solved in two ways:

- Significant labor immigration in the health and care professions may offset the future under-coverage of health professionals
- Norway can think new and offer services in health and care in a different way than today, so that the under-coverage of health professionals is not as great as estimated

Norwegian municipalities provide health and care services to the elderly and other residents in need of home nursing and practical help. The demanding resource situation places demands on new thinking from both the authorities and the municipal sector in connection with how tomorrow's health and care services are offered to the citizen, and what these services should consist of.

National Welfare Technology Program

As part of the government's commitment to future care challenges, welfare technology has become one

¹¹ Roksvaag, K. and Texmon, I. (2012): *The labor market for health and social workers towards the year 2035*. Statistics Norway, reports 14/2012.

¹² Ramm J. (2013): *Elderly use of health and care services*. Statistics Norway, statistical analyzes 137.

important part of the health and care work. Based on the Government's report to the Storting «Tomorrow's care» (2012-2013), a national program for welfare technology (National Welfare Technology Program - NVP) has been established, with the intention of ensuring that welfare technology becomes an integral part of the services in care services by 2020. a targeted commitment to further develop the care sector using welfare technology.

The program will take care of a municipal perspective, and service innovation is a key tool. The main tasks of the program are:

- Develop and test welfare technology solutions in the municipalities Create and
- disseminate knowledge about welfare technology
- Contribute to good models for the introduction and use of welfare technology
- Competence development
- Establish standards and IT architecture for welfare technology

The Norwegian Directorate of Health has been given the responsibility for running NVP, at the same time as they must take special responsibility for standardization work in the area of welfare technology. The Directorate has established a close collaboration with KS on the implementation of NVP. The welfare technology program became operational from 1 January 2014 and is expected to last until 2020. The financial framework for NVP is decided annually through budget decisions in the Storting.

The program focuses on the municipal health and care services, but will also stimulate that welfare technology solutions are used by private actors. NVP will include various welfare technology solutions with the aim of:

- Improve users' ability to master their own everyday lives
- Increase the security of users and relatives and relieve relatives of worries
- Increase the opportunity for users and relatives to have contact and give users the opportunity to have contact with others and participate in social arenas

The program will also address relevant practices regarding better accessibility, resource utilization and quality of services^{13/14}.

Over two hundred municipalities wanted to be part of the national program. Based on this, the Norwegian Directorate of Health selected 32 municipalities to participate. The Directorate manages grants to these municipalities, which will be spearheads in a long-term commitment where welfare technology solutions will

¹³ National program for welfare technology. Oslo: KS (2013).

¹⁴ National Welfare Technology Program. Oslo: The Norwegian Directorate of Health (2014).

tested on a large scale. It is a priority to focus on projects that test solutions in practice. Examples of solutions to be tested are various security packages, notification and tracking technology, electronic locking systems and other solutions that increase security for users and relatives. Depending on the annual framework decided by the Storting, new municipalities will be able to be included in the program in 2015.

The municipalities that participate in the program will have national obligations that will benefit all the country's municipalities. This means, among other things, participating in a national network that gathers experiences from the projects, and contributing experiences to standardization work in the field of welfare technology. The participating municipalities shall be resource municipalities vis-à-vis other municipalities in the region / region and in this way contribute to welfare technology solutions being widely used in the health and care services.

THE INVESTIGATION

The mandate

An important part of the user experience of welfare technology is that the welfare technology works. This requires a focus on well-functioning practical organization in the municipalities. Based on this, the Norwegian Directorate of Health has prepared a mandate related to a study of how Norwegian municipalities and other countries have organized emergency reception. The purpose of the report is that it will serve as inspiration for the municipal sector and the Norwegian Directorate of Health in the further work of deciding on the future organization of alarm reception in Norwegian municipalities.

Original mandate for the work on the basis of the Norwegian Directorate of Health's job description from July 2014:

The Norwegian Directorate of Health sees a need for a study as a basis for further work on organizing emergency reception in Norway. Through a mapping work in the United Kingdom, Norway, Sweden, Denmark and the USA, this report will provide an overview of how alarm reception for welfare technology solutions is organized across the various geographies.

In Norway, the report will look at and describe ongoing processes regarding the organization of alarm reception in the municipalities of Trondheim, Oslo, Bærum, Stavanger, Fredrikstad, Lindås, Tinn and the Lister region. The report will present in-depth descriptions of five emergency reception centers in municipalities in the United Kingdom (England, Wales and Scotland). In addition, the report will describe the overall organization of alarm reception in Sweden by looking at one alarm reception provider and two municipalities, and describe how Kaiser Permanente in the USA has organized alarm reception.

Based on the work in the different geographies, the report shall identify the types of services provided, describe the service chain and interaction with the municipalities and various actors, look at computer systems used and challenges regarding storage of health information, describe financing model and critical and optimal use, and look at staffing and competence, training of employees and the requirements for the services.

On the basis of these findings, a comparison of the results across the geographies will be prepared, and a discussion and analysis of the findings from the various countries will be prepared.

Method

PA Consulting Group¹⁵ has assisted the Norwegian Directorate of Health in preparing the report. The study has been carried out on the basis of qualitative and quantitative data collected through:

- **Field visit.** Field visits have been made in the countries in question and the municipalities / alarm receptions. Thorough inspections have been carried out during the visits to the locations, and this has contributed to increased insight into how alarm reception for welfare technology solutions is organized across the various countries.
- **In-depth interviews.** In-depth interviews have been conducted in all municipalities with representatives from various levels and disciplines.
- **Collection of documentation.** Reports, statistics, documents / agreements and information material have been collected from all the mapped alarm receptions. In addition, photos were taken during the field visits. It is agreed with the people included in the photos that these are published in a Norwegian, public report. All collected documentation is made available to the Norwegian Directorate of Health to the extent that it is not reproduced in the report.

In the work, the following procedure is used:

- Items for assessment and analysis were agreed with the Norwegian Directorate of Health prior to the work. Prior to the field visits and in-depth interviews, interview guides were prepared per target group. These served as a starting point for interviews with relevant employees in the municipalities / alarm clinics that were visited.
- In addition, a standard list of documentation was prepared and requested from all municipalities / alarm reception centers.
- The results of the field visits and in-depth interviews are documented.

The report has also relied on relevant publicly available material. This includes, among other things, previous survey reports carried out at national or municipal level in Norway and other countries, publicly available population statistics and more. All sources are listed in the source list at the end of the report.

¹⁵ Represented by Grete Kvernland-Berg, Anette Ravlo, Maren Altø Riis, Liza Nienova, Ole-Andreas Grendstadbakk, Jesper Wolff Olsen and Steve Carefull.

CHAPTER 1 INTRODUCTION



1 INTRODUCTION

1.1 Definitions of terms

1.1.1 Definition of welfare technology

Welfare technology is often used as a collective term to cover several different technologies related to the welfare of citizens. Welfare technology is a term that is mainly used in Scandinavia. In Norway, the term «care technology» is also used in some municipalities. The Norwegian Directorate of Health's expert report on the implementation of welfare technology refers to the Hagen Committee's recommendation: NOU 2011: 11 «Innovation in care», which was presented in June 2011, where the following definition was used¹⁶:

"Welfare technology means first and foremost technological assistance that contributes to increased security, safety, social participation, mobility and physical and cultural activity, and strengthens the individual's ability to manage themselves in everyday life despite illness and social, mental or physical impairment. functional ability.

Welfare technology can also function as technological support for relatives and otherwise help to improve accessibility, resource utilization and quality of service provision. Welfare technology solutions can in many cases prevent the need for services or hospitalization. "

KS distinguishes between different categories of welfare technology. These are:

- Fall alarm
- Motion detector
- Door alarm
- Extended security alarm (sensors and the like connected via this) Smart home installation, which for example controls lights, heating, doors or windows
- Tracking and warning technology (eg GPS)
- Game technology
- Automatic medicine dispensers
- Digital planners; time and activity indicators
- Electronic locking systems
- Robot vacuum cleaners
- Photo phone
- PC with camera

¹⁶ The Norwegian Directorate of Health (2012): *Welfare technology. Technical report on the implementation of welfare technology in the municipal health and care services 2013-2030*. IS-1990 Report.

- Social robots, such as the robot harness «Paro»

In addition, KS uses an additional category, *other*, which includes other, smaller welfare technologies that are not covered by the technologies above. Taken together, these categories provide a good indicator of which technologies are referred to as welfare technology.

1.1.2 Definition of alarm reception

This report uses the following definition of alarm reception:

Alarm reception is a reception center that receives alarms from alarm users, assesses the users' needs, and implements the necessary help. The alarm reception includes the technical alarm reception equipment, all personnel and all routines necessary to receive calls from the alarm, keep in touch with the user, be in charge of operations management for the emergency service, and keep in touch with other adjacent health services.

Alarm reception is closely linked to the "emergency service" which reaches out to users on behalf of the alarm reception. This report uses the following definition of emergency service:

The emergency service is the service that moves out to the users and performs the services the users need after the alarm is triggered.

In the Scandinavian countries, it is primarily the health and care service that is covered by the alarm reception service.

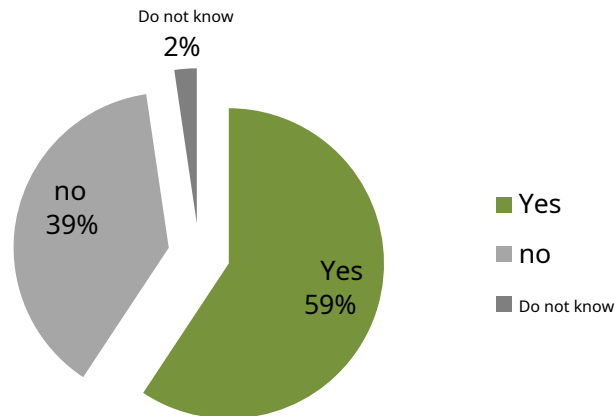
There are great differences, both across municipalities and between different countries, in who takes care of alarm reception, and which solutions have been established.

1.2 Welfare technology in Norway

In 2014, KS conducted a comprehensive survey on the use of welfare technology in the municipal nursing and care services. 172 municipalities participated in the survey. Results from the survey relevant to this report are highlighted in this section.

Figure 4 Use of welfare technology in Norwegian municipalities ¹⁷

Answer to the question "Has the municipality used welfare technology in the health and care services?"

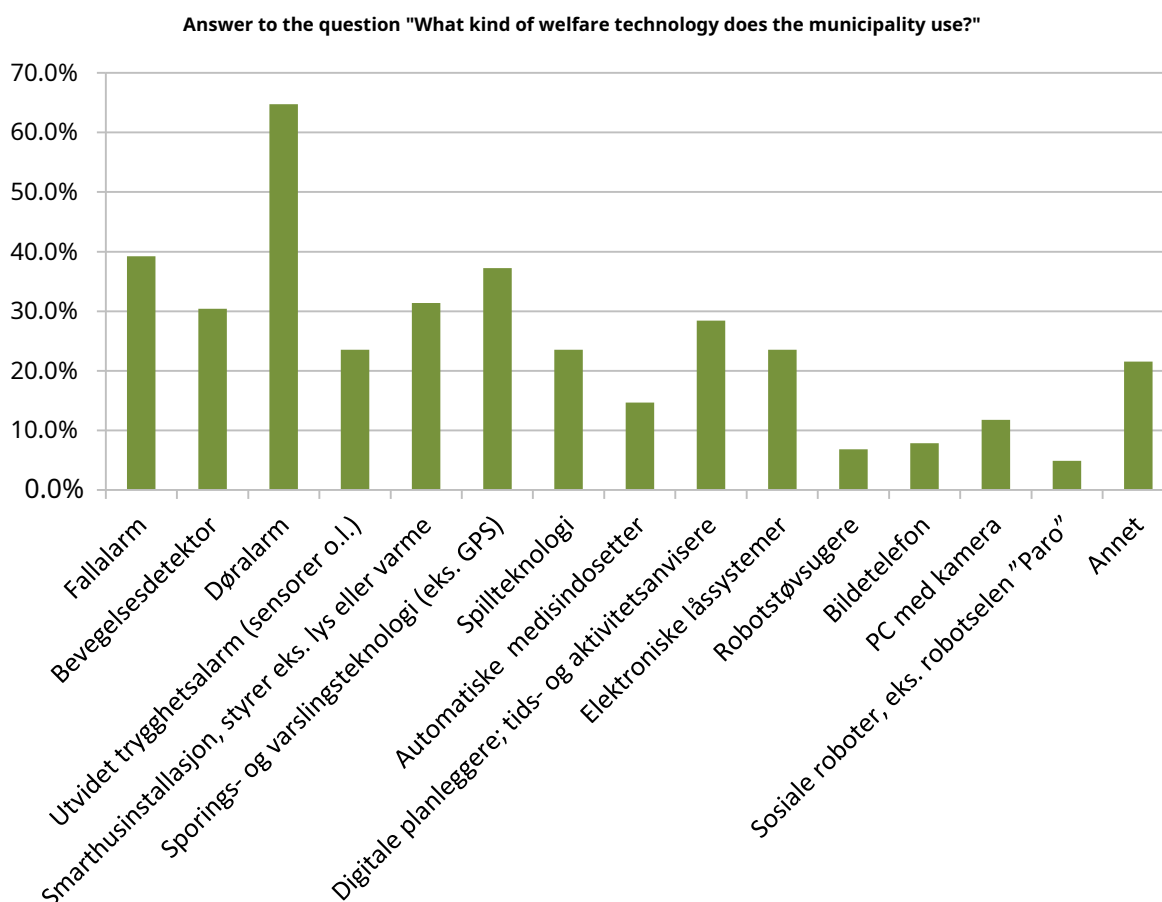


As the figure above illustrates, 59% of the 172 municipalities surveyed have used welfare technology in health and care services, 39% do not use it, and 2% of the respondents do not know whether welfare technology is used in the municipality.

Furthermore, KS examines the types of welfare technology used in the municipalities. This is illustrated in the graph on the next page. As the graph shows, this includes other types of welfare technology than the simple security alarms.

¹⁷ Hoen and Tangen U. (2014): KS 'survey on the use of welfare technology in Norwegian municipalities. KS 2014.

Figure 5 Different types of welfare technology used in Norwegian municipalities ¹⁸



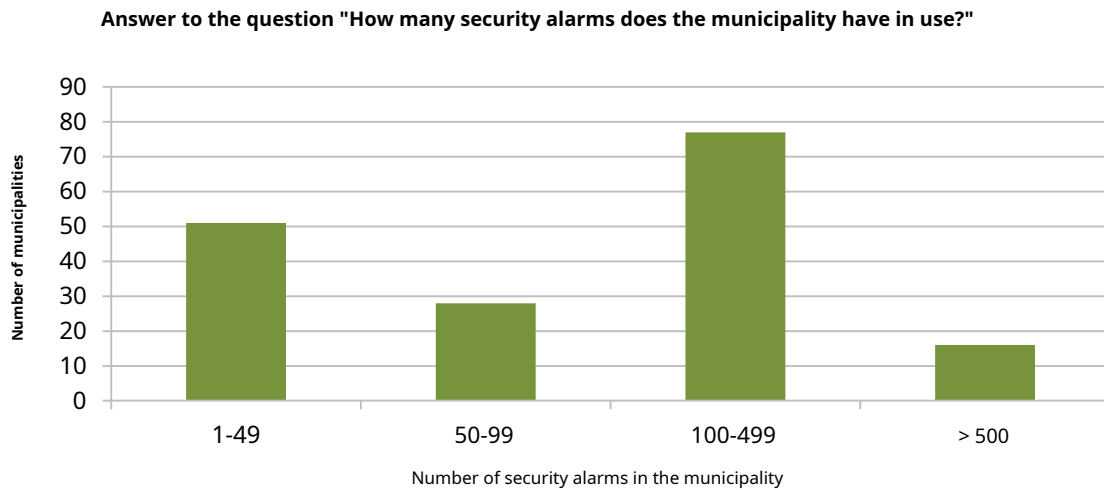
The figure above shows that door alarms stand out as the most widespread welfare technology aid in Norwegian municipalities. About 65% of the 172 municipalities that responded to the survey have used this. In addition, fall alarms and tracking and warning technology (such as GPS) have been used by many municipalities, with a share of just under 40%.

Security alarms are particularly prevalent in the municipalities. Security alarms are often the first technology municipalities use when using welfare technology. The graph below illustrates how many security alarms are in use in the municipalities. As the graph shows, the largest proportion of the 172 municipalities that responded to the survey have between 100 and 499 security alarms in use. Only 16 of the municipalities surveyed have 500 security alarms or more in use. The municipality in the survey with the most alarms in use is Trondheim, with 4,000 security alarms.

¹⁸ Hoen and Tangen U. (2014): KS' survey on the use of welfare technology in Norwegian municipalities. KS 2014.

Internationally, the coverage rate of security alarms is measured as the proportion of users aged 65 and older who have security alarms. Norway's coverage in 2012 was 73,000 alarms, corresponding to a coverage of 10%¹⁹.

Figure 6 Number of security alarms in Norwegian municipalities²⁰



Today, a great deal of work is being done to explore and develop welfare technology services in many countries, including the Netherlands, Norway and Denmark.²¹ A similar survey for the use of welfare technology services in the municipalities from 2011, showed that lack of competence and support schemes is often perceived as a barrier to using welfare technology, and more information is seen as an important measure to use welfare technology. The municipalities still have great faith in welfare technology as a good preventive measure for the elderly²².

1.3 Alarm reception in Norway

In KS 'survey on the use of welfare technology in the municipal nursing and care services, the use of a notification system related to the use of welfare technology is elucidated, and who receives the messages from the user. Whether the municipalities have notification systems related to the use of

¹⁹ The Norwegian Directorate of Health (2012): *Welfare technology. Technical report on the implementation of welfare technology in the municipal health and care services 2013-2030*. IS-1990 Report.

²⁰ Hoen and Tangen U. (2014): *KS 'survey on the use of welfare technology in Norwegian municipalities*. KS 2014.

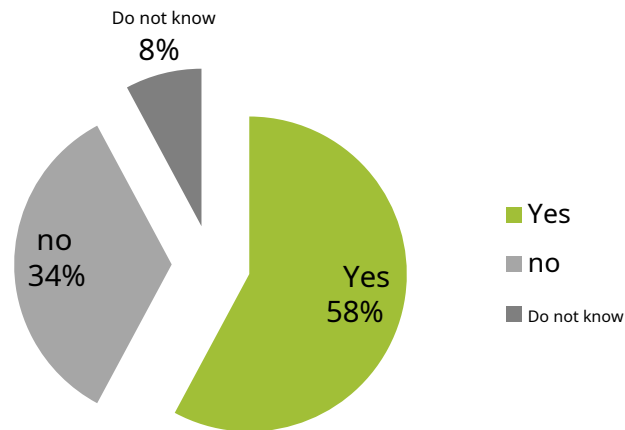
²¹ Beale S., Sanderson D., Kruger J. (2009): *Evaluation of the Telecare Development Program*. The Scottish Government, final report.

²² Hoen and Tangen U. (2011): *Use of welfare technology in the municipalities. KS 'survey on the use of welfare technology in the municipal nursing and care services*. KS.

welfare technology is illustrated in the graph below.

Figure 7 Use of notification system for welfare technology in Norwegian municipalities ²³

Answer to the question "Does the municipality have warning systems related to the use of welfare technology? "

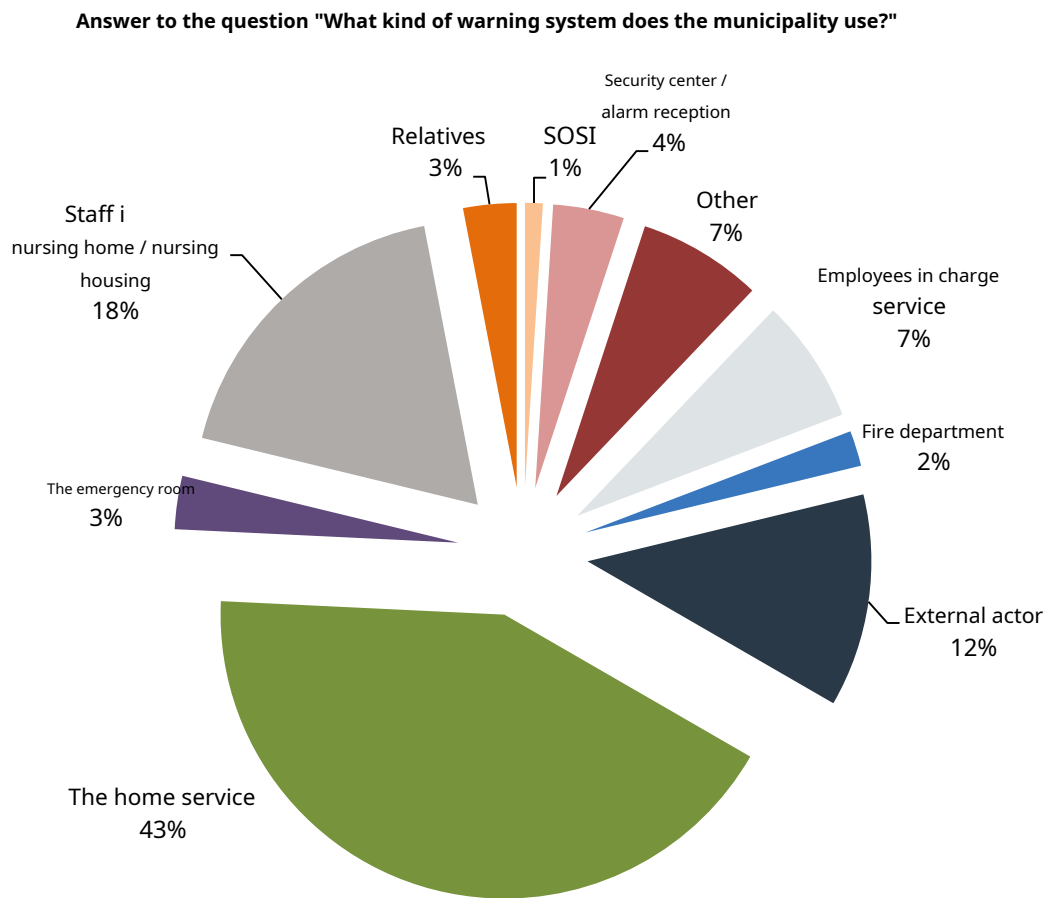


The figure above shows that 58% of the municipalities that responded have warning systems related to the use of welfare technology, 34% do not use warning systems, and 2% do not know whether this is used.

For the municipalities that use such warning systems, there are significant differences in who receives the signals when an alarm is triggered.

²³ Hoen and Tangen U. (2014): KS 'survey on the use of welfare technology in Norwegian municipalities. KS 2014.

Figure 8 Alert systems for welfare technology used in Norwegian municipalities ²⁴



Data in the graph above are based on responses from 57 municipalities. The graph shows that it is the home service that handles the largest proportion of the signals that are triggered (42%). In addition, personnel in nursing homes / care homes and external actors are large at 18% and 12%, respectively. External players include SOS International, which is the largest private supplier of alarm reception in the Norwegian market.

Chapter 6 provides an in-depth insight into how a selection of Norwegian municipalities chose to organize their alarm receptions.

²⁴ Hoen and Tangen U. (2014): KS 'survey on the use of welfare technology in Norwegian municipalities. KS 2014.

1.4 Alarm reception in other countries

Across different countries, there are both similarities and clear differences in the way alarm reception is organized and run. A common feature of the alarm receptions is that the municipalities have a mandate for how the services are to be designed and delivered, and that the services are very often provided by a mixture of public and private actors. Mapping of countries in Europe shows several examples where municipalities have chosen to purchase their services directly from a third party. Chapters 2, 4 and 5 show how municipalities in the United Kingdom, Denmark and Sweden have chosen to organize their alarm receptions.

1.5 Standards for alarm reception and welfare technology in Norway and other countries

Norway's alarm systems today are mainly based on the use of analogue telephone lines. Although communication solutions that connect users to alarm reception vary, almost two thirds of the municipalities state that security alarms are mainly based on traditional fixed telephony²⁵. Telenor has announced that by the end of 2017 they will phase out the analogue network in Norway, and that mobile and fiber networks will take over. This will mean that municipalities that use the analogue telephone network must replace the security alarms. The transition from analogue telephone lines to mobile and fiber networks could lead to risk and vulnerability for the municipalities. Similar experiences from Sweden highlight the importance of providing sufficient information to the municipalities in the event of a change in technology, so that they have time to implement new digital technology. In order to handle the transition in a good way, a number of Norwegian municipalities are already testing the use of security alarms connected to the mobile network.

Sections 1.5.1 and 1.5.2 describe recommended standards for welfare technology in Norway and the EU.

1.5.1 The Continua Framework

Recommendations on the use of frameworks and standards are presented in the Norwegian Directorate of Health's report from 2014, «Recommendations on the choice of standards / frameworks for welfare technology», where it is recommended that standards, architecture and frameworks chosen to support the use of welfare technology should apply to safety alarms and sensors that monitor health status and bodily functions, and shall be independent of whether the application is within the preventive area, primary or specialist health service. To ensure this, the Norwegian Directorate of Health recommends that

²⁵ Directorate for Civil Protection and Emergency Planning (2013): *Technology change in Telenor's infrastructure. Social safety and emergency preparedness consequences of Telenor's phasing out of PSTN and ISDN technology and remediation of parts of the copper network*. Report.

the framework forms the basis for further work.

Continua Health Alliance is an international organization that aims to promote personal health through "plug & play" connections of medical equipment connected to the individual. Welfare technology equipment units must be able to communicate both with each other and with the health and care service. The purpose of Continua is to reach agreement on the use and implementation of standards by establishing standards for interoperability. The framework is based on recognized and international standards in welfare technology and e-health.

Such a foundation will lay the foundation for the health and socio-economic gains one wishes to realize over time. Decisions made today will have strategic and practical significance for the health service for many years to come. It is essential to facilitate a unified and holistic direction that will benefit society. This is also in line with the Storting's report "One inhabitant - one medical record" from 2012 and the proposals for legislative changes that make it possible to share and access patient data. A possible transition to Continua will provide guidelines for alarm reception and create new considerations that the municipalities must take care of when receiving alarm for security alarms.²⁶

While Continua is primarily a technical standard, it is widespread in other European countries with a standard approach to the actual process of installing an alarm at the citizen and receiving an alarm. This is seen, for example, in the United Kingdom, where the Telecare Services Association (TSA), a public, non-profit member organization for technology-based care and treatment service providers, has developed a nationally recognized framework against which telecare and telehealth service providers can be accredited. The TSA - Telecare Services Association is described in more detail in chapter 2.2.3.

1.5.2 TeleSCoPE

Telehealth Services Code of Practice for Europe, better known as TeleSCoPE, is a quality benchmark for telehealth developed for all EU countries. The purpose of TeleSCoPE is to provide telecommunications health services with a recommendation they can be assessed and accredited against to ensure security for²⁷.

Target groups:

- Providers of telecommunications health services and their employees
- Users of telecommunications health services and their relatives

²⁶ The Norwegian Directorate of Health (2014); *Recommendation on the choice of standards / framework for welfare technology*. Report IS-2200.

²⁷ European Code of Practice for Telehealth Services. Oslo: AGE (2014).

- Organizations that use or recommend telecommunications health services
- Authorities and strategic agencies working on this

The purpose of the recommendations is to:

- Address the way telehealth services, related procedures and practices are organized
- Provide a framework for services that can help increase accessibility for users and relatives
- Encourage users and relatives to assist in service planning and development Ensure
- consistency in service quality by offering one reference standard
- Point out the skills, knowledge and competence requirements that employees need to possess

The recommendation includes telehealth services for people of all ages, and helps to promote focus on both their clinical health and general well-being. Although the focus of the recommendation is telecommunications health, it is relevant to, and also includes welfare technology, security alarms and some aspects of telemedicine.

The guidelines are not binding, but rather provide a framework that enables and encourages providers of telecommunications health to plan and manage their services in an inclusive and ethically sound manner. The importance of the guidelines will increase with various demographic, political and economic factors.

CHAPTER 2 ORGANIZATION OF ALARM RECEPTION IN THE UNITED KINGDOM



2 ORGANIZATION OF ALARM RECEPTION I

GREAT BRITAIN

This chapter describes the organization of emergency reception in the United Kingdom. Initially, an introduction is given to the organization of health and care in the United Kingdom, including England, Scotland and Wales. Furthermore, a presentation of welfare technology is given in the UK. Finally, the chapter contains case descriptions from five municipalities / regions.

2.1 Organization of health and care in the United Kingdom

Political power was decentralized and transferred to the authorities of Scotland, Wales and Northern Ireland respectively as a result of a 1998 bill ²⁸. Parliament in the United Kingdom maintained its sovereignty, but at the same time this meant that responsibility for health services was delegated to the administrations of the respective countries. This meant that each country's political systems were made responsible for their own public funding of the health care system. In this way, the authorities themselves could decide how much money should be spent on health services, what their political priorities should be, and how the services should be delivered.

Health services in the UK are mainly provided by the public health service, National Health Services (NHS). Care services are provided primarily by local authorities. Structural and organizational similarities and differences exist at both national and local levels across the various countries. This will be elaborated in the following chapters.

In the UK, the health and care system has been run as two independent systems. This means that medical treatment, provided by the NHS, and home treatment, mainly provided by the municipalities, have not been integrated. The number of people with health problems in need of both health and care services is increasing. The British Prime Minister David Cameron has signaled the need to integrate the two systems across the board. Scotland has already taken several active steps to increase integration.

The figure below illustrates structural differences in the health system in England, Scotland and Wales. Northern Ireland is excluded, as it is not covered by the case descriptions in the report.

²⁸ The UK Government (2013): Devolution of powers to Scotland, Wales and Northern Ireland, Guidance.

Figure 9 Structural differences in the health and care system in the UK²⁹

	England	Skottland	Wales
Innbyggertall (m)	50	5	3
Organisatoriske karakteristikk:			
Skille mellom kjøper og leverandør	Ja	Avskaffet i 2004	Avskaffet i 2004
Penger følger pasienten	Ja	Nei	Nei
Konkurranse mellom offentlige og private aktører	Ja	Nei	Nei
Integrasjon av helse- og omsorgssystemer	Nei	Ulike initiativ	Nei
Avgifter og brukerkrav:			
Gratis omsorgstjenester for personer over 65 år	Nei	Ja	Nei
Gratis resepter	Nei	Ja	Ja

The Health and Social Care Act 2012 was implemented in April 2013. The law has been prepared for the English health and care service, but also has direct consequences and ripple effects for the other countries in the UK. The law will help meet the UK's challenges related to increased demand for health and care services, higher treatment costs, necessary modernization needs of the NHS, and the need to ensure better and more efficient use of public funding for health and care.³⁰

2.1.1 Organization of health and care in England

The introduction of The Health and Social Care Act 2012 entailed increased decentralization and local focus, with greater accountability at both national and local level. National governance should be limited, and rather help to link local services together. This has led to an increased local focus on health and care services in England.

A distinction is made between the following local authorities in England³¹:

- County councils
- District / borough / city councils / London boroughs

²⁹ Bevan G., Karanikolos M., Exley J., Nolte E., Connolly S., Mays N. (2014): *The four health systems of the United Kingdom: how do they compare?* The Health Foundation, source report.

³⁰ The UK Government (2012): *Overview of the Health and Social Care Act 2012*. Factsheet A1.

³¹ Politics.co.uk. *Local government structure*. 2014.

- Unitary authorities
- Metropolitan districts

County councils are responsible for providing services to their citizens across a larger geographic area. This involves providing care services that cover residents across the entire council.

A county council is divided into several districts, referred to as district, borough or city council. The districts are responsible for covering a smaller area and offering services at a lower local level than county councils. Examples of such services can be local nursing homes and care homes.

Local authorities can be organized in an independent local authority, called unitary authorities. Here, unitary authorities are responsible for delivering all care services at the local level.

Regardless of organization, local governments are responsible for providing local health and care services to their citizens. Today, there are 56 unitary authorities and 27 county councils in England³².

2.1.2 Organization of health and care in Scotland

NHS Scotland is subordinate to The Scottish Government Health and Social Care Directorate. In addition to setting the strategic direction and ensuring the development and implementation of health and care policies, NHS Scotland is responsible for delivering Healthier Strategic Objectives. This is a goal developed by the Scottish authorities to help citizens maintain and improve their own health, as well as ensure better, local and faster access to health services.³³

NHS Scotland is organized into 14 regional NHS boards, seven specific NHS boards and a public health body³⁴. The regional NHS boards are responsible for the population's health and for providing the primary health services. The specific NHS boards support the regional NHS boards by offering a number of important specialist and national health services.

The regional health boards are again divided into 34 Community Health Partnerships (CHP). Their priority areas include³⁵:

³² Office for National Statistics. *Counties, Non-metropolitan districts and Unitary Authorities, Guidance and Methodology* (2014).

³³ The Scottish Government. Oslo: The Scottish Government (2014).

³⁴ NHS Scotland. Oslo: NHS Scotland (2014).

³⁵ Community Health Partnerships. Oslo: Community Health Partnerships (2014).

- Ensure better access to primary health care
- Ensure a systematic approach to long-term diseases
- Preventive health
- Support people in their homes
- Prevent unnecessary hospitalizations
- More local diagnoses and treatment
- Increased focus on discharging patients and rehabilitation
- Improving health outcomes
- Improve health and prevent inequalities

The Scottish Government published the *Integration of Adult Health and Social Care in Scotland* in 2012. The proposal aims to improve health and care services. The proposal will help to inform and change the way the NHS and local authorities work together. The proposal includes changes in how health and care services are provided to the older part of the population³⁶.

2.1.3 Organization of health and care in Wales

The health system in Wales is made up of seven health councils and three national NHS foundations. Each health council is responsible for delivering the NHS health services within a geographical area, while at the same time representing and safeguarding the interests of the population. The three NHS foundations cover three areas of the Welsh Health Service, including the ambulance service, the cancer service and general public health³⁷.

The seven local health councils are supported by 22 unitary authorities, with responsibility for the local care services. The Government of Wales sets the broad political agenda for unitary authorities. This means offering a number of services to the inhabitants, including care for the elderly and the disabled. Each unitary authority is responsible for the municipal services provided in their area. Due to the size of the country and the absence of an organizational level between the local and the national, political involvement in local decisions can sometimes be significant³⁸.

In addition to unitary authorities, Wales is organized into community or town councils. Today, there are over 730 community and town councils in Wales, working to cover a smaller area and provide services

³⁶ The Scottish Government (2012): *Integration of Adult Health and Social Care in Scotland*. Consultation on Proposals.

³⁷ Patient.co.uk. *Monitoring the NHS*. (2014).

³⁸ Longley, M., Riley, N., Davies, P. Hernández-Quevedo, C. (2012). *United Kingdom (Wales), Health system review*.

at a lower local level³⁹.

2.2 Welfare technology in the UK

2.2.1 The British definition of welfare technology

In the United Kingdom, the concept of welfare technology is linked to the concepts of telecare and telehealth. The Norwegian Directorate of Health's expert report on the implementation of welfare technology refers to the Department of Health (2009) to explain the concepts⁴⁰:

Telecare: Services that use a combination of alarms, sensors and other equipment to help people live independently. This is done by monitoring activity changes over time and will raise a call for help in emergency situations, such as fall, fire or a flood”.

“Telehealth: Services that use equipment to monitor people's health in their own home... (monitoring) vital signs such as blood pressure, blood oxygen levels or weight”.

Telecare is thus the combination of equipment and services for monitoring, and is used primarily in the home. The user can use either active or passive telecare. Passive telecare means that the user can activate their own alarm when assistance is needed. Active telecare involves monitoring behavioral patterns, where changes outside the normal range will be reported. This monitoring is intended to support people and enable them to continue living in their own homes.

Telehealth is equipment used at home or outside the home to measure important signals that would normally be measured by healthcare professionals. This should help reduce the number of visits to the doctor. It is expected that telehealth can help reduce the number of planned admissions to institutions by identifying changes in health status before any problems become serious enough to justify emergency intervention. The data is automatically transferred to an emergency room and / or healthcare professional. Signals indicating changes outside the user's normal parameters are then flagged for further follow-up⁴¹.

2.2.2 Status of work on welfare technology UK

The UK is working to integrate telecare and telehealth into the health and care sector. Great Britain

³⁹ Llywodraeth Cymru Welsh Government. Community and Town council (2014).

⁴⁰ The Norwegian Directorate of Health (2012): *Welfare technology. Technical report on the implementation of welfare technology in the municipal health and care services 2013-2030*. IS-1990 Report.

⁴¹ Davies A. and Newman S. (2011). *Evaluating telecare and telehealth interventions*. The King's Fund, WSDAN briefing paper.

has a well-developed infrastructure for emergency services provided by local authorities, the social services or actors from the voluntary and private sector. Telecare is offered both to residents in care homes and in ordinary households. Most local authorities offer some form of telecare, whether they provide the service directly themselves, or through an external provider. Relatives of the user's family are often involved in the service. In some areas, mobile intervention groups are offered, in addition to the nominated caregivers from the user's side.

The Whole System Demonstrator Program, introduced in 2008, is a program started by the Department of Health in England to show what telehealth and telecare are capable of. This should provide a basis for important investment decisions. It should also show how technology helps people to live an independent life, take control of their own lives and be responsible for their own health and care.

Preliminary findings show that telecare and telehealth can contribute to significantly reduced mortality, reduce the need for hospitalizations, reduce the number of hospital stays and reduce time spent in the emergency department.⁴²

In Focus has now moved from the Whole System Demonstrator program to Three Million Lives. This is a campaign launched by the Department of Health in England in 2011. The campaign established a commitment from the authorities to work with industry, the NHS and the care sector to improve access to telecare and telehealth. The campaign aims for telecare and telehealth to improve the lives of three million people over a period of five years⁴³. Service integration will help to improve the course of treatment. This will lead to different services and sectors collaborating, towards increased patient flexibility, more appropriate care.

In Scotland, The Scottish Center for Telehealth and Telecare works with health councils to implement telehealth. A review of telehealth in Scotland conducted by Audit Scotland, shows that telehealth has the potential to help deliver clinical services more efficiently. The Audit Scotland study identified that telehealth is popular with patients, doctors and carers alike⁴⁴.

The All-Wales Telemedicine Development Program is a development programme's goal to offer and test a sustainable and generic model for chronic conditions. The model will take care of the citizens' local needs and promote independent life in the community, by including the use of telecare and telehealth⁴⁵.

Welfare technology is becoming more and more common in the UK. This comes from political will and essential

⁴² Whole System Demonstrator Project. Oslo: Telecare Services Association (2014).

⁴³ Crispin S. (2011): *DH launches 3m lives telehealth campaign*. Ehealth INSIDER.

⁴⁴ Telehealth and telecare. Oslo: Royal College of Nursing (2014).

⁴⁵ Telehealth and telecare. Oslo: Royal College of Nursing (2014).

financing schemes in the form of support for campaigns, programs and investment funds.

2.2.3 Telecare Services Association (TSA)

The Telecare Services Association (TSA) is a public, non-profit member organization for technology-based care and treatment service providers in the United Kingdom. TSA has developed a framework against which service providers of telecare and telehealth services can be accredited.

The TSA has three main priorities:

- Engage and involve key stakeholders in telecare and telehealth in the UK
- Promote industry and the sector
- Be at the forefront of skills development in the sector

TSA has a membership base of about 360 organizations that includes everything from local governments, social housing, private service and technology providers and telecommunications and infrastructure providers. Of these, 210 are alarm reception.

TSA represents a total of 1.7 million users. TSA members are mainly from the UK, but they also have members from other countries. Of the 360 members, approx. 140 organizations accredited members. The accredited members are distributed relatively equally between municipalities and private / non-profit actors.

The TSA has developed the Integrated Code of Practice (ICoP). This is the only integrated recommendation for telecare and telehealth in the world. ICoP has been developed to identify quality providers and ensure that the services provided within telecare and telehealth are of the highest possible quality. The recommendations are based on a broad stakeholder consultation that included the authorities of England and similar administrations in Scotland, Wales and Northern Ireland, the Department of Health, as well as TSA member organizations.

The recommendations in ICoP include a number of measurement parameters that service providers must satisfy in order to ensure a good quality level for citizens. The measurement parameters include, for example, response time, handling of alarms, time perspective for installation of solutions and delivery of mobile response solutions. ICoP consists of detailed descriptions of quality requirements and the recommended process for what happens from a resident receiving an offer of telecare, until a response unit moves out when the resident triggers the alarm.


Accreditation takes place by the service providers being inspected annually by an independent accreditation organization, United Kingdom Accreditation Services (UKAS). Accreditation must ensure

that the services performed are reliable and consistent. The inspections are usually carried out by a representative from UKAS visiting the member organization and assessing whether systems and processes are in accordance with the guidelines and requirements included in ICoP.

The first part of the accreditation normally takes place over two days, and results in a report with identified areas for improvement.

The figure below shows extracts from ICOP.

Figure 10 TSA integrated Telecare and Telehealth Code of Practice Matrix⁴⁶



Standards Modules	PROCESS MODULES								
	ACCREDITED SERVICES								
	Service Blueprint	Referral	Assessment		Service Set Up		Monitoring	Response	Re-Evaluation
	Service Blueprint	Referral/Risk Stratification	User Profiling	Telecare/ Telehealth Plan	Service Tailoring	Installation	Monitoring	Response	Re-Evaluation
Safeguarding	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organisational and Clinical Governance	✓	✓	✓	✓	✓	✓	✓	✓	✓
Staff & Training	✓	✓	✓	✓	✓	✓	✓	✓	✓
Information Governance	✓	✓	✓	✓	✓	✓	✓	✓	✓
Partnership Working	✓	✓	✓	✓	✓	✓	✓	✓	✓
User Communication	✓	✓	✓	✓	✓	✓	✓	✓	✓
Managing Access/ Working in the Home			✓			✓	✓	✓	✓
Technology Management						✓	✓	✓	
Business Continuity	✓					✓	✓	✓	
Development of SC							✓		
Legislation (inc Health & Safety)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Key Performance Indicators	✓	✓	✓			✓	✓	✓	✓

✓ Telehealth only ✓ Telecare & Telehealth SC = Service Centre

© Telecare Services Association May 2013

British municipalities⁴⁷ have divided opinions about the TSA's significance for the work with telecare. Leaders from the British municipal sector believe that TSA's methodology related to accreditation is good in a start-up phase, as a "recipe" for processes and procedures. Some argue that the TSA should rather be a government body, so that objectivity is maintained in an even better way. A private player⁴⁸, states that they consider TSA accreditation to be important in order to be a bidder in public tenders.

The TSA states⁴⁹ that they want to further develop ICoP to become more oriented towards the user of the services. TSA states that they want to work on adapting the framework so that it is better suited for smaller alarm reception centers and small municipalities, as the framework is considered too comprehensive for this user group. The TSA also sees a need for guidance on profit realization for British municipalities.

⁴⁶ TSA Integrated Telecare and Telehealth Code of Practice Matrix. Oslo: Telecare Services Association (2014).

⁴⁷ Tameside Metropolitan Borough, Royal borough of Greenwich, Cardiff Council of Edinburgh Council.

⁴⁸ Medvivo, platinum member of the TSA

⁴⁹ Trevor Single, Chief Executive TSA

TSA conducts significant activity related to skills development. TSA publishes various "good practice guides" with concrete examples and tips on how telecare services can be improved.

In the future, TSA will work with the supplier industry to ensure that the products become more consumer-friendly. Welfare technology equipment receives a lot of criticism for poor design, and the TSA sees a need for product design to be improved and modernized. TSA also sees a need for closer cooperation with the supplier market, to ensure that players can advocate more comprehensive standards across the sector and national borders.

2.2.4 National framework agreement for telecare

The NHS Purchasing and Supply Agency has established a national telecare framework agreement. The agreement includes the purchase of equipment, installation, maintenance, monitoring, and response services. In addition to this, each country in the UK also has its own framework agreements for telecare.

2.3 Case descriptions from the United Kingdom

This subchapter presents case studies from five municipalities / regions in the United Kingdom. The case studies are based on visits, interviews with managers and employees as well as obtaining written documentation.

2.3.1 Cardiff Council⁵⁰

The Cardiff Council is the governing body of Cardiff - one of 22 regions in Wales.

Cardiff is a central region of Wales in terms of population and economy. The region has 350,000 inhabitants, and accounts for approx. 20% of GDP in Wales. The region is densely populated, and has strong local self-government. Cardiff has 6,500 telecare users.

About Cardiff Council

Country:
Wales

Number of citizens:
about. 350,000

Percentage of inhabitants over 65 years:
about. 14%

⁵⁰ Lawson S. (2014): Cardiff, interview conducted 20.08.14.

Cardiff Council divides citizen services into 17 categories, with "Health and Social Care" being one of the areas. Cardiff works consciously with integrated services and partnerships with various actors towards municipal service production, and the strategy within health and care focuses on this.

In the rest of the chapter, Cardiff Council is referred to as a municipality.

User segments

Cardiff has around 6,500 telecare users. These are primarily older users with a need for security alarms, sensors and GPS monitoring. The users are often elderly people with dementia, elderly residents who live in municipal housing, and elderly people who feel insecure in their own home because they are afraid of falling. The municipality also handles a number of younger users who have epilepsy and residents equipped with violence alarms.

The alarm reception has historically grown as a service of the municipality's activities related to municipal housing. This is also where the largest user segment is located.

Cardiff is very conscious of using terms such as independence and quality of life in the promotion of the services offered to users.

Process for referral to telecare

References to telecare in Cardiff come from the social services (primarily related to municipal housing), and from the families of potential users. The referral starts with an initial assessment over the phone. Potential users then fill in a form that is assessed by a case officer in the municipality.

The referral form is first sent to the municipality's e-mail box for telecare. A simple needs survey is then carried out of what the user needs by telephone. The need is noted and a time is set for when the equipment is to be assembled and installed. The equipment is then prepared for assembly and installation.

Telecare services

Cardiff Council offers telecare services on two levels:

1. Service which means that relatives or others close to the user receive a call from the alarm reception when an alarm is triggered
2. Service which means that the alarm reception sends out a response team if necessary in the event of an alarm being triggered

The alarm reception also offers services related to monitoring of violence alarms. These are routed directly to

the police.

Cardiff offers the following technologies:

- GPS
- Just Checking system for monitoring the user's movements in the home
- Security alarms
- Alarms
- Sensors for door, bed, and more

In addition, a number of other equipment is being piloted and tested.

Organization of alarm reception

The municipality runs the alarm reception with 24/7 staffing. The alarm reception in Cardiff has a total of 10 employees who handle calls from users. There are a minimum of two employees at work at any one time. In the morning and evening / night there are four employees at work, at the turn of the day there are two. Employees work on rotating shifts.

When the alarm is triggered, the contact with the user first goes through the alarm reception, before relatives or response teams are involved in

need. The response service has two service vehicles that are used when the response team visits users at home. The company cars are equipped with basic equipment to be able to handle falls and basic first aid.

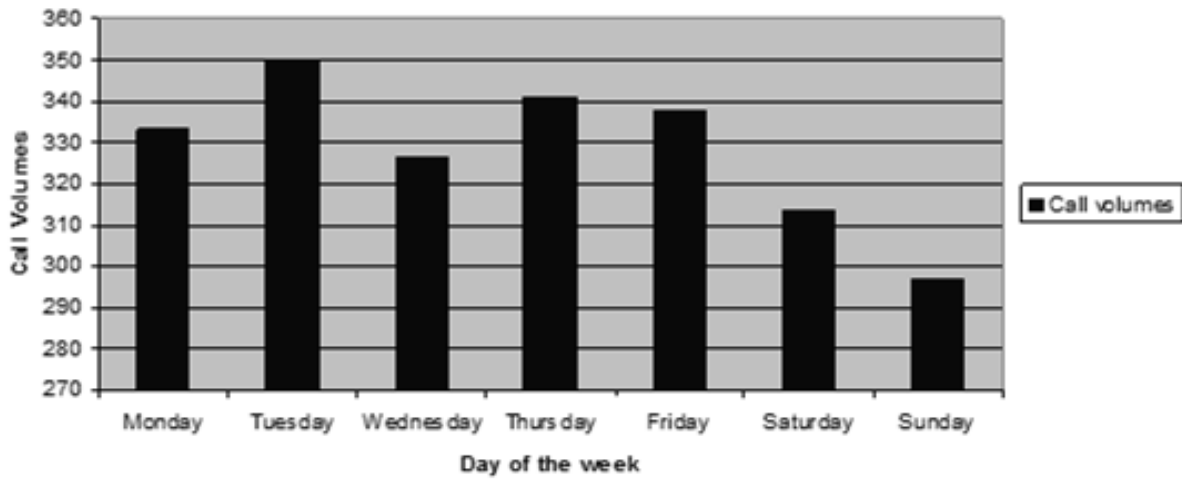


Picture 1 Cardiff Council emergency room staff

The alarm center also collaborates with several other municipal and non-municipal actors on monitoring and emergency response. Other actors involved are the ambulance service, the police, the fire service, the postal service and volunteers. The fire service monitors 300 homes associated with smoke alarms.

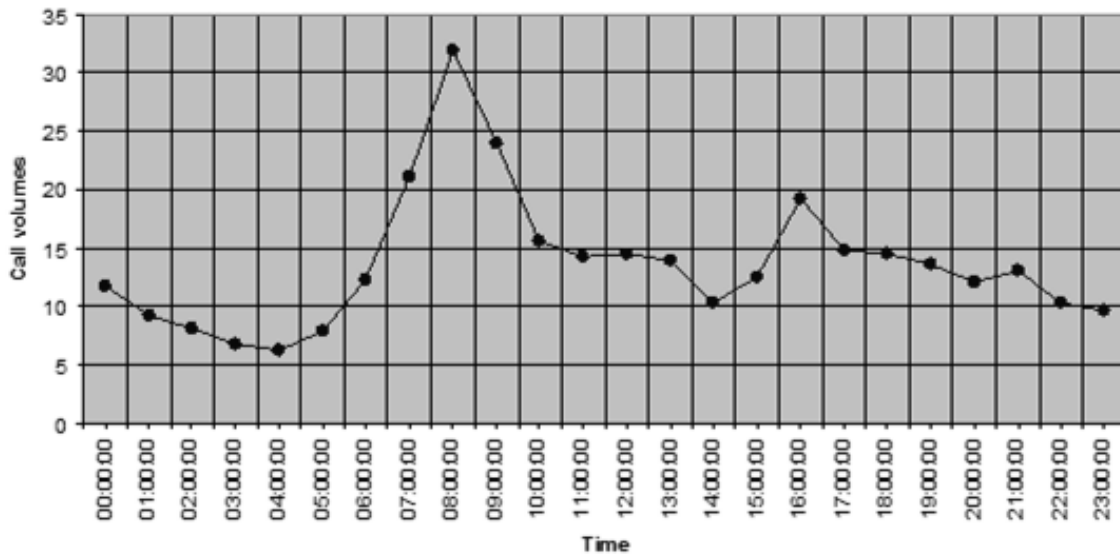
On a normal day, approx. 600 calls, and on average about 18,000 calls are answered per month. The emergency service performs approximately 300 home visits per month. 54% of the calls in August 2014 were due to users who had fallen. 7% of conversations with alarm users resulted in an ambulance being called.

Figure 11 Average call volume per day of the week at the Cardiff Council emergency reception



The figure below shows how the call volume at the alarm reception varies during a day. From April to June 2014, the alarm reception received an average of 328 calls per day. The busiest time is between 8.00 and kl. 9.00 in the morning. The call volume is reduced from kl. 17:00 and does not start to increase again until kl. 5.00 in the morning the following day.

Figure 12 Number of inquiries per hour on a normal day at the Cardiff Council emergency reception



The call volume varies during the week, and the largest number of alarms is received on weekdays.

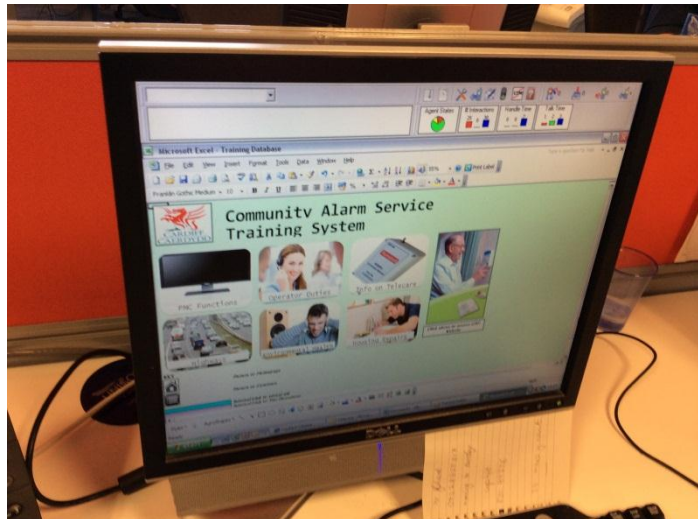
During quiet periods, the employees at the alarm reception use the time for overdue paperwork

the alarm reception and the municipality in general, as well as answering e-mails from users and relatives. In addition, they call users who have a birthday on the day in question to congratulate them and at the same time check that the personal details are correct.

Staffing, competence requirements and training

The employees at the alarm reception do not have a health professional background. Criteria that are emphasized in the hiring process are, for example good telephone manners and basic knowledge of using PCs and other technology. Several of the employees in the alarm reception has a background from other positions in the municipality.

Departure is low, and employee satisfaction is high. New employees undergo a two-week training program that will enable them to complete the services in a good way. There is a continuous need for training, and the alarm reception uses an electronic training database for this purpose.



Picture 2 The telecare training database for Cardiff Council employees

Control and measurement

Cardiff is a member of the TSA, and carries out audits of its own organization in line with guidelines from the TSA. The municipality analyzes statistics regarding incoming calls based on the TSA's framework on a daily basis.

Examples of targets for key indicators in the Cardiff Council: (The targets are derived from the TSA's framework)

1. Measures for response time to alarms:

- 97.5% of the calls must be answered within 60 seconds
- 98.5% of the calls must be answered within 120 seconds
- 99.0% of the calls must be answered within 180 seconds



Picture 3 Screen showing the status of incoming calls 26 August 2014. The municipality constantly measures incoming calls against TSA requirements

2. Measure of response time on applications

- Critical applications - installation within 2 days
- Critical applications - installation within 5 days
- Non-critical applications - installation within 15 working days
- Non-critical applications - installation within 20 working days

3. Measure response time target for error correction

- Critical alarm faults - repair within 48 hours
- Critical alarm faults - repair within 96 hours
- Non-critical alarm faults - repair within 10 working days
- Non-critical alarm faults - repair within 15 working days

User satisfaction is measured through separate feedback forms, and the alarm reception receives good feedback regarding the telecare services from users and relatives.

IT systems and integration

The alarm reception uses software for handling calls. There is no integration between the emergency room and the health and care systems in Cardiff.

Cardiff Council uses the telecommunications network for communication. Cardiff does not experience many major challenges related to infrastructure, but in some cases irregularities have arisen in connection with thunderstorms. To reduce vulnerability, data is backed up every night, and during downtime due to power issues, the phones are routed to another center.

Privacy and information security

Cardiff Council has set up a separate information security forum that develops guidelines for the treatment of privacy and data security in the municipality. The forum reports to Cardiff Council and the Wales authorities. Cardiff has developed a separate directive describing guidelines related to data security and data handling procedures. Cardiff, like other countries in the United Kingdom, complies with the Data Protection Act and adheres to the guidelines outlined here.

Ambulance personnel and other health personnel who need access to ensure a safe service are given access to patient information.

Payment and financing

The alarm reception requires a user fee from the users of the services:

- £ 1.97 per week for receiving alarm and forwarding to relatives or ambulance
- £ 3.65 per week for receiving the alarm and emergency response of the emergency reception staff or ambulance

Many users receive a discounted price as a result of pensions, etc. All users still have to pay a small share of the user fee.

For 2014/2015, the budget including total costs related to the operation of the alarm reception is £ 1,063,360. The largest cost items are payroll costs equivalent to £ 916,880, as well as costs to suppliers and equipment equivalent to £ 97,690.

The total revenue for 2014/2015 is budgeted at £ 1,191,510. The user fee is among the largest sources of income for the alarm reception, and is budgeted at £ 265,000 for 2014/2015.

Cardiff received support from the Welsh Government Intermediate Care Fund to cover telecare costs.

Profit realization

Cardiff emphasizes that the alternative cost of telecare in all cases is very high compared to the cost of operating the alarm reception, and that society as a whole benefits from this.

Cardiff has to some extent mapped savings related to telecare, for example by calculating alternative costs / avoided costs when using telecare. The municipality has a detailed degradable overview of costs related to the health and care services, and plans to introduce a profit realization model that communicates avoided costs even more clearly than today.

The head of care in Cardiff emphasizes that it has been a prerequisite for the work with the realization of benefits that the costs for the municipality's "care packages" are defined, so that a clear zero point has been established for measurement.

The municipality states that they are in the start-up phase with detailed follow-up of profit realization. They find it demanding but necessary.

Plans for the future

Cardiff is in the process of reorganizing the emergency reception, and the focus going forward is on getting the new organization integrated into daily operations. The telecare service in Cardiff is focused on improving the link between the emergency room and the other health and care services in the municipality. The municipality emphasizes working with even better integration between the alarm reception and external partners such as the police, the postal service and voluntary organizations.

Success criteria

The chief of care in Cardiff states work with politicians as central to securing funding for the telecare service. The municipality first met with skepticism from politicians when they intensified their work with telecare. The alarm reception identified that a central politician in the municipality had a parent who used telecare, invited the politician in to see how the alarm reception worked. This politician eventually became a champion of telecare.

The head of care further states that it is very important to have control over what is the alternative cost for telecare. She believes it is crucial to communicate what the alarm reception prevents from future care costs.

2.3.2 Royal Borough of Greenwich⁵¹

The Royal Borough of Greenwich is one of 32 administrative districts in Greater London.

The Royal Borough of Greenwich has 260,000 inhabitants. 50% of the population is of non-Western origin. The district is one of the 30 poorest districts in Britain.

The Royal Borough of Greenwich has been declared by the government as a pioneer municipality / district in the development of integrated health and care services. Greenwich's efforts in this area were awarded a national innovation prize in 2014.

About the Royal Borough of Greenwich

Country:

England

Number of citizens:

about. 260,000

Percentage of inhabitants

over 65 years:

about. 10.3%

Greenwich's approach is that service users should increasingly be cared for in the local environment instead of in nursing homes or other forms of institutions. An increasing number of residents receive care services in their own homes, and Greenwich has 5,000 telecare users. The approach is further based on services being integrated across units in the municipality, and between the municipality and the state. The services are provided in close collaboration with local voluntary organizations and private actors.

In the rest of the chapter, the Royal Borough of Greenwich is referred to as the municipality.

⁵¹ Allan J. (2014): Royal Greenwich Telecare, interview conducted 29.08.14.

User segments

Telecare services are offered to all residents of the Royal Borough of Greenwich, and in September 2014 approx. 5,000 inhabitants connected to the municipality's alarm reception. Of these users, 3,750 are home residents, and 1,250 live in municipal housing for residents with care and nursing needs (British expression: "Sheltered houses"). There has been a decline in the number of telecare users in recent years, but this picked up again in 2014.

14,000 of the inhabitants of Greenwich are over 75 years old (6.5%). The municipality works purposefully to get residents who need assistance as a result of chronic illness and the like in this age group to use telecare.

Process for referral to telecare

From April to September 2014, Greenwich received 488 new telecare referrals. The municipality expects a minimum of 1,500 inquiries annually in the future. Since 2012, there has been an increase in the number of referrals of 33%.

71% of the referrals to telecare occur as a result of a recommendation from health personnel, while 10% of the users contact the municipality themselves because they want to use the service.

The user's needs are assessed by an interdisciplinary team, and this is what determines which equipment is installed at the user. Residents can also look in an online catalog that describes what equipment is available.

Greenwich states that the reasons for the increase in the proportion of referrals from healthcare professionals are due to:

1. Significant efforts made to raise awareness of the municipality's interdisciplinary health and care team regarding telecare. Referrals to telecare are now considered a natural, integral part of the care teams' work
2. Creation of an electronic form with associated online catalog with equipment for referrals. This lowers the threshold for healthcare professionals to make referrals

The municipality's referrals to telecare are always linked to an expected benefit for the citizen and the municipality. Below are statistics regarding the inquiries in Greenwich:

- 63% of referrals are expected to reduce injuries as a result of falls
- 73% of referrals are expected to increase the citizen's ability to manage on their own at home
- 22% of referrals are expected to prevent / postpone transfer to a nursing home / nursing and care home

- 37.5% of the inquiries are expected to prevent an increase in the citizen's consumption of municipal health and care services
- 52% of inquiries are expected to avoid / prevent hospital admissions / blocking of hospital beds
- 19% of the inquiries have an element of dementia care in them

The municipality works continuously with health and care personnel to increase the number of inquiries. The municipality states that they are moving from the use of the word "telecare" to the use of the word "Assistive technology".

Telecare services

Greenwich offers telecare services to users with cognitive and physical impairments so that they are able to manage on their own. Greenwich does not offer telehealth services, but the municipality has been involved in pilot projects in connection with telehealth.

In Greenwich, telecare users are offered two types of service:

- Only monitoring of residents without a response service. Here, the alarm reception receives the alarm signal and notifies a relative who is investigating the matter further with the user
- Full response service with emergency response from the emergency room with an interdisciplinary care team involved

Greenwich offers the following technology:

- Smoke and flood sensors (500 sensors in operation today)
- Safety alarms
- Fall sensors (150 sensors in operation today)
- Door sensors (100 sensors in operation today)
- GPS (15 sensors in operation today)
- Medicine dispensers
- Just Checking, a system for monitoring the user's movements in the home

Telecare users in Greenwich have more than one sensor connected to the alarm reception, but the users mainly use security alarms. The goal is that at least half of the telecare users have more than one sensor connected to the alarm reception.

Organization of alarm reception

The municipality runs the alarm reception. There are at all times three employees on duty to answer and respond to alarms. All contact with the inhabitants goes through first

the emergency reception staff, then the inquiries are routed to an interdisciplinary team for health and care services. The interdisciplinary team consists of physiotherapists, occupational therapists, and health and care workers, the ambulance service and volunteers. GPs are also involved in the telecare work. The municipality experiences that this works well for users with complex needs.

Telecare in Greenwich is staffed by 17 full-time employees.

- 2.5 man-years go to the installation of equipment and control of existing installations
- 1 man-year handles referrals and other administrative tasks
- 1 man-year works with the financing (income and expenses)

Greenwich receives approx. 300 activated alarms per day. Twelve visits to residents are carried out daily as a result of an activated alarm, primarily as a result of falls.

Staffing, competence requirements and training

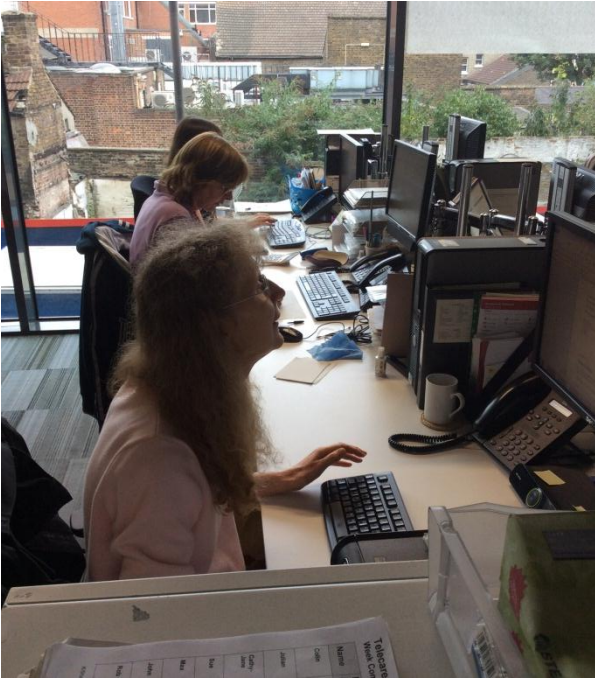
The alarm reception and the response team are primarily staffed by employees without a health professional background. It is an unavoidable requirement that employees do not have a criminal record. Greenwich states that it is positive with a health and care professional background, but that there is no remuneration at the contact center that attracts formal health professional competence. They also do not feel that this is necessary, because a health professional background has little effect on the quality of the alarm reception services themselves.

Greenwich values, however, that employees have the competence to solve practical and technical problems in addition to being able to handle tasks related to referral and administration. Greenwich states that it is a requirement that those involved in the referral process feel comfortable assessing and handling telecare equipment.

Greenwich certifies CIH Certificate in Telecare employees⁵².

Nurses in Greenwich have resisted the process as they consider telecare to be a burden rather than a help to users. It is stated that occupational therapists and other health and care workers to a much greater extent have been positive about telecare.

⁵² CIH Certificate in Telecare Services (QCF), The Chartered Institute of Housing.



Picture 5 Staff at the Royal Borough and Greenwich emergency services



Picture 5 Technical room for the emergency reception in the Royal Borough of Greenwich

Collaboration with external partners

Greenwich performs the services related to contact center, response and installation internally in the municipality. There is no SLA (Service Level Agreement) between the telecare service and the municipality.

The agreements with suppliers of contact center software and equipment are regulated by SLA.

Control and measurement

The municipality uses TSA standards as a guide for measurement indicators of the alarm reception's performance.

Examples of important measurement indicators:

- 90% of referrals must be completed within 48 hours
- 90% of critical installations must be completed within 48 hours
- 90% of non-critical installations must be completed within 15 working days
- 97.5% of the calls must be answered within one minute

Greenwich also measures customer satisfaction and the extent to which residents are aware of / have heard of the services related to telecare.

IT systems and integration

There is no integration between alarm reception and specialist systems in Greenwich. There are plans for integration between both alarm reception and specialist systems, and alarm reception and databases with patient and citizen information. Greenwich is planning the introduction of a "single view of citizen" so that care personnel get an overview of inquiries and services the citizen receives from the municipality in one place.

Greenwich is experiencing challenges related to interoperability between sensors and base units. They state that most of the equipment communicates well with the alarm reception software.

Privacy and information security

Greenwich does not experience challenges related to data security and privacy in the form of concern among users. Users give their consent to share relevant information with the alarm reception to ensure the best possible outcome in a crisis situation.

Payment and financing

The deductible rates are distributed according to the service level categories:

- £ 3.50 per week for non-response monitoring service
- £ 5.50 per week for the response service

The first six weeks are considered a trial period and are free. More users do not pay for the service, or pay only in part due to low solvency. The municipality has increased the price for the use of telecare, and they have lost users because of this.

The biggest cost drivers for telecare in Greenwich are:

- Staff - estimated cost £ 900,000 annually
- Equipment - estimated cost £ 130,000 annually

Equipment is purchased with a 5-year warranty, and Greenwich does not use the government's procurement service, but is part of the London Consortium for procurement and achieves favorable rates from this collaboration.

The municipality's revenue from telecare amounts to £ 450,000.

Critical user base

5,000 users cause the municipality to reach break even at a cost of £ 5.00 a week for simple monitoring service, and £ 8.00-10.00 for investigation service. Many users do not pay for

the services. The ideal is considered to be a combination of an income-based and a self-financing model.

Requirements for service level, marketing costs and purchase of equipment mean that economies of scale are considered necessary to achieve.

Profit realization

However, the benefit analysis for telecare in Greenwich indicates that the service should be offered free of charge to all potential users, because the municipality saves money in the long term by using telecare.

Greenwich expects that telecare will result in a reduced number of acute hospital admissions, a reduced number of permanent nursing home stays, a reduced number of residents who go directly from hospitalization to long-term care, a reduced number of hospital stays and a reduced need for municipal welfare packages.

Greenwich has developed a dashboard for realizing profits from telecare.

Plans for the future

In the years ahead, Greenwich will focus more on adults with complex needs, who are considered to have a high risk of poor health and hospitalization. Greenwich chooses a focus area for telecare based on close cost monitoring of the care services in the municipality.

Greenwich wants to offer services to other districts. For example, the Bromley Borough district is on the list of possible candidates. The goal is to reduce the fixed costs associated with telecare by allocating them to more people.

2.3.3 Edinburgh Council⁵³

Edinburgh is the capital of Scotland and the country's most populous city, with close to 500,000 inhabitants.

Telecare is organized under Social Care and Health in Edinburgh Council. Edinburgh Council has established a strategic plan for the elderly. In this plan, the clear goal is for older residents to live at home for as long as possible.

The demographic trends in Scotland indicate that the population will increase from 5.3 million to 5.8 million over the next 20 years. In 2011, the census showed that the number of inhabitants over 65 years for the first time was higher than the number of inhabitants under 15 years. At the same time, the number of inhabitants over the age of 75 is expected to increase by 60% over the next 20 years.

Trends in health and care indicate a doubling in the number of people with dementia by 2035, and that the proportion of residents with chronic diseases will increase significantly in the coming years. There is an increased focus on health and wellness in Scotland, but the gap between socio-economic groups is widening.

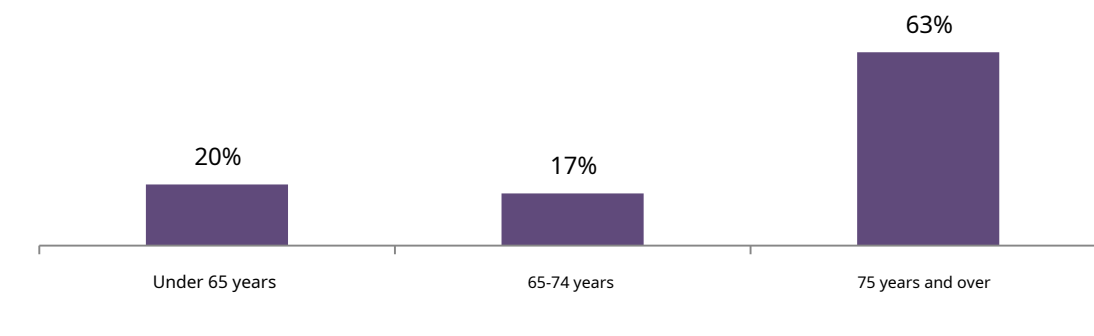
In the rest of the chapter, Edinburgh is referred to as a municipality.

User segments

Edinburgh started with telecare 20 years ago, and today has 8,500 users of telecare services.

The graph below shows the distribution of telecare users by age group.

Figure 13 Distribution of telecare users by age group



⁵³ Laing H. (2014): Edinburgh, interview conducted 01.09.14.

About Edinburgh Council:

Country:
Scotland

Number of citizens:
about. 490,000

Number of citizens over 75 years:
about. 20%

Edinburgh categorizes the telecare user segments as follows:

- Residents with dementia
- Residents who live with and are dependent on assistance from relatives
- Relatives in need of assistance to take care of family members
- Residents with developmental disabilities
- Residents living with children in the risk group
- Residents who are vulnerable when living alone due to violent relationships
- Residents who are isolated due to physical limitations
- Residents who are worried about, or at risk of falling
- Residents under the age of 16 with learning disabilities
- Residents with brain damage
- Residents with epilepsy
- Residents with mental health problems
- Residents with violence alarms

A large proportion of telecare users in Edinburgh have dementia. In September 2014, 113 new telecare packages were installed. 24% of these installations were for users with dementia. 34% of users are women and 66% are men.

Process for referral to telecare

Both potential users and their relatives can contact the alarm reception for referral to telecare.

The referral process normally takes place by health personnel, potential users or relatives submitting an application form to the municipality. The form is assessed by a separate department in the municipality consisting of 5 employees.

A social worker, physiotherapist or municipal care assistant performs a needs assessment meeting at the resident's home.

With the user's consent, the GP is contacted to get a better picture of the need. After the meeting, the municipality will tailor the service offer, and then review this with the user.

The criteria considered when applying for telecare services are:

- Personal safety
- Personal care and household chores
- Family and social responsibility
- Need for care

Risk is also assessed.

Applicants with critical needs will be offered telecare within a few days. Applicants with significant needs will be offered services within three months. Potential users with moderate needs are assessed within 12 months, and applicants with low needs will not be offered assistance.

Telecare services

Telecare users can choose between different service packages:

- Standard alarms
- Extended telecare packages that include various sensors and alarms

Telecare users can choose whether they want friends or family to be the preferred respondent, but the vast majority want the calls to be routed to the municipality's response team.

Edinburgh offers the following telecare technology to its citizens:

- Security alarms
- Smoke and flood sensors Draw
- cords
- Motion sensors
- Gas sensors
- Temperature sensors
- Fire / smoke sensors
- Just Checking system for monitoring the user's movements in the home

Edinburgh is very restrictive in the choice of technology, and its criterion is that no technology should have an exclusive effect on other suppliers' solutions. Edinburgh Council only uses suppliers affiliated with the Scottish Telecare Framework Agreements.

The response service is in possession of two equipped cars that are used for home visits. The cars are equipped with an inflatable chair to help with falls, "slider" for use to move someone in a sitting position, as well as first aid equipment.



Picture 6 Edinburgh Council's alarm reception-equipped cars, inflatable chair for residents who have fallen and a so-called "slide".

Organization of alarm reception

The municipality performs the services related to the alarm reception's contact center, response and installation. The telecare service is staffed by a team that receives and handles calls from residents 24/7, and these physically sit with a response team that moves out on home visits. The employees always travel in teams of two when they go out to the user.

Edinburgh receives approx. 240,000 calls to the alarm reception. About. 8,000 of the calls result in actual calls (an average of 22 per day), and 2/3 of the calls are to users over 75 years of age. Most of the calls are related to falls (2/3). In 2013, 3% of the calls resulted in

hospitalization. The busiest time of the day is between 11.00 and kl. 12.00 in the morning.

The alarm reception calls the ambulance immediately if the user feels very unwell.

Some family members want to be contacted if relatives have fallen or feel unwell. Several relatives prefer to be contacted after the response service has provided assistance to the user, while other relatives want to be notified immediately after an incident has occurred.

A total of 60 employees are connected to the alarm reception, including employees at the switchboard, the response service and administrative personnel.



Picture 7 Telecare training facilities in Edinburgh Council

Staffing, competence requirements and training

The telecare service in Edinburgh is staffed by health professionals, social workers, unskilled workers and volunteers. Health professionals are used in the work with reference to telecare.

Edinburgh considers it inappropriate to use health care staff in the emergency room. In Scotland, a common understanding has been established that health professionals must be used where necessary in the telecare process, and that unskilled workers can be used for as many tasks as possible.

Edinburgh conducts a comprehensive training program for employees associated with the telecare services. This includes the home care service, social workers and employees at the alarm reception.

The municipality has a demo house where all the technology offered to users is installed, and

used for training purposes for employees in the municipality.

Training is carried out for 600 people annually. This includes employees at the alarm reception and affected health workers in the home care service. The training includes demonstration of equipment in a natural environment. The Edinburgh Council emphasizes that it has been important to take a practical approach to telecare training, so that, for example, the home care service feels safe in handling equipment and gets to know as much as possible about how this can help residents.

Employees associated with the home care service carry out thorough training every time new services are included in the service portfolio. Tailor-made training is offered to occupational therapists, nurses and other health personnel, in addition to groups of relatives.

Control and measurement

Edinburgh measures the operating services on a daily basis in the form of response time to incoming calls and response time to emergency calls to users' homes. In 2012, 19,777 calls were answered at the alarm reception, and 95.2% of the calls were answered within 60 seconds. In 2012, 725 visits were made in connection with emergencies, 88.0% within 45 minutes.

Edinburgh has been accredited by the TSA, and was most recently accredited in 2013 for:

- Installation, repair and maintenance
- The Response Service
- **References**
- Customization of services

Edinburgh uses standard target figures from the TSA for telecare:

- Within 45 minutes, 90% must have received a response
- Within 69 minutes, 90% must have received a response
- Within 2 days, 90% of users with an immediate need for equipment must have it installed Within 5 days, 100% of users with an immediate need for equipment must have it installed Within 15 days, 90% of users with a non-immediate need for equipment must have it installed Within 20 days, 100% of users with a non-immediate need for equipment will have it installed
- Within 96 hours, 100% of critical repairs must be performed
- Within 10 working days 90% of non-critical repairs must be carried out
- Within 15 working days 100% of non-critical repairs must be carried out

Regular user satisfaction surveys are conducted. The results from 2012-2013 show that

users are very satisfied with the quality of the services (99%), that the response time is between 93% and 98%.

The Edinburgh Council Alarm Center uses all target information for continuous improvement.

IT systems and integration

The alarm reception is in the process of updating the technical infrastructure. Johntech is the main supplier of technical equipment, and the alarm reception uses the SDN 30 line. The telephone line does not depend on power supply.

Privacy and information security

The Edinburgh Alarm Clinic does not experience major challenges related to data security and privacy in the form of concern among users of the services or their relatives.

The municipality has prepared a "Code of Conduct" regarding the use of digital communication, which concerns all employees. The purpose is to inform and guide employees in information security.

Payment and financing

The telecare offer in Edinburgh is financed through:

- Local authorities
- National authorities (Scotland)
- Change fund
- Integration partnership

User deductible rates:

- £ 5.80 weekly for standard alarm
- £ 8.40 weekly for extended package with telecare

Annual cost for the service is approx. 1.5 million British pounds. The largest revenues come primarily from local authorities, in addition to some grants from the Scottish authorities and the NHS.

Critical user base

The municipality estimates that the number of telecare users can be increased from 8,500 to 10,000 with the current staff at the alarm reception.

Profit realization

The municipality has not worked systematically with measuring gains related to telecare so far. Politicians and the administrative management in the municipality have demanded quantification of gains. Efforts are being made to identify the zero point for cost on current services, in order to later have the opportunity to measure avoided costs.

Plans for the future

In the future, Edinburgh will develop a common platform where telecare and telehealth services are integrated and appear seamless. This is part of the work to see health and care work in context.

The municipality will implement the system "Just Checking" to an increased degree after very good test results. The system provides a good overview of what activities the users carry out at different times of the day, and it provides a good basis for tailoring the services for the individual citizen.

Increased use of GPS and GSM technology outside the home in the form of clocks, alarms and telephones is another focus area. In addition, the use of self-service technologies such as tablets is being considered.

2.3.4 Hampshire County Council and Medvivo Group⁵⁴

Hampshire (Abbreviation Hants) County Council is located in the South East of England. The administration is located in the city of Winchester.

Hampshire has 1.3 million inhabitants in 11 districts.
235,000 inhabitants are over 65 years (18%).

Some of the health and care services are provided by the Hampshire Council, while other services are provided by the districts of the region.

The health and care services in Hampshire Council are oriented to the needs of the citizen, and the services are provided by eight interdisciplinary

About Hampshire County Council

Country:

England

Number of citizens:

about. 1,300,000

Percentage of inhabitants

over 65 years:

about. 18%

⁵⁴ Carefull S. (2014): Hampshire, interview conducted 10.09.14.

service teams in the Adult Social Care & Health sector.

The Hampshire Council is working on telecare through Argentina. Argenti is a constellation of five companies that together provide implementation of the telecare services in Hampshire Council.

The constellation consists of PA Consulting Group (program management, employee training, culture change, reorganization, communication and profit realization), Tunstall (technology supplier and training), Magna Careline (installation and repair of equipment), Medvivo Group (alarm reception), Telecare Technology (supplier of, among other things, medicine dispensers).

The constellation has entered into a contract with Hampshire Council where the players are paid per functioning installation of telecare. The contract expires in 2018.

Furthermore, this chapter will describe how the Hampshire Council works with telecare, and how Medvivo's alarm reception works.

Medvivo Group

Medvivo Group was established in January 2013, following the merger of two experienced companies in telehealth and telecare, Wiltshire Medical Services and Telehealth Solutions Limited. Medvivo is committed to delivering quality in the services they offer, with a focus on primary health and expertise across a wide range of patient services. Today, Medvivo delivers products and services that will help users to activate themselves, and live a good and safe life in their own home for as long as possible. Medvivo provides services across several regions and districts in England from its two offices in Watford and Chippenham. Medvivo Group's alarm reception is located in Chippenham, approx. 112 km from Winchester.

User segments

11,000 Hampshire Council residents over the age of 65 receive some form of health and care services in their own homes. Hampshire estimates that approx. 80% of residents over the age of 65 who receive health and care services in their own homes are also potential users of telecare.

The Hampshire Council has initially chosen to prioritize the implementation of telecare for this group. The prioritization is based on the municipality estimating the economic potential for telecare to be greatest in this group of inhabitants. Hampshire has recently begun assessing future benefits and planning to roll out telecare for people with disabilities and learning disabilities.

Process for referral to telecare

The municipality considers the process of referral to telecare as a critical success factor for implementation

and profit realization.

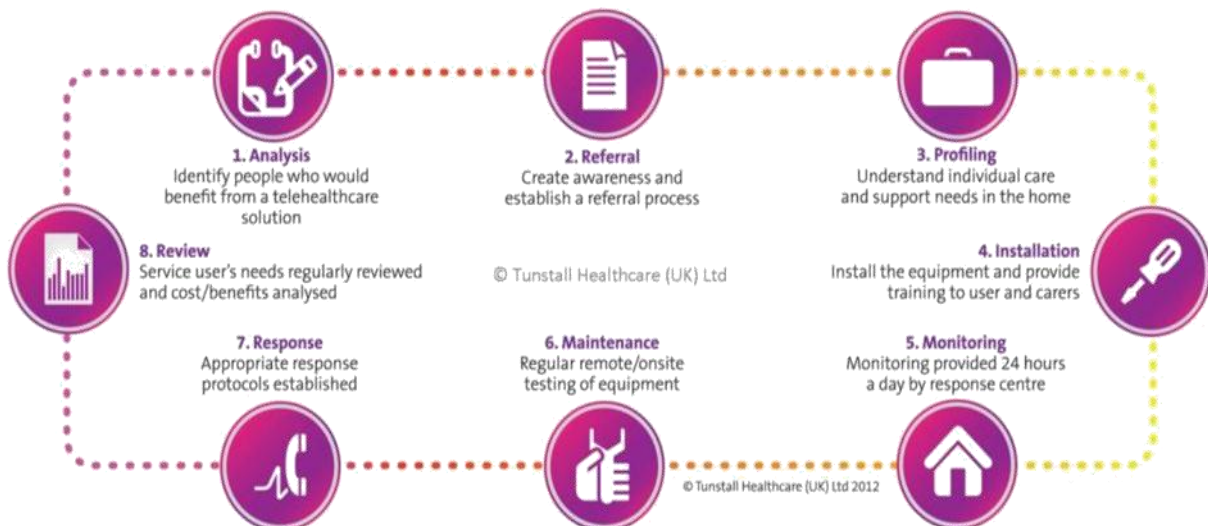
Hampshire Council receives 40-50 referrals to telecare weekly. The referral comes primarily from health and care staff. Employees use an electronic form in the referral process. The Argenti project is responsible for receiving the referrals. The referrals are coordinated to the right caseworkers in the municipality and further to external partners when telecare is to be installed in the households. All references are entered into a database. All parties in Argentina have access to the database, and the municipality uses the database to keep track of statistics on which professional teams make the referrals.

The form clearly explains the purpose of each area to be mapped. From the point of view of the alarm reception center, it is important that various risks are thoroughly mapped, so that Medvivo Group's alarm reception center possesses the clearest possible information about the resident and the condition of the resident's residence.

The referral form is the first step in the Hampshire Council's profit realization process. Employees fill in areas they believe will lead to avoided costs if telecare is installed at the resident. Each area is linked to a pre-calculated cost, so that the referral shows a possible saving for the municipality if the resident receives telecare.

The referral process is depicted in the process description below. The Hampshire Council also has a comprehensive telecare operations manual. The manual is owned by the municipality, and all parties involved must adhere to defined management structures, measurement parameters and process descriptions reproduced in the manual.

Figure 14 Process for referral to telecare in Hampshire Council



The process description above shows that the municipality's telecare process starts with a fact-based analysis of which inhabitants are potential recipients of telecare. Referrals to telecare are then made by health and care workers. These assess the individual's individual needs, and adapt an equipment package that identifies benefits (the benefits are already identified in the referral form). Telecare is installed and the citizen is connected. The equipment is tested and maintained regularly.

The alarm reception is responsible for receiving any alarms and coordinating the response. The citizen's service package is evaluated at regular intervals, especially triggered by analysis from the alarm reception. If it turns out that the resident contacts the alarm reception very often, the Hampshire Council will reconsider whether telecare is actually appropriate for the user.

The figure below shows the municipality's dashboard for following up referrals.

Figure 15 Dashboard for following up referrals in Hampshire Council



Organization of the alarm reception in Medvivo Group

When the resident triggers the alarm, Medvivo Group's alarm reception in Chippenham is responsible for taking care of the resident in the first paragraph. The alarm reception is staffed with four operators during the day and two operators at night.

Hampshire Council has chosen a model where each telecare user is associated with their own

caregivers as a first-line response. This could be a family member, a neighbor or a local health worker. The Hampshire Council has so far chosen this solution to avoid overloading the home care service.

If necessary, contact the Hampshire Council's private or public home service, or possibly if the resident feels unwell.

Hampshire Council telecare users are required to be associated with a minimum of two caregivers. Some users find it challenging to find two caregivers, and then receive assistance from Medvivo. To avoid ambiguity, Medvivo is clear on what the role entails, and tries to ensure that the caregiver agrees with this. The caregiver is free to place restrictions on their role, for example in which time period of the day the caregiver can be contacted.

Through Medvivo's contact center software, alarm operators have access to information about the user's health status, caregivers, and previous alerts, and more. If necessary, information is passed on to the user's caregivers.

Medvivo also provides an outgoing service to its users, where they call and check their health, ask them to take their medication or similar. This helps to prevent the user's need to press the alarm, and reduces the number of incoming alarm calls.

Medvivo offers its own response team. Hampshire Council does not currently use this service. Medvivo's response team is composed of care workers who respond in the event of incidents that do not require medical assistance - such as falls. The intention is that they will help to limit unnecessary use of the ambulance services and home services in the municipalities that subscribe to this model. The response team makes the home service confident that someone will move out to the user if they are unavailable, and helps to prevent unnecessary stress for the user by preventing the ambulance service from showing up. In total, Medvivo has four local response teams spread across the districts they serve.

Organizing responses in the Hampshire Council is challenging for Medvivo, as it can be difficult to reach relatives. There have also been episodes, for example at night, where relatives have not been willing to move out. The Hampshire Council is therefore considering whether to start with a response team scheme.

The manager of the alarm reception analyzes daily statistics on incoming alarms. Immediate action is taken in the form of a dialogue with the home municipality if users stand out with a high number of presses of the alarm button. In such cases, it is assessed whether telecare is the right support based on the user's needs.

Medvivo's core services include end-to-end emergency services. This includes installation of alarms, monitoring, maintenance and user response. In addition, Medvivo provides a number of additional services to help the user or support staff. An example of this is monitoring systems for municipal health personnel who move out alone.

When Medvivo enters into new contracts, they hold meetings with the health team in the municipality. The purpose is to explain the service chain, division of roles and responsibilities, and more. Once the services have been put into operation, regular meetings are held between the municipality and Medvivo to ensure that the expectations of both parties are met, and that any challenges can be handled.

Staffing, competence requirements and training for employees at the alarm reception in Medvivo Group

Medvivo states that the human qualities and the ability to handle stressful situations on the phone are the most important qualities for employees at the alarm reception. Medvivo does not set any fixed requirements for the response team to have a health and care background if they show good abilities in an interview. Employees at the alarm reception and in the response teams receive basic training in first aid and lifesaving.

The management at the alarm reception states that it is considered an advantage for the users of the services that the alarm reception is closely integrated with the telehealth team in Medvivo.

Control and measurement at the alarm reception in Medvivo Group

Medvivo is a member of the TSA, and has been accredited to their highest level.

Hampshire Council measures, among other things, how long it takes from the alarm reception is contacted until the user receives help. Today, 90% of cases are handled within 45 minutes, and almost all the other 10% within 60 minutes.

Table 4 Excerpt of key measurement parameters for Medvivo's alarm reception

NHS111	Calls	Intermediate Care	Step Up Beds	Admits
	Answered <60 Secs %			Discharges
	Abandoned >30 Secs Calls %			Occupancy Rate
	Ambulance Referral %			No. >7 days LoS
	A&E Referral %		Step Down Beds	Admits
OOH Telephone Advice Calls	Discharges			
OOH PCC Attendances	No. >6Wk LoS			
Medvivo	OOH Home Visits	Ambulance	Red (1&2) Incidents	Total No. of clients
	Referrals to urgent care at home			Total Incidents
	Referrals to extended EOL service			
	Telecare mobile responses			
	One number SPA calls			
	SPA Referrals			

Table 4 shows extracts of other key measurement parameters for Medvivo's alarm reception. The measurement parameters have been developed in collaboration with Medvivo's customers. Medvivo states that they carry out a thorough review of all measurement parameters on a weekly basis, and reports to the municipalities, the NHS, the ambulance service, and more. According to Medvivo, analysis of fact-based information is a very central factor in being able to deliver good quality at an acceptable cost. The municipalities use Medvivo statistics actively in the planning of health and care work. Medvivo places special emphasis on analyzing the reasons for calls.

IT systems and integration in Medvivo Group

Medvivo currently uses contact center software provided by Tunstall.

The alarm reception's IT systems are not integrated with the health and care systems in the municipalities. The operators at Medvivo's alarm reception have the opportunity to go in and read patient information in the municipalities' systems. The company is in the process of working on the integration of alarm reception and the municipal professional systems in collaboration with the municipalities.

Critical user base

Every month, Medvivo in Chippenham receives about 30,000 incoming calls. Of these, about 1,500 incidents lead to the need for some response.

Handling of the company's users is done from the company's two alarm receptions in Watford and Chippenham. Of the company's total of 33,000 users, the Chippenham alarm reception is responsible for handling 11,000 of these, and the rest are handled from the Watford alarm reception. The alarm reception in Chippenham receives around 1,400 calls daily.

Medvivo states a critical user base of 20,000.

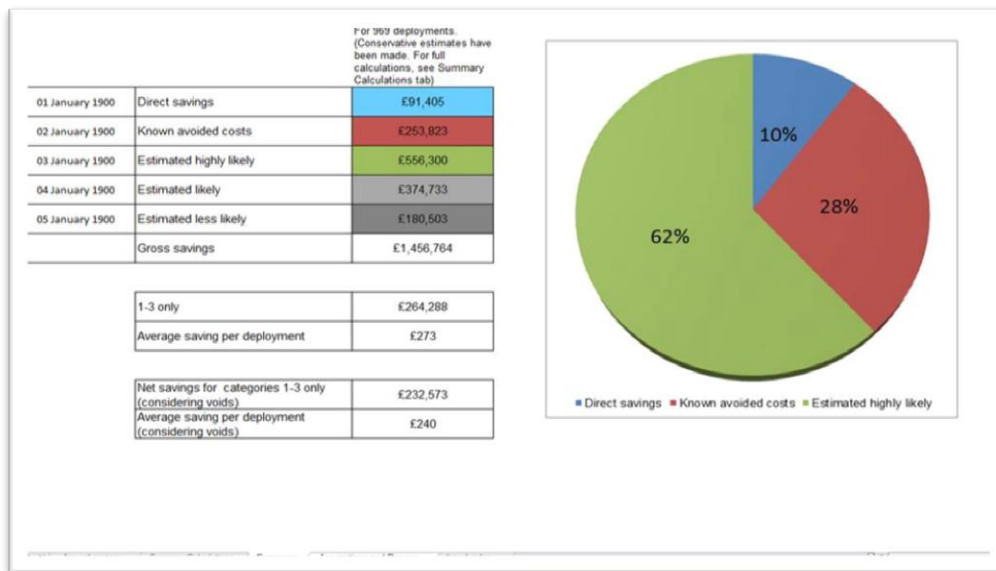
Profit realization in Hampshire County Council

Hampshire Council works in detail with the realization of gains both before, during and after the implementation of telecare. Employees involved in the referral process are asked what they think are possible benefits / avoided costs of introducing telecare. The health and care staff receive training in this when they are introduced to telecare, and the referral form is pedagogically structured in relation to this assessment.

Upon receipt of the referral form, the indicated winnings are carefully reviewed by Hampshire Council staff, and estimated winnings are entered into a detailed overview for follow-up of winnings. The municipality distinguishes between "direct savings", "known avoided costs" and "estimated highly likely costs".

The spreadsheet shown in the figure below shows excerpts from the Hampshire Council's earnings analysis.

Figure 16 Excerpt from profit analysis in Hampshire Council



The Hampshire Council states that it has been crucial to know the costs of health and care services in order to make a detailed follow-up of benefits. The municipality points out that they do not have exact figures on the gains, but that the current overview provides a good enough indication and decision basis.

The municipality says that they have spent a lot of time and resources on following up gains, but that it has been valuable in creating legitimacy for the introduction of the services. The municipality has an internal apparatus with controllers who assist the entire health and care department with target figures and cost analyzes. The responsibility for the follow-up of winnings lies primarily in this team. Hampshire reports the gains from the telecare program to the UK government.

The Hampshire Council estimates that they save approx. 1 million British pounds annually due to telecare. This finances the implementation of telecare in its entirety. The huge gain has meant that the Hampshire Council does not charge users of the service.

Plans for the future

The municipality aims to implement telecare for 15,000 users by the end of 2018. Hampshire has now increased its focus on people in need of care with special needs, since this is a group of users who make up a large proportion of the health and care budgets in the municipality. The Hampshire Council is constantly working to integrate telecare as a natural part of the service. The municipality believes that telecare and telehealth will have an increasing overlap in the coming years.

Success criteria according to Hampshire Council and Medvio

Hampshire County Council and Medvivo state the following success criteria for successful telecare implementation and profit realization:

Focus on the user: The referral process is important for identifying user needs. Hampshire Council and Medvivo emphasize that it is important to collect as much information as possible about the user, in order for the contact center services to assist in the best possible way. Analysis of telephone statistics is important to follow up needs after implementation, and ensure continuous improvement.

Engage employees: Employees are "sellers" of telecare. Employees must be comfortable with the benefits telecare provides, otherwise they do not want to promote telecare. Focus on education and information has been crucial for the Hampshire Council in this regard.

Look at the end-to-end process: Telecare involves many parties and the process is complex. Comprehensive control of the end-to-end process is crucial to a successful outcome.

Do not get too hung up on technology: Hampshire had previously purchased a wide range of equipment that did not realize gains. The municipality is now focused on realizing gains from a narrower range of technology, which provides gains.

Focus on quality: A successful implementation that provides benefits for the citizen and the municipality requires a focus on quality. One-sided focus on price does not have to give a good end result.

Focus on profit realization: Profit realization legitimizes the continuation of telecare.

Look at telecare as a cultural change: Implementation of telecare requires cultural change for users and employees in the municipality. Both residents and health and care workers must accept telecare in order for gains to be realized.

Maintain the link between the alarm reception and the municipality: Good communication, agreement on processes and clear role and responsibility descriptions are critical for smooth operations and good results.

Keep things simple: Processes and communication around telecare must be clear and easy to understand for all parties involved.

2.3.5 Metropolitan Borough of Tameside⁵⁵

The Metropolitan Borough of Tameside is an administrative district in Greater Manchester, England. The district has approx. 220,000 inhabitants. The administration center is Ashton-under-Lyne. It is approx. 29,000 Tameside residents over the age of 65, representing 13% of the population.

In the rest of the chapter, the Metropolitan Borough of Tameside is mentioned as a municipality.

User segments

Tameside has 5,000 telecare users, and the service has been in operation since 2008. Tameside has also started with telehealth services, and offers this to 265 inhabitants. The municipality's residents must have tried telecare in their own home before they may be transferred to an institution. 67% of telecare users in Tameside do not receive other services in the form of home service and the like. The majority of users are older people with reduced health, and healthy people with a desire for increased security, as well as young people with learning difficulties.

Process for referral to telecare

The process for referral to telecare and telehealth is handled by Tameside municipality. For referral to telehealth, documentation from a GP is required. For telehealth, a referral is made with the help of skilled workers in the home care service.

Referrals are made by healthcare professionals in the Long Term Conditioning Team, and are then handed over to the alarm reception, which checks that all fields have been filled in. If there are any shortcomings, the forms are returned to the team for further detail.

The referrals are prioritized according to the order in which the applications are received, unless otherwise specified. A home visit is made to the resident continuously after the referral is

OmMetropolitan Borough of Tameside

Country:

England

Number of citizens:

about. 220,000

Percentage of inhabitants

over 65 years:

about. 13%

⁵⁵ Strothers J., Craig C. and Eyres P. (2014): Tameside, interview conducted 03.09.14.

received. A new user profile is then set up for the inhabitant that contains information about the type of equipment the user needs, and a plan for monitoring using telecare is prepared.

Telecare services

Tameside offers security alarms, various sensors and smoke alarms. The alarm reception uses "Just Checking" to monitor residents in their own homes and map telecare needs.

The municipality sees it as important to keep up with developments in technology and equipment, but they have also experienced that it is important to prioritize implementing technology they know works, and rather focus on slightly fewer solutions.

The alarm reception's response team is in possession of five equipped cars that are used in home visits by users. The cars are equipped with an inflatable chair and first aid equipment.

Organization of alarm reception

The municipality runs the alarm reception, and the service is staffed in two teams; the contact center and a response team. The two teams sit next to each other. The response team travels individually when they go on home visits to users, with the exception of suspected unsafe or dangerous situations.

There are at all times (24/7) employees on duty to answer and respond to alarms. There are a total of 35 employees in the alarm reception, consisting of 2 installers, 20 in the response team, and the rest in the contact center. Employees work in rotating shifts, divided into eight hours of day shifts and 10 hours of night shifts in a 36-hour working week. The contact center is staffed with a minimum of two people around the clock.

Tameside Municipality considers it important that the contact center and the response team sit close to each other to ensure seamless interaction between the teams. The management of the alarm reception believes that it is important that the contact center is staffed by employees with the same dialect as the user, and who can relate to local conditions.

Tameside collaborates with the fire service, the police and the ambulance service in the municipality on telecare and telehealth services.

Organization of the service chain

The alarm reception forwards calls to the response service if it is considered necessary to supervise the user. If anyone feels unwell, call an ambulance immediately. If you need care / nursing, contact the home service in Tameside.

The response service reaches out to the relevant citizen to assist. When capacity is available, both teams use the time to test whether alarms work.

The busiest time of the day is early in the morning, after users of the service have got up.

In April 2014, the alarm center in Tameside had 9,264 incoming calls from users, and made 859 home visits (approx. 29 visits per day).

Staffing, competence requirements and training

Employees in the response service and in the contact center receive training in each other's everyday work to increase insight into what the other party is doing, and how to help make each other's work more efficient. An example of this is that employees at the alarm reception stay with the response service in the emergency vehicle at regular intervals.

In Tameside, the majority of employees in the emergency room have no health professional educational background. The management of the alarm reception states that the most important capabilities they look for in employees are the ability to care and motivation to complete the job.

The municipality works consciously to use both volunteers and unskilled people in service production where possible.

Both nurses and pharmacists have shown great opposition to the telecare services for various reasons. In fact, there has been greater opposition and skepticism to telecare from employees than among users of the services. Trade union representatives are positive about the introduction of telecare. The municipality has experienced that it is important to sell telecare so that different occupational groups see the benefit, and can relate to the benefits for the citizen. Case studies have proven to be a particularly strong tool for reducing employee skepticism.

New employees undergo a six-month introductory program. Here, the handling of daily routines, the possibilities of technology, including topics such as personal security, data security, privacy and first aid are reviewed. The response teams train on installation and uninstallation of equipment, as these are tasks that are part of the job. Tameside has developed e-learning in telecare adapted to different groups of employees in the municipality.

When Tameside started the work of creating a telecare service, the municipality was a member of the TSA. The municipality perceived the access to TSA's framework as valuable in the start-up phase of the service and considered it valuable to be able to use the organization's template in the work with the development of the service. However, they ended their collaboration with the TSA when they felt that the telecare services were up and running on their own.

IT systems and integration

There is no integration between the alarm reception's IT system and the municipality's professional systems.

Payment and financing

The deductible for users is £ 5.84 per week plus administration fee.

It is up to the user, relatives and / or health personnel to choose which technology to use in the household. The deductible is fixed regardless of the choice of equipment. The deductible covers the municipality's costs for the service. The municipality invests any profits in equipment.

Profit realization

The municipality is aware of the cost savings that the telecare services bring. The municipality has documented that 71 beds have been taken out of hospitals as a result of the municipality introducing telecare. It is further estimated that the weekly cost per service user is reduced from £ 500 to £ 5.84 by using "Just Checking" to map users' movements in the home. Before the telecare service was introduced, there was a significantly higher number of ambulance calls in the municipality.

**CHAPTER 3 ORGANIZATION OF ALARM
RECEPTION IN THE UNITED STATES**



3 ORGANIZATION OF ALARM RECEPTION I USA

This chapter describes the organization of alarm reception in the United States. Initially, an introduction is given to the organization of health and care in the United States. Furthermore, a presentation of welfare technology in the country is given. Finally, the chapter contains a case description of Kaiser Permanente.

3.1 Organization of health and care in the United States

The health and care services in the USA are largely run by the private sector, and account for about half of the total health and care expenses in the country⁵⁶.

About 55% of the country's inhabitants currently have private health insurance. Of these insurances, approx. 92% of employers⁵⁷. Public health insurance is offered through three national health insurance schemes with different focus areas, Medicare, Medicaid and the Children's Health Insurance Program (CHIP), respectively. Medicare is primarily aimed at the elderly and disabled, Medicaid will cover the health and care services for low-income households, and CHIP will be aimed at disadvantaged families with children.

At the national level, the health care system is managed by the US Department of Health and Human Services and its agencies.

The health care system in the United States is largely decentralized, and is primarily governed by the states. Among other things, states are responsible for licensing and regulating service providers, administering Medicaid and CHIP, and administering many public health and care services. Decentralized governance leads to major disparities in the organization of health and care across the United States.

The majority of service providers in the United States are private actors, often non-profit organizations. The public service provision is administered at the state and local level, and shall, among other things, ensure that poor and other disadvantaged residents also have access to services. The offer includes public hospitals, and medical and preventive services at state and local health departments with affiliates

⁵⁶ Rice T., Rosenau P., Unruh LY, Barnes AJ (2013): United States of America, Health system review, Health Systems in Transition, Vol.
⁵⁷ Kaiser Permanente (2014): An Overview of Kaiser Permanente, submitted presentation.

clinics and health centers (Community Health Centers).

There are significant social differences in health and care coverage in the United States, and approx. 17% of the population lacks health insurance⁵⁸. In 2010, the Affordable Care Act (ACA) was introduced to make health care more accessible to all population groups.

3.2 Welfare technology in the United States

Opportunities in welfare technology have received increased attention after the introduction of ACA in the United States. In the work of making the health service more accessible to all population groups, ACA focuses, among other things, on welfare technology initiatives that will contribute to this. An introduction to selected initiatives is given below.

As part of the ACA, Independence at Home Demonstration (IaHD) was introduced. IaHD started in 2012, and over a three-year period will provide 10,000 chronically ill Medicare patients with access to a complete range of primary care services in their homes. In addition to doctors and nurses making home visits to patients, it is expected that diagnostic and external monitoring technologies will be used.⁵⁹

With the introduction of the ACA, the Center for Medicare and Medicaid Innovation (CMI) was established. CMI intends to test innovative payment and supplier system models in order to improve the quality of care. The ACA focuses on CMI, among other things, exploring the possibilities of facilitating the use of technology and electronic monitoring of patients at hospitals.

As part of the ACA, measures were introduced to help reduce the number of readmissions. Re-admissions of patients have been an increasing challenge in the United States. Statistics show that about one in five Medicare patients was back in hospital for further follow-up or treatment, within one month of discharge from hospital. Re-admissions require a lot of resources, and are expensive for society. Costs related to readmissions at Medicare amount to more than \$ 17 billion annually for the public sector.

Despite the fact that some readmissions are unavoidable, such inquiries from the elderly and chronically ill can often be avoided. To achieve this, the ACA replaced the then fee-for-service model with a model that promotes preventive treatment and general well-being. Under the new model, hospitals with chronic readmissions risk being able to cut Medicare payments. With this became

⁵⁸ Kaiser Permanente (2014): An Overview of Kaiser Permanente, submitted presentation.

⁵⁹ Independence at Home (2010): Independence at Home Act, Section 3024 of the Affordable Care Act.

the focus is on the fact that healthcare professionals and patients should to a greater extent use technology to monitor health conditions externally, and to ensure that patients receive the right medical treatment to avoid further hospital visits ⁶⁰.

For several years, private and public organizations have rolled out various pilots and programs, which will assess the effect of various technologies. Although the use of welfare technology has shown good results, the use of technology-based home services has primarily been driven on a larger scale by integrated providers such as Kaiser Permanente and the US Department of Veterans Affairs (VA).

Since 2003, VA has been working to build a national telemedicine program that will increase the levels of care services available to veterans. This includes, among other things, clinical video conferencing for face-to-face interaction between caregivers and patients and home surveillance that allows physicians to have control over patients with chronic conditions. During 2013, more than 600,000 veterans gained access to health services from VA by using telemedicine programs ⁶¹.

3.3 Case description from the USA

This subchapter presents a case study from Kaiser Permanent (KP) in the United States. The case study is based on one interview, as well as obtaining documentation. Kaiser Permanente is very restrictive in publishing information. The case description reproduces what Kaiser Permanente's representatives have given permission for for publication.

⁶⁰ Malykhina E. (2013): Home Is Where the Health Is: Obamacare Positions "Telehealth" Tech as a Remedy for Chronic Hospital Readmissions, Scientific American.

⁶¹ Mazmanian A. (2014): How VA is driving telemedicine, FCW.

3.3.1 Permanent Kaiser

KP is the largest private provider of integrated health and care services in the United States, and consists of Kaiser Foundation Hospitals, Kaiser Foundation Health Plan and Permanente Medical Group. The organization is non-profit and includes over 9.1 million members across eight states and Washington

DC KP delivers a full range of health and care services through its own prepaid insurance schemes. The organization's network of service providers includes 38 hospitals and 608 doctors' offices with around 17,000 doctors⁶².

KP focuses on:

- Offer prepaid health plans that increase service availability by spreading the costs beyond Preventing
- illness to the same extent as providing care services to the sick
- Establish a unified system that will handle as many services as possible under one roof

KP's strategy is to focus on technology, preventive work, early intervention and an integrated delivery model to deliver affordable, high-quality health and care services to its members.

Welfare technology services

Today, KP invests around 6% of its turnover in ICT and digitalisation, and telehealth is an important focus area.⁶³

The different initiatives may vary somewhat between the different regions. For example, in 2013, KP in Northern California carried out 10.5 million doctor visits via e-mail, mobile and video⁶⁴. Key telehealth solutions here include:

- Secure e-mail solution that allows patients to send pictures with disease symptoms (eg skin rash) to a dermatologist in KP. Statistics show that in 80% of cases, the dermatologist was able to diagnose and prescribe without conducting a physical visit.

About Kaiser Permanente

Regions:

Colorado, Georgia, Hawaii, Mid-Atlantic States (Virginia, Maryland, Washington, DC), Northern California, Northwest (Washington, United States, Oregon), Southern California

Number of members:

about. 9.1 million

Number of employees:

about. 174,000

⁶² Kaiser Permanente (2014): An Overview of Kaiser Permanente, submitted presentation.

⁶³ Kaiser Permanente (2014): An Overview of Kaiser Permanente, submitted presentation.

⁶⁴ Schwartz E. (2014): Pros and cons of Kaiser's ambitious mHealth efforts, mHealth News.

- Mobile services that offer video consultations for patients before and after surgery.

In 2014, KP San Diego piloted telehealth stations in collaboration with welfare technology provider HealthSpot⁶⁵. By visiting telehealth stations, patients can receive consultation and follow-up through video solutions and interactive digital services.

KP is currently rolling out video visits for all its members, but this is not currently available in all regions. These video visits are conducted on secure platforms. Today, physical visits account for only 50% of total interactions in the primary health service for all departments in KP.

KP's 17,000 doctors can in many cases use video conferencing or telephone to consult with other doctors. Sometimes such conferences are set up while the user is present, so that in many cases the user does not have to come back to consult a specialist.

KP also offers 24-hour staff access to nurses by telephone for its members. The nurses are given access to the members' electronic patient records and can give advice or set up a meeting with a doctor if this is necessary.

Plans for the future

The figure to the right shows a presentation of KP's vision for the future. KP envisages that the home will be the hub for healthcare. Furthermore, they envisage that diagnoses will be made to a greater extent in the home, and that the local community in the form of friends and family will be more involved. There will also be an increased degree of integration and better utilization of resources.

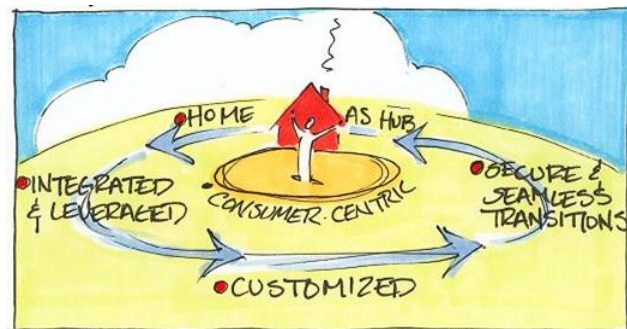
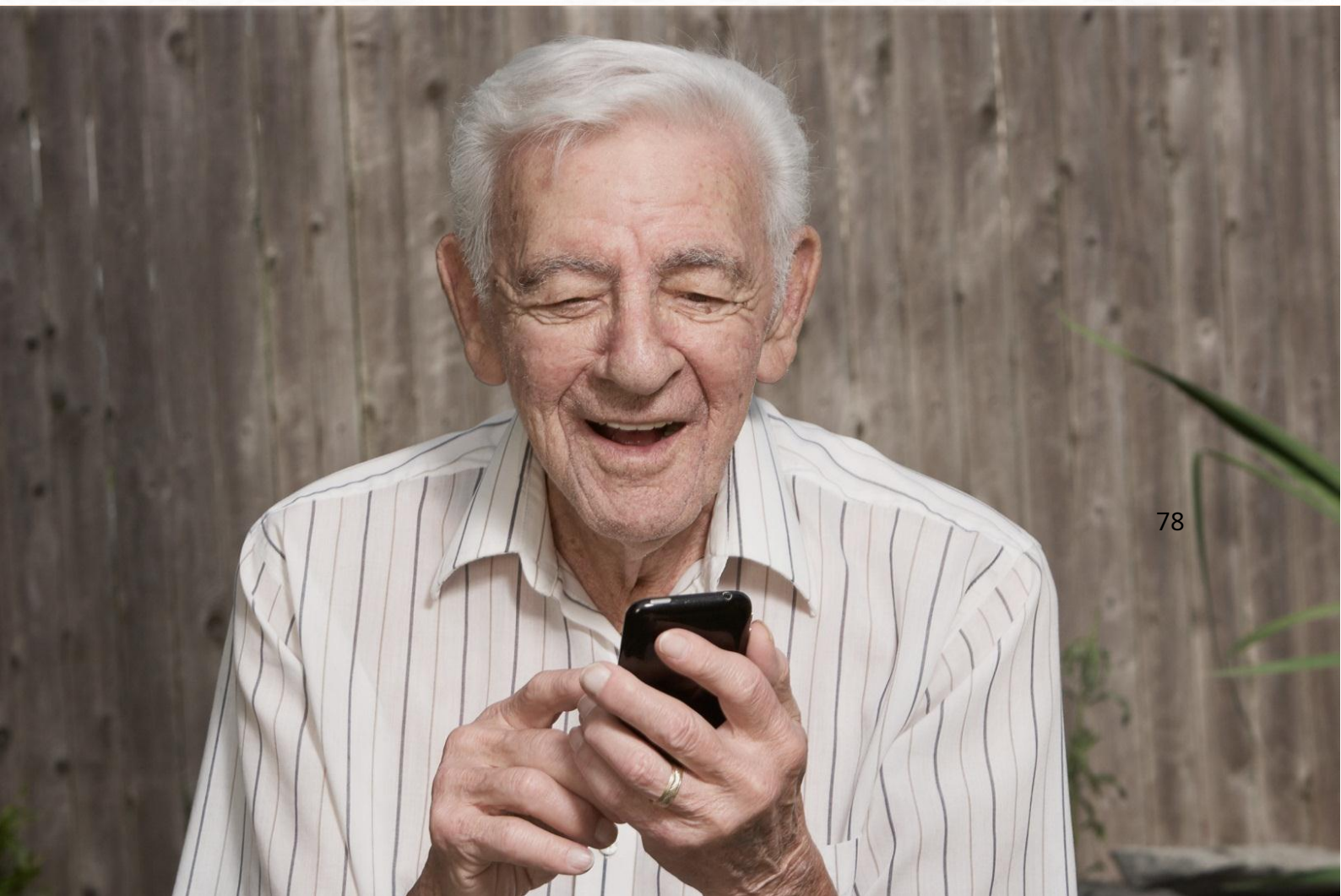


Figure 17 Kaiser Permanente's vision for the future

Health services will be combined with preventive activities, and IT functionality will ensure that scarce resources can be utilized far better than today. KP also wants an increased degree of special adaptations in the form of tailor-made health plans, individual care services, and so on. The user will be at the center, and the providers of health services will adapt to the user and not the other way around. In addition, the user will experience a seamless service offering.

⁶⁵ Pedulli L. (2014): Kaiser Permanente San Diego launches telehealth pilot station, Clinical Innovation + Technology.

CHAPTER 4 ORGANIZATION OF ALARM RECEPTION IN DENMARK



4 ORGANIZATION OF ALARM RECEPTION I

DENMARK

This chapter presents the organization of alarm reception in Denmark. Initially, an introduction is given to the organization of health and care in Denmark. Then the overall strategy for the development of the health care system and the use of welfare technology in Denmark is presented. Finally, the chapter contains case descriptions with findings and analyzes from the mapping work from two municipalities with alarm reception in Denmark.

4.1 Organization of health and care in Denmark

The Ministry of Health and Prevention is the overall national authority for the health and care sector in Denmark. The Ministry shall ensure that well-functioning, modern and efficient health and care services are provided to the country's inhabitants⁶⁶.

The National Board of Health, which is under the Ministry of Health and Prevention, will set a common framework and directions for health in Denmark, with a focus on residents and patients. The National Board of Health together with the Ministry of Health and Prevention is responsible for ensuring strategic direction for health and care.

The structural reform came into force on 1 January 2007, and set the framework for the current organization of health and care at regional and municipal level. The reform created a new regional structure, in which 14 counties were transformed into five regions, and 271 municipalities were reduced to 98.

The regions are responsible for the primary health care service, including the operation of the hospitals in Denmark. Their main task is to manage the Danish health service, develop plans and run the hospitals.

As part of the Structural Reform, a number of tasks were transferred to the municipalities. Danish municipalities are responsible for providing local care services to the inhabitants. The National Association of Local Authorities (KL) is at the forefront of the local authorities, and aims to safeguard the common interests of Danish local authorities and ensure that the local authorities carry out their political and administrative duties.⁶⁷

⁶⁶ Ministry of Health and Prevention. Oslo: Ministry of Health and Prevention (2014).

⁶⁷ About KL Oslo: KL (2014).

4.2 Overall strategy for the development of the health care system in Denmark

At the national level, work is being done on two leading strategies that will set the framework for the regions and municipalities.

The first strategy, *Det Nære Sundhedsvæsen*, is an initiative from KL with the aim of putting the local health service on the national agenda. The strategy project, started in 2011, and will establish a future picture of how the development of the health and care system should be conducted at the municipal level. The project will deliver an overall municipal policy assessment of the health and care area. The strategy project aims to answer the following questions⁶⁸:

- How can the municipalities work to promote public health?
- How to ensure that more elderly people can be treated in their own homes to reduce the number of hospital visits?
- How to ensure that mentally ill people can live in their own homes and establish a social network that can help create a meaningful life?
- How to ensure that women on maternity leave receive the necessary support and help as soon as they are sent home from the maternity ward?
- How to help chronically ill patients, for example with diabetes or kidney disease, to achieve a higher quality of life through telemedicine and rehabilitation?

The second strategy, «Joint public strategy for digital welfare 2013 - 2020 », will set the direction for future welfare. This means that the focus is on the public sector to deliver productive and innovative solutions with high-quality services. Based on new knowledge and experience, the framework will be adjusted, and new goals and measures will be implemented⁶⁹.

In addition to these two strategy projects, a national strategy has been prepared for digitization of the health care system from 2013 - 2017. The strategy lays down the guidelines for the government, KL and the Danish Regions to collaborate on digitization. The background for this strategy is a desire for residents in Denmark to have a modern and efficient health care system with consistent quality in patient care. This means that the treatment will be more user-oriented. Health personnel across sectors and professional groups must work together and must be integrated to deliver the best services for the user⁷⁰.

⁶⁸ The Near Sun Room. Oslo: KL (2014).

⁶⁹ The Digitization Agency (2013): *Digital welfare. An easier everyday life. Joint public strategy for digital welfare 2013-2020*.

⁷⁰ Statens Serum Institut, Sector for National Health IT (2013): *Digitization with effect. National strategy for digitization of health care 2013-2017*.

4.3 Welfare technology in Denmark

Investment in welfare technology is prominent in Denmark, and the Danish government has a clear focus on this in its strategic investment in health and care. The Fund for Welfare Technology was established in 2008. This fund aims to streamline the public sector through the development of new technology that will ensure better services for lower costs. The fund's funds will ensure a targeted focus on the government's commitment to spreading the welfare technology solutions that have shown the greatest potential, where the technology is mature. This will help to ensure that the public sector is obliged to use welfare technology⁷¹.

Many pilot projects have been carried out in Denmark. Work is now underway to use the results from the pilots in large-scale implementation.

Denmark has two major investment projects related to welfare technology:

- Telecare Nord is a large-scale project in telemedicine, and is currently the first project of this type to be implemented in Europe. The lung disease COPD is the focus of the work. The project includes 11 municipalities in North Jutland, general practitioners in North Jutland and Aalborg University who are collaborating on the development of a telehomecare solution for residents with COPD. Telehomecare means that care and treatment take place in the patient's home with the support of communication and information technology. The goal of the project is that Telecare Nord will be offered to all COPD patients in North Jutland who can benefit from a telehomecare solution. The offer is independent of which municipality, which hospital or which GP the patients are affiliated with⁷².
- Clinically Integrated Home Monitoring (KIH) is a coordinated large-scale project under the auspices of the Foundation for Welfare Technology. The project tests and demonstrates IT solutions with emphasis on integration of existing IT systems, telemedicine home monitoring, and solutions that support the patient's involvement in their own course. KIH consists of eight different sub-projects, including diabetes, COPD, pregnant women with complications and gastrointestinal infections⁷³.

In recent years, Denmark has paid more attention to the use of telemedicine. Telesurgery is an example of this. Internet psychiatry has also received increased attention. Internet psychiatry

⁷¹ Fundraiseren.dk. *Welfare Technology Fund* (2014).

⁷² TeleCare Nord. Oslo: Region Nordjylland (2014).

⁷³ Medcom, The Danish Health Data Network. *Clinically Integrated Home Monitoring*. (2013).

deals with the treatment of psychiatric patients via specially developed software on the internet⁷⁴.

The Service Act stipulates an overall framework for security alarms in Denmark. The Service Act states that residents of Denmark must be able to be granted a security alarm if there is a need for this. Each municipality can decide the level of service, and which solutions and organization are to be used for security alarms. The National Board of Health supervises that the municipalities perform these tasks appropriately.

4.4 Case descriptions from Denmark

This subchapter presents case studies from two municipalities in Denmark. The case studies are based on visits, interviews with managers and employees as well as obtaining written documentation.

4.4.1 Aabenraa municipality⁷⁵

Aabenraa municipality is located in the region of Southern Denmark, and has approx. 60,000 inhabitants.

The organization of health and care is under the administrative area Social and Health. The administration is composed of five departments; Visitation & Rehabilitation, Nursing & Care, Health & Prevention, Disability & Psychiatry and Management & Development⁷⁶.

User segments

Aabenraa municipality has 890 users of security alarms. The security alarms are used by both home residents and residents of nursing homes. In addition, the municipality offers other welfare technology aids, such as robotic vacuum cleaners, GPS tracking of residents with dementia and door sensors. The solutions are primarily offered to residents living in nursing homes, or in other municipal housing.

About Aabenraa municipality

Region:

Southern Denmark

Number of citizens:

60,000

Percentage of inhabitants

over 65 years:

about. 20%

Number of users of

security alarms:

890

⁷⁴ Internet psychiatry project. Oslo: Psychiatry in the Region of Southern Denmark (2014).

⁷⁵ Springborg K., Larsen TL, Churchill P. (2014): Aabenraa Municipality, interview conducted 05.09.2014.

⁷⁶ Diagrams for administrative organization. Oslo: Aabenraa kommune (2014).

Welfare technology services

Aabenraa municipality offers security packages in the user's home and in nursing homes.

The municipality is working to develop the nursing homes of the future.

The Rise Parken nursing home was reopened in 2013, and has 84 beds. The home is pioneering home for the use of integrated welfare technology, including automated

vacuum cleaners, GPS tracking with alarm, sensor technology, stimulation technology for

dementia, and tablet apps for residents, employees and relatives. The technology used will ensure better and more efficient operation of the nursing home. Several of the solutions will also be rolled out. The pictures above show the nursing home's employee portal. The portal distributes necessary information to employees. Employees also receive training in the use of welfare technology via this portal. Management and employees at



Picture 8 Pressure-sensitive plate used for stimulus technology for residents with dementia in Aabenraa municipality



Picture 9 Employee portal in Aabenraa municipality

Rise Parken states that the portal reduces the use of paper, as well as unnecessary meeting time.

The municipality is now implementing a new system for digital keys.

Since 2010, the municipality has set aside annual earmarked amounts for welfare technology.

Organization of alarm reception and service chain

Aabenraa municipality's alarm reception is operated and operated by Tunstall. The alarm reception communicates with the user, and performs a first-hand assessment of the user's needs. Based on the contact with the user, the alarm reception operator decides on further measures. If the resident needs assistance, the call is forwarded to the home care service. The inquiry is sent as a text message to the staff. The staff has the option to accept or reject the alarm. In the event of a rejection, or a predefined timeout, the call is forwarded to the next person. Upon acceptance of a call, a call connection is established with the user. Incident and status are reported back to the alarm reception.

The home service in Aabenraa is organized in professional teams.

Staffing, competence requirements and training

Rise Parken has one employee with dedicated responsibility for running the welfare technology projects. Rise Parken offers training to employees in the use of welfare technology aids. The training is disseminated via the mentioned employee portal, on mobile devices and in the form of case-based classroom teaching.

The management at Rise Parken states that the nursing home has been through a heavy turnaround operation. This has required significant presence from management. Intensive work has been carried out with employees to influence culture and attitudes. Rise Parken has streamlined the health and care services in the municipality, at the same time as the service offering has increased.

Collaboration with external partners

The municipality states that it has been crucial to work closely with suppliers already from the pre-engineering phase to ensure good design and avoid extra costs.

The Department of Social Affairs and Health works across other sectors in the municipality in the work with welfare technology, for example with the building and planning department.

IT systems and integration

The welfare technology in the municipality is not integrated with other professional systems.

Payment and financing

The municipality offers security alarms free of charge.

Profit realization

The municipality has a strong focus on profit realization. If you wish to implement new technology, a carefully thought-out benefit analysis with a high level of detail is prepared. The benefit analysis has been prepared in collaboration with managers and employees and contains detailed calculations of how much the municipality will save in time and money in the event of an implementation.

The benefit analysis is included in the annual budgeting process. Planned savings are cut in the budget as quickly as possible.

The work with welfare technology has helped to reduce the municipalities' costs by around DKK 30 million. About 98% of the cost reduction comes from better structuring and streamlining of services. The projects related to welfare technology have been self-financed, and the health and care management has been measured and managed on this.

Plans for the future

The municipality experiences that the current organization of the alarm reception for security alarms does not provide the best solution for users. A lot of time is lost when the alarm reception does not make contact with the home service. There are often misinterpretations of the alarm calls. Analyzes show that 50 - 60% of calls are unnecessary.

The municipality is now working on a solution where the calls are connected directly to employees in the home service. This is based on a principle that the best dialogue with the user takes place through direct communication with the home service. Today, there are 27 municipalities that use this solution in the Danish region of Jutland. Some examples of such municipalities are ⁷⁷:

- Rebild (approx. 600 alarms)
- Skanderborg (approx. 300 alarms)
- Hedensted (approx. 700 alarms)
- Billund (approx. 200 alarms)
- Ringkøbing-Skjern (approx. 800 alarms)
- Viborg (approx. 1,000 alarms)
- Randers (approx. 900 alarms)

⁷⁷Vesthimmerlands Kommune mark 1, presentation from Tunstall

- Norddjurs (approx. 700 alarms)

The home care service has pointed out a number of benefits of implementing such a solution. This includes, among other things ⁷⁸:

- The home care service gets an insight into what happens to the individual user
- The home care service gets an increased sense of security, and has control over what happens to the user
- **Almost all calls are relevant**
- It is important to have a good insight into the user's everyday life in order to do a good job

Success criteria

Rise Parken states that it is absolutely necessary that improvement projects related to welfare technology can be run in operation and that thorough work is being done to realize gains. Management must be "hands on" and focus on cultural change.

The management of Rise Parken says that it is crucial to work with detailed analyzes of the operation (work processes). At Rise Parken, it has been important to identify the desired flow of information, and to map current and future work processes in detail.

The management makes no secret of the fact that the innovation work has been challenging. It has been challenging to handle many small suppliers and different technology. The management states that it is important to work with suppliers who understand the work processes well.

The municipality has chosen a flexible organization, with more emphasis on interdisciplinary teams. This organization has come in the wake of the Danish municipal reform.

⁷⁸ Manned Vagtcentral Vs. Unmanned Vagtcentral, survey conducted by Tunstall.

4.4.2 Odense Municipality ⁷⁹

Odense municipality is a Danish city municipality and administration center in the region of Southern Denmark.

The municipality currently has around 195,000 inhabitants. Of these, every tenth inhabitant is a student. This makes Odense a student city.

The organization of health and care is under the Elderly and Disability Administration. The organization must ensure that there is one entrance to the administration for the inhabitants.

User segments

Odense municipality has 1,454 users of security alarms. The users are primarily older.

The table below provides an overview of the number of granted security alarms and the number of inhabitants with granted home care in the municipality.

The table below shows that both the number of granted security alarms and the number of residents with granted home care in Odense have fallen in recent years. The municipality states that this is related to rehabilitative measures.

About Odense municipality

Region:

Southern Denmark

Number of citizens:

195,000

Percentage of inhabitants**over 65 years:**

about. 18%

⁷⁹Thomsen L., Mohr U., Larsen U., Hjort HV (2014): Odense Municipality, interview conducted 04.09.2014.

Table 5 Number of granted security alarms and number of inhabitants with granted home care in Odense municipality, 2009 - 2013⁸⁰

Year	Number of grants security alarms	Number of citizens granted home care	Granted security alarms,%
2009	1,767	7,118	24.8
2010	1,765 th most common	7,081	24.9
2011	1,670 th most common	6,693	24.9
2012	1,504	6,110 th most common	24.6
2013	1,393	5,753	24.2

Process for referral to security alarm

Security alarms are assigned to the elderly or adults over the age of 18 with disabilities. A user of a security alarm is normally a resident with a high risk of falling, or residents who are unable to communicate with a mobile phone.

It is the resident himself, or any relatives who apply for a security alarm. A thorough professional process is carried out, where the applicant is examined by health or care staff. If the inhabitant is known to the municipality, a report is prepared based on a professional assessment from a professional who knows the user. If the inhabitant is unknown to the municipality, a health and care assistant is assigned to carry out the assessment.

On the basis of an application and assessment, the resident receives a grant or a refusal from the municipality. Despite an extensive process for applying for a security alarm, the municipality states that there is a low threshold for being granted a security alarm.

The municipality has appropriating authority for alarms. The private providers do not have the authority to choose which areas to cover, but the citizens themselves choose which private provider they want to use.

⁸⁰ Thomsen L., Mohr U., Larsen U., Hjort HV (2014): Odense Kommune, 2014.

Welfare technology services

The municipality also offers other welfare technology services, such as a robot vacuum cleaner. Odense is carrying out various projects that will contribute to the development of welfare technology. Among other things, the municipality has carried out a small project for the use of electronic pill dispensers, and looked at the possibility of using toilets. The municipality is also working on developing robot technology and intelligent beds, where the user is able to get out of bed without assistance from the home care service.

Organization of alarm reception and service chain

The fire service is responsible for handling the alarm reception for security alarms. When the user presses the alarm, the fire brigade is responsible for contacting the home service. The home care service is provided by both municipal health personnel and private providers.

The fire service is responsible for purchasing security alarms. The supplier prepares the alarms for use, and the fire brigade installs the alarm. If necessary, the fire brigade replaces batteries and alarms that are out of order. The fire service first communicates directly with the user, and performs an assessment of the user's needs.

Staffing, competence requirements and training

The alarm reception is staffed by two people during the day and one person at night. Handling the alarm reception has not led to increased staffing in the fire service.

The municipality does not require any special competence or health education from the fire service to handle the alarm reception.

There is no requirement to be certified to install security alarms. The fire service often instructs the home service on the installation of alarms over the telephone.

Control and measurement

It must take a maximum of 30 minutes from the fire service being contacted until the home service is in place with the user. Due to long distances, this can sometimes be challenging.

The municipality and the home care service experience challenges with some users, especially people with dementia, often pressing the alarm. In such cases, the municipality makes a new assessment of the user. If the user is found unfit to continue with a security alarm, other measures are initiated.

IT systems and integration

The fire service uses a separate call-handling system that is not integrated with the municipality's professional system. The fire service documents all alarms they receive in a separate database. The conversations with the user are logged.

Payment and financing

The municipality has allocated DKK 2 million per year for the operation of security alarms. This amount covers installation and uninstallation, as well as technical operation. The municipality offers the service free of charge.

Critical user base

The municipality believes that they can handle several security alarms. The Odense fire service is already in dialogue with the neighboring municipality to provide alarm reception services to them. The fire service states that they can still handle "a large number" of several security alarms. This will not require increased staffing at the alarm reception.

Plans for the future

The municipality has revealed that closer contact between the municipality and health personnel is perceived as important. Odense municipality states that this provides guidelines for how future alarm reception for more advanced welfare technology should be solved.

CHAPTER 5 ORGANIZATION OF ALARM RECEPTION IN SWEDEN



5 ORGANIZATION OF ALARM RECEPTION I

SWEDEN

This chapter presents the organization of alarm reception in Sweden. Initially, an introduction is given to the organization of health and care in Sweden. Then welfare technology is presented in Sweden. Finally, the chapter contains case descriptions with findings and analyzes from the mapping work from one municipality with alarm reception in Sweden.

5.1 Organization of health and care in Sweden

Responsibility for the health system in Sweden is shared between the state, county councils and municipalities. Together, they must ensure good health and care on equal terms for all the country's inhabitants. The state is responsible for the overall health policy. The Ministry of Social Affairs and the National Board of Health and Welfare have the overall responsibility for fulfilling the goals of the Riksdag and the Government in health and care.

Sweden is divided into 21 counties. The counties represent Sweden's regional administrative areas, and are responsible for primary and specialist health services. With the exception of Gotland, each county has its own county council. Two regions, Skåne and Västra Götaland, are county councils with expanded regional development responsibility.

The county councils' most important task is to manage the health service, and ensure that good health services are provided to the inhabitants. The counties, like the municipalities, are largely self-governing.

The county councils and municipalities share the responsibility for the health and care services. Sweden consists of 290 municipalities. The municipalities must look after local interests, and are responsible for elderly care, the physically disabled, and people with mental illness. The municipalities also have rehabilitation responsibility for all nursing homes and care homes.

The municipalities are obliged to offer care planning to discharged hospital patients in need of follow-up, and people with an extended need for health and care services in the home. The municipality reviews the population's situation, and assesses the need for assistance.

5.2 Welfare technology in Sweden

Sweden invests significantly in welfare technology. Through the program Technology for the elderly contributes

the government with financial resources for the work with welfare technology. The program will contribute to the development of products and services that will simplify the elderly's everyday lives and increase their opportunities to live at home longer. Companies, organizations and municipalities can apply for support for relevant projects. Between 2007 and 2010, 100 projects were awarded financial support from the program. From 2010 - 2012, the government allocated an additional 66 million for the same investment⁸¹.

Municipal pilot projects have been carried out in Gothenburg, Norrköping and Västerås. The goal of the pilots has been to test and develop new technologies for the elderly who live at home. In addition, the projects have sought to establish better collaboration with housing development companies⁸².

It is expected that the focus on telecommunications health services will increase further in Sweden in the time ahead. For example, these can be ECG measurements, weight measurements for heart failure or heart rate measurement. Currently, this is used to a small extent.

Internet psychiatry is an area that has received a lot of attention in Sweden. The user receives cognitive behavioral therapy mediated via the internet, and is given the opportunity to have contact with a psychologist over the internet⁸³.

5.3 Case descriptions from Sweden

About 200 Swedish municipalities have chosen central solutions for alarm reception. The alarm receptions are supplied by two suppliers:

- CareTech AB in Malmö and Kalix (covers approx. 90 municipalities)
- Tunstall Nordic Trygghetscentralen in Örebro (covers approx. 110 municipalities)

In this subchapter, case studies from one of the two central alarm reception centers are presented, and a description is then given by Lund municipality. The case studies are based on visits, interviews with managers and employees as well as obtaining written documentation.

⁸¹ Technology for the elderly, Projects in welfare technology. Better technology for the elderly and relatives (2014).

⁸² Better technology for the elderly and relatives. Oslo: Technology for the Elderly (2014).

⁸³ Internet treatment with CBT. Oslo: Internet Psychiatry (2014).

5.3.1 Central alarm reception provided by CareTech AB⁸⁴

About CareTech AB

CareTech AB (CareTech) offers complete alarm solutions for the elderly and disabled. CareTech offers a fully digitized solution. This means that all their solutions throughout the service chain are based on digital technology. This is due to the fact that the government of Sweden has decided that all the country 200,000 security alarms will go digital by 2015⁸⁵.

CareTech operates two central alarm reception centers in Sweden; one in Malmö and one in Kalix. In total, the company's alarm reception covers around 53,000 inhabitants across the municipalities. The two reception centers share information, so that an alarm reception center can serve all municipalities, if a reception center is not operational.

Organization of alarm reception and service chain

When a user presses the alarm, a signal goes to CareTech's main center in Malmö. When the signal is received, the municipalities have chosen one of two solutions:

- CareTech's staffed alarm reception in Malmö or Kalix answers the alarm. If there is a need for a response to the user, this is taken directly with the individual municipality's home service. This solution is chosen by approx. 90 municipalities.
- The municipality responds to the alarm itself. This solution has been chosen by 6 municipalities, which are connected to CareTech's technical solution via a web client. The municipalities have locally staffed alarm reception centers, but use CareTech's software and maintain user data in CareTech's central solution.

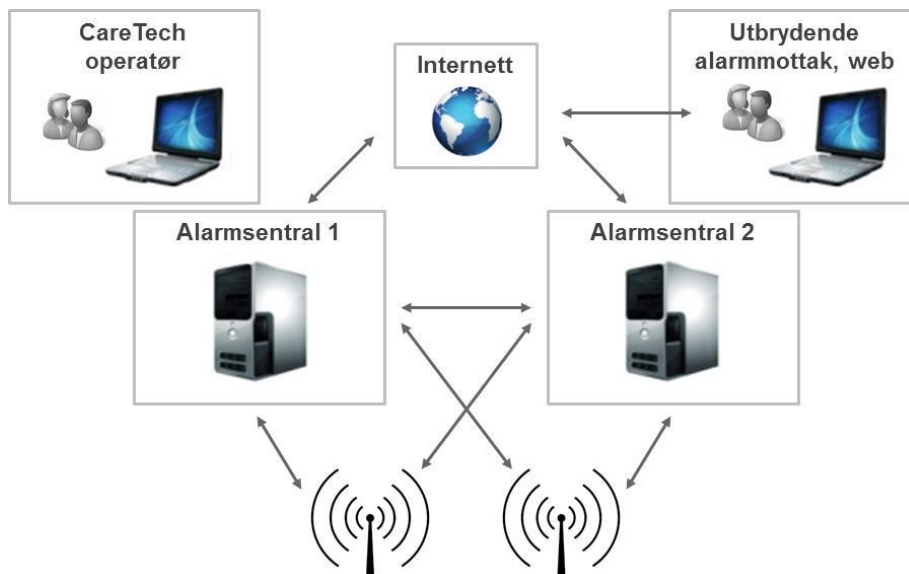
CareTech also provides alarm reception services to the Norwegian municipalities of Sola and Trysil.

The figure below illustrates CareTech's two possible solutions.

⁸⁴ Hübner A. and Svenske P. (2014), CareTechAB, interview conducted 24.09.14.

⁸⁵ S linder M., S berg PO, N u AA (2012): *Final report of the project "Effective Security Alarms"*. SICS.

Figure 18 Setup of CareTech AB's alarm reception⁸⁶



Municipalities have access to detailed call statistics through CareTech's solutions. The municipalities are responsible for maintaining user data.

Welfare technology services

CareTech also offers surveillance visits using a camera. Rather than being visited by health professionals at home, the user is checked via a video camera. The employee at the alarm reception logs on to the camera installed in the user's apartment, and checks that the user is in bed. Calculations carried out by CareTech show that video surveillance can save up to SEK 120,000 per user with the need for two nightly visits every day.

CareTech also offers a service where they relay alarms via SMS. Sharing information about the user in writing simplifies healthcare professionals' access to relevant user information. The services presuppose that the alarm reception receives a quick receipt if the assignment is confirmed. If the assignment is not confirmed, the operator finds another available health worker.

Staffing, competence requirements and training

Every day, CareTech handles approx. 10,000 alarms. The alarm reception in Malmö is staffed with 13

⁸⁶ CareTech AB alarm reception, presentation from CareTech

operators during the day, 12 operators in the evening and seven operators through the night.

The employees at the alarm reception work according to clear work routines, and must follow a specific training plan when they are new employees.

CareTech requires that employees at the alarm reception must be trained as assistant nurses, a level between nurse and assistant nurse in Norway. This requirement comes from the Swedish municipalities. The management of CareTech points out that it should not necessarily be a requirement to have this education to staff the emergency room. For management, it is more important that the operators are patient, confident, good at listening, and cope with stressful situations.

Payment and financing

Regardless of the number of alarms that are triggered, the municipalities pay a fixed monthly price to CareTech. This ensures the municipalities a predictable expenditure, so that the municipalities can plan their budgets accordingly. The monthly price varies somewhat from municipality to municipality, but is around 45-50 SEK per user. Sweden has set a maximum price for how much an alarm reception provider can charge per user. This will ensure that services are delivered to municipalities throughout the country, regardless of user base.

Critical user base

CareTech states a critical user base of 50,000 inhabitants.

Digital vs. analog solutions

CareTech delivers exclusively digital alarms. According to CareTech, the most important advantage of digital alarms is that they provide more secure monitoring of the user compared to analog alarms. Analog alarms can only be checked once a day. Digital alarms, on the other hand, send pings (response time to server) every minute, and notify if pings are not received. At CareTech, this is done through an online service.

GSM alarms

99% of CareTech's alarms are delivered with a GSM transmitter. In general, SIM cards have a duration of three years. This entails complications for the security alarm providers. CareTech has solved this by ordering its own SIM cards with a lifespan of 15 years.

5.3.2 Lund Municipality⁸⁷

Lund municipality is located in the Skåne region, and has 114,000 inhabitants.

The municipality's home service for the elderly is organized in 12 districts. In addition, three private care companies operate in the home care service.

User segments

Lund municipality currently has approx. 2,000 users of security alarms.

All alarms are analog, including the GSM alarms. The municipality offers security alarms based on assistance decisions from the home service. Other municipalities in Sweden automatically provide security alarms to residents over the age of 67.

The municipality also offers other welfare technology aids to its inhabitants, including digital locks, door sensors and magnetic alarms for doors.

Organization of alarm reception and service chain

Lund municipality has staffed its own alarm reception which uses CareTech's central technical solution.

When a user presses the alarm, the alarm device in the user's home is activated. The alarm unit sends signals to CareTech's systems, which automatically recognize that the signal comes from a user in Lund.

The system automatically checks who is at work at the municipality's alarm reception. The alarm is then passed on to the operator in the municipality who responds to the user's inquiry.

CareTech has essentially no communication with the user by telephone. Exceptions occur if the municipality has problems staffing its alarm reception. Then the alarm is answered by CareTech's operators.

About Lund municipality

Region:

Scania

Number of citizens:

about. 114,000

Percentage of inhabitants

over 65 years:

about. 13%

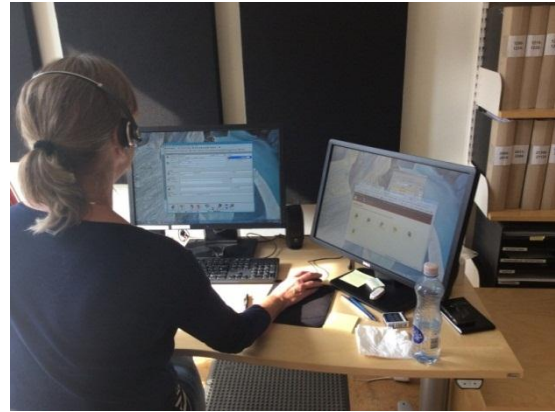
Picture 10 Employed by Lund municipality who answers alarm

⁸⁷ Petersson M. 2014, Lund municipality, interview conducted 24.09.14.

Staffing, competence requirements and training

There are a total of 14 employees working at the alarm reception in the municipality. This includes administration, technical personnel and first-line user support. The working groups are divided into two; one technician group and one alarm reception group.

Two people are on duty during the day, two in the evening and one through the night. Technical personnel are at work during the day on weekdays.



Picture 11 Employed by Lund municipality as

The alarm reception receives approx. 400 alarms per day. About. answering the alarm 50% of these calls are routed to the home service. The operators at the alarm reception group do not have the opportunity to see if the home service moves out to the user. Lund will now implement a receipt solution that takes care of this.

The municipality does not require nursing education to work at the alarm reception.

IT systems and integration

CareTech delivers the alarm reception software. Alarm causes are logged here. All alarm calls are recorded and stored at CareTech.

The software CareTech uses is an online client.

The management at the alarm reception in the municipality wants to highlight the following advantages of the chosen IT solution:

- Simplicity
- All PCs can be used to log in to CareTech's systems
- Easy to update when new versions are implemented
- High redundancy

Payment and financing

The cost the user pays to the municipality for the service is 227 SEK per month, regardless of use. This includes equipment maintenance.

Advantages and disadvantages of the chosen solution

The solution that Lund municipality has chosen is only in use by five other municipalities in Sweden. In Lund, this special solution is an outcome of a political decision. The unit that responds to the alarms also performs other services for the municipality, and that was one of the reasons why the politicians found it useful to hold the alarm reception locally. Lund Municipality agrees that the solution with a locally staffed alarm reception rather than the use of the central contact center for CareTech is a significantly more expensive solution. Lund municipality also has a lower screening rate of calls compared to CareTech's alarm reception in Malmö.

According to Lund municipality, there are several advantages to being connected to a central alarm reception. CareTech's alarm reception in Malmö serves as a backup for Lund municipality in situations where staffing is difficult to obtain, or in particularly busy situations. If Lund municipality's employees do not respond to the alarm within 10 minutes, the alarm will be answered by CareTech in Malmö. Lund Municipality emphasizes that a central service is advantageous as they do not have to be responsible for upgrading and repairing technical equipment for the alarm reception. The central solution is perceived as safer than having a local solution.

Plans for the future

Lund municipality is in the middle of a technology shift from analog to digital technology. Earlier in 2014, the municipality implemented the transition from an analogue to a digital alarm reception system. The municipality will replace analogue alarms, and is now preparing to acquire digital security alarms. This will lead to a safer solution in the future.

CHAPTER 6 ORGANIZATION OF ALARM RECEPTION IN NORWAY



6 ORGANIZATION OF ALARM RECEPTION I

NORWAY

This chapter describes the organization of alarm reception in Norway. The chapter contains case descriptions from seven municipalities / regions in Norway, as well as one private actor.

6.1 Case descriptions from Norway

This subchapter presents case studies from seven municipalities / regions in Norway, as well as a private actor. The case studies are based on visits, interviews with managers and employees, as well as obtaining documentation.

6.1.1 Bærum municipality ⁸⁸

Bærum municipality is located in Akershus county. The municipality has around 119,000 inhabitants. The services within the municipality's nursing, care and rehabilitation have as their overall goal to give users an increased opportunity for self-help.⁸⁹ The municipality is concerned that the needs for nursing and care services are covered in a sober and efficient manner. Bærum is part of the National Welfare Technology Program.

Welfare technology projects

Bærum municipality has had the topic of welfare technology on the agenda since 2009, and this is a strategically important focus area for the municipality. The municipality has participated in, and led several major innovation and research projects, as well as contributed to national knowledge in the area.

The municipality has established a strategic plan for welfare technology for the period 2013 - 2017⁹⁰. A key driver behind the investment is the need to meet increased demand for services in a time

About Bærum municipality

County:

Akershus

Number of citizens:

about. 119,000

Percentage of inhabitants

over 65 years:

about. 13%

⁸⁸ Øverli G. and Standal K. (2014): Bærum municipality, interview conducted 03.09.201.

⁸⁹ Bærum Municipality (2014): *Mastery and care report 2013-2023*. Adopted by the municipal council on 29 January 2014.

⁹⁰ Bærum Municipality (2013): Strategic plan for welfare technology 2013-2017.

limited resources. Central objectives in ongoing and planned welfare technology projects are prevention, increased mastery and efficiency.

Bærum municipality works on the basis of a focus on user needs, and the projects have therefore so far been focused on identifying how the technology works from a user perspective, as well as testing the technology's ability to interact.

The municipality wants to roll out welfare technology on a larger scale. A part of this is the upcoming project with 100 security packages (procurement process in progress). The 100 security packages will be rolled out for home residents in 2015, and will contain a standard basic package with welfare technology solutions including security alarms, fire alarms and more. The basic package should be able to be linked to other, and more advanced technologies later.

Security alarms

Bærum municipality has 1,750 inhabitants with security alarms. These are simple, standardized security alarms that are not linked to welfare technology services.

The municipality conducts preventive visits to all residents over the age of 80 to inform potential users about available services and identify the needs. The municipality also informs about the service in other channels, for example on its website.

To be assigned a security alarm, the user must complete the standard application form. The municipality processes the application on the basis of the user's needs. Bærum wants security alarms to be a low-threshold offer, and the starting point is that everyone who applies for an alarm is offered this. In recent years, there has been a steady interest from the inhabitants of the municipality to be granted an alarm, and the number of alarms in the municipality has remained stable.

Organization of alarm reception

Bærum municipality has a joint agreement with Asker municipality on the delivery of security alarm services through the private player SOS International (SOSI). The municipality therefore has no direct experience with the operation of alarm reception.

Today's organization means that SOSI is responsible for operating a 24-hour manned alarm reception, and provides full coverage to all users, including installation, monitoring, maintenance and user response. Bærum municipality buys and owns the equipment. When a user is granted an application for a security alarm, a notification is sent from the municipality to SOSI, which is then responsible for installing the alarm within 2-3 weeks.

SOSI has its own doctors, nurses, and other health personnel, who are used when there is a need for emergency services

users. As stated in the supplier agreement with the municipalities, there must always be at least one nurse on duty at the alarm reception.

To ensure full operation of the alarm reception, SOSI uses two servers. Should one server go down, the other server will take over. Today, the level of service is close to 100%.

The municipality has a dedicated employee who is responsible for following up the work against SOSI.

Organization of the service chain

When the resident presses the alarm, the call is automatically transferred to the alarm reception at SOSI. SOSI then has the opportunity to communicate directly with the user, and with this makes an initial assessment of the user's needs. Based on the assessment, SOSI decides whether to send personnel to the user.

SOSI has access to personnel, and some information about the user's ability to function. If the user has special considerations SOSI should be aware of, the user can agree to share this information with the company. SOSI does not have access to the municipality's records.

SOSI is responsible for moving out to the user. In principle, SOSI shall provide emergency services to users, and not care services. In cases where care services are required, SOSI contacts the home service in Bærum municipality.

Below are statistics from SOSI for Bærum municipality from the last three years.

Figure 19 Number of alarms and emergency calls per year in Bærum municipality

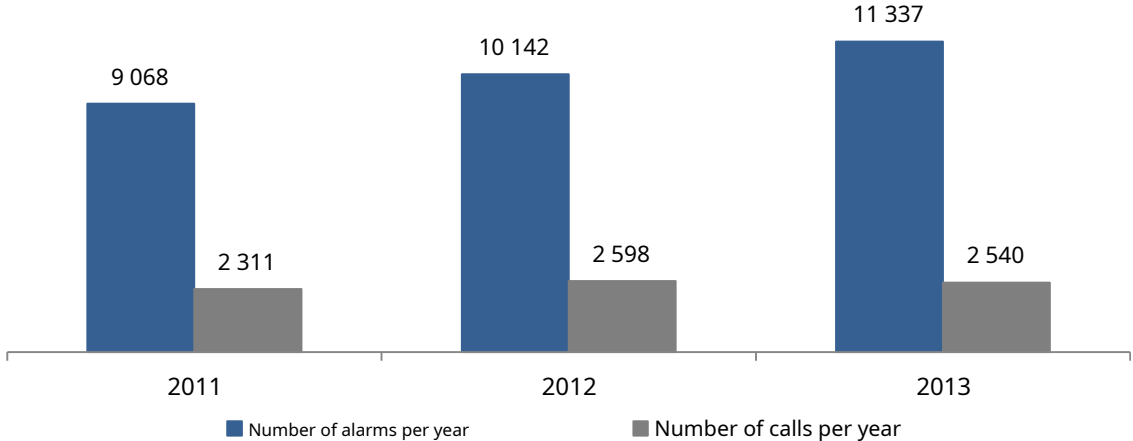
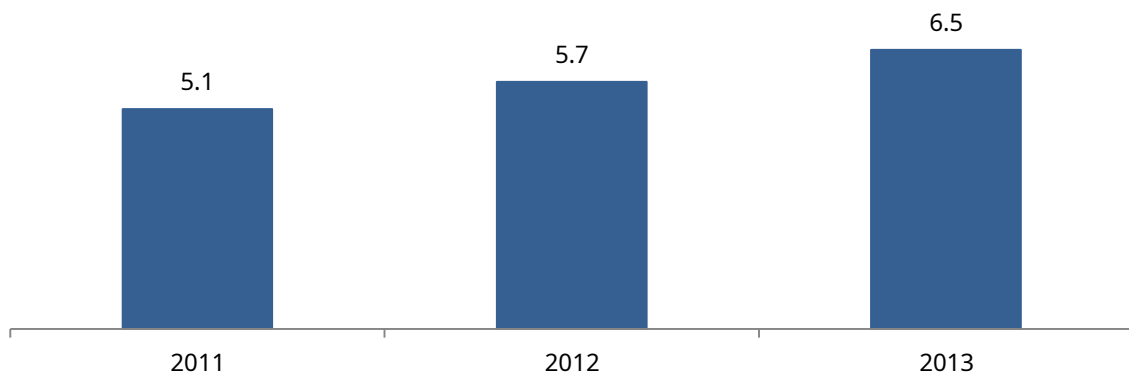


Figure 20 Number of alarms per user in Bærum municipality



As the graphs show, the number of alarms has been increasing during the period, while the number of emergency calls has remained relatively stable. This shows that the degree of screening has increased.

Figure 21 Number of alarms, emergency calls and installations per day in Bærum municipality

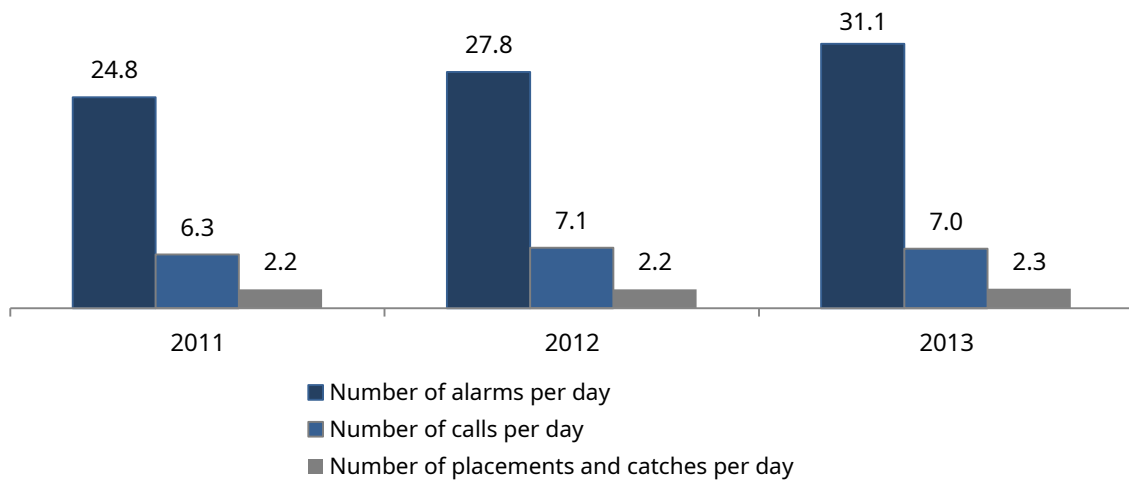
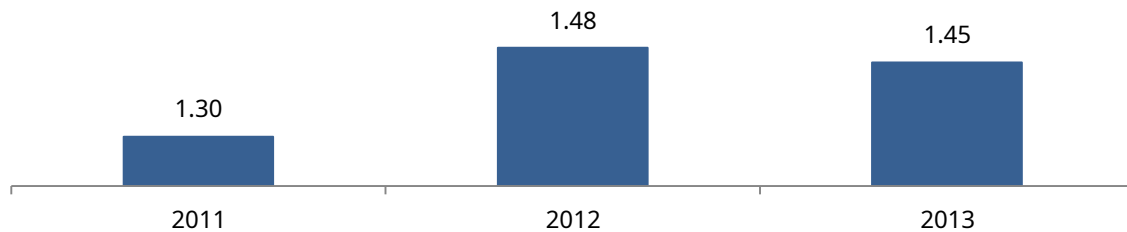


Figure 22 Number of calls per user in Bærum municipality



The graph above shows that the number of calls per user has only increased marginally since 2011.

Staffing, competence requirements and training

SOSI is responsible for training its own employees.

In its strategic plan for welfare technology, Bærum municipality mentions in several places that the projects the municipality is now implementing are important for strengthening competence in the area. The municipality also points to the importance of strengthening IT competence in welfare technology.

Control and measurement

Bærum municipality demands that all emergency calls related to security alarms must now be used within 30 minutes.

IT systems and integration

SOSI uses its own software in the alarm reception. SOSI's information is not integrated with the municipality's records, and this is perceived as a lack from the municipality. Today, SOSI gives written notice to the municipality only if they experience something special with a user or the user's situation. In addition, SOSI distributes general statistics to the municipality (as shown above).

Privacy and information security

Sensitive information regarding the security alarms is processed on paper, as the systems of the municipality and SOSI are not integrated. This means that patient information is sent by post between the municipality and SOSI, which then registers the information in their respective systems.

Payment and financing

Security alarms will in principle be delivered at cost, but Bærum municipality currently sponsors some of the user's costs. Security alarm granted by the municipality costs NOK 289 per month.

The municipality buys and owns the security alarms. In addition, they pay a fixed cost per user to SOSI, regardless of the number of calls to the user.

Profit realization

Bærum does not work systematically with profit realization in connection with welfare technology. The municipality states that the realization of gains will be important in the further work.

Plans for the future

Bærum municipality would like to scale up the welfare technology investment from pilot projects to implementation that can realize gains for more users.

The municipality wants to make the right choices, and is therefore awaiting national guidelines before further plans are detailed. Bærum would like clear guidelines related to standards and alarm reception before further investigation in these areas is intensified, and has allocated funds to participate actively in the national work. The municipality would like to see security alarms and welfare technology as integrated services in the future.

6.1.2 Lindås municipality⁹¹

Lindås municipality is located in Hordaland county. The municipality has around 15,000 inhabitants. Lindås municipality decided in 2013 that the municipality will be in a development process, where the goal is to perform health and care services in a smarter and better way⁹². The municipality considers care technology to be an important tool for achieving this. The goal of care technology is to strengthen the inhabitants' self-care and coping. Lindås municipality is part of Nasjonalt Welfare Technology Program.

About Lindås municipality

County:

Hordaland

Number of citizens:

about. 15,000

Percentage of inhabitants

over 65 years:

about. 13%

The care technology project in Lindås municipality



Picture 12 Brochure on care technology in Lindås

municipality, fall sensors, flood sensors, epilepsy sensors and pill dispensers.

Lindås has since 2012 collaborated with Bergen University College (HiB) and Tunstall in a research project with care technology. Solutions will be implemented for up to 250 people living in their own homes. The care technology solutions are implemented for residents with home services, or as a purely preventive measure.

Due to the project, Lindås offers various care technology services, including fixed and portable security alarms, smoke detectors, door sensors, humidity sensors, motion sensors, ring cords, bed / chair sensors,

The plan for the project currently extends until 1 August 2015. Research is linked to perceived results for users and quality in the services. The research will be completed on 1 August 2016.

User segments

Lindås municipality has 120 active users of care technology as of September 2014. The municipality has approx. 140 users with traditional security alarm.

Care technology is an offer for home residents of all age groups. By far the largest proportion of users is older. Some of the users have incipient, or developed dementia, and live in their own home. Some

⁹¹ Dyrdal GH, (2014): Care technology, Lindås project, interview conducted 09.09.2014.

⁹² Development Center for Nursing Homes and Home Services (2014): *Care technology in the municipalities "Lindås project"*. Halfway report / August 2014.

users use care technology because it gives them increased security.

Younger users of care technology are mainly users with chronic diseases who are cognitively well-functioning living in their own home. A few users are mentally retarded.

Lindås distinguishes between established users with a real risk of falling or being exposed to similar incidents, and users who are exposed to few or no incidents (for example, diagnosed with chronic diseases). Care technology is used as a preventive measure for the latter user group.

Potential users receive information about the services through brochures, offers of information visits in their own homes and through "open houses" in the municipality's premises. In addition, users will be able to be exposed to various media reports in connection with conferences and the like that the municipality holds.

Process for referral to security alarms

The home care service in Lindås municipality has five resource persons within care technology; four nurses and an occupational therapist. The resource persons carry out a survey together with the user and, if desired, relatives. The survey is the assessment basis for recommending which technology is most suitable to meet the user's needs.

The referral process is specified in a separate flow chart. The process means that each individual user receives a recommendation on the choice of equipment.

Lindås municipality wants to make it clear to potential users that care technology is a preliminary solution for the municipality. The municipality will consider other measures for the inhabitant if the project is stopped on the basis of a political decision.

For the allocation of a regular security alarm, the resident must apply, or the allocation takes place on the basis of the home service's recommendation.

Organization of alarm reception and service chain

The care technology project uses an external alarm reception owned by Alarm24.

Each user has a home exchange that collects the signals from the sensors. The home exchange transmits the signal to Alarm24's exchange, and Alarm24 is notified of which aid has triggered the alarm. The employee at the alarm reception is then given the opportunity to communicate with the user, and on the basis of this information assesses the situation.

The residents' home exchanges have a two-way speaker so that the alarm reception and the user can communicate with each other. The home exchange is connected to power and telephone line, analogue or via GSM.

There are three models for how the alarms are routed in Lindås municipality. All models go first via Alarm24:

Model 1) The fire service's 110 switchboard is involved: When the smoke sensor is triggered, Alarm24 first tries to reach the user, and at the same time contacts the fire service's 110 exchange, which then contacts the fire brigade in Lindås municipality. The firefighter rushes out to the relevant user to check if everything is ok.

Model 2) The home care service is involved: In most cases, the alarms are transmitted from Alarm24 to the home service in the municipality. If the call is forwarded to the home service, it will be routed to one of five geographical areas. The home service in the relevant area goes out to the user. The home care service assesses urgency. If it is considered an urgent assignment, you withdraw immediately.

Model 3) The alarm reception contacts the user's relatives: Some users have stated relatives as 2nd line support. The home care service is always called if relatives are not available.

Staffing, competence requirements and training

Alarm24 informs Lindås municipality that the center is staffed by health personnel.

Involved in Lindås municipality have a health professional background, with the exception of the fire brigade.

Control and measurement

Lindås has conducted a user survey in collaboration with HiB. The feedback from the survey shows that the users are positive about the service, and they feel that care technology contributes to increased security in their own home.

HiB is responsible for preparing measurement parameters for the project. HiB conducts interviews with users, relatives and holds focus group interviews with employees. In addition, HiB conducts observations of meetings and processes in the project.

The municipality has designed a separate checklist for various process steps in the use of security alarms and care technology. The process includes installers, users, employees, relatives and more, and will help ensure an overview of the end-to-end process.

IT systems and integration

The municipality uses Visma Profile. The alarm reception uses Tunstall PNC 5.

Payment and financing

The security alarms and care technology are financed by the user paying a deductible to the municipality based on income level.

The deductible rates the user pays are divided into two categories:

- Under 2G in income - NOK 180 / month.
- Over 2G in income - NOK 283 / month.

If the user wants a GSM solution for the home exchange, there is a one-time cost of NOK 2,000 in addition.

Assembly, dismantling and alarm reception costs are covered by the user fee. The municipality pays the alarm reception per active alarm, and for installation it is paid per connection and disconnection.

The municipality has entered into an agreement with Tunstall on sponsorship of equipment for up to 250 users until the end of 2015.

The user fee accounts for 11% of the total income related to care technology in Lindås municipality. In addition, the municipality receives grants through the National Welfare Technology Program (42%), competence grants from the Housing Bank (22%), grants from the Regional Research Fund (3%), discretionary funds from the County Governor (1%), and grants from the Norwegian Directorate of Health's collaboration funds (21%).

Critical user base

The municipality has not yet defined a critical user base.

Profit realization

The municipality is not working systematically with profit realization now, but aims to increase the focus on this in the time ahead. The municipality has given some thought to the purpose of the services. Preliminary goals are related to increased quality of services, better resource utilization, and development of the services provided by the municipality. It is estimated that three institutional admissions have been avoided since the municipality started the service. The benefits are only discussed in informal bodies. The municipality sees a need to document these internal discussions in the future in line with the increasing volume of the service. The research completed in 2016 will refer to realized

gain.

The municipality believes that the services related to care technology must be measured against other services. They also point out that care technology can motivate users, and create increased security.

Prior to, and during the entire project, there has been a strong focus on employee involvement and information. The municipality has also made the project part of ordinary operations.

Plans for the future

When the project ends, the municipality will decide whether to maintain the offer of care technology in the municipality, based on a political decision.

Lindås points out that they lack local control over the alarm reception in the current solution, and that they experience resource leakage in connection with the current model. The alarm reception's organization and choice of technology are important points to consider in a possible continuation of the implementation.

6.1.3 Stavanger Municipality⁹³

Stavanger municipality is located in Rogaland county. The municipality has about 131,000 inhabitants. The municipality has established a long-term strategy for nursing and care services; "Care 2025". This strategy defines how the municipality is to ensure that the services of the future within the subject area are of good quality⁹⁴. Important focus areas for the municipality are:

- User participation, individual plan and health promotion work to strengthen the user
- Quality strategy, ordering / executing organization, new financing model and voluntary work to ensure a fair distribution of the service offer

The municipality has established a strategy for implementing welfare technology for 2014-2017⁹⁵.

The municipality's vision within welfare technology is: "Independent, safe and active". The main goal is for welfare technology to become part of the municipality's service offerings and contribute to security and mastery for users, ensure better quality of services, better working conditions and the environment, and be

About Stavanger municipality

County:
Rogaland

Number of citizens:
about. 131,000

**Percentage of inhabitants
over 65 years:**
about. 15%

⁹³Ingebretsen Ø. And Sandvold C. (2014): Stavanger municipality, interview conducted 03.09.2014.

⁹⁴Stavanger Municipality (2008): *Care 2025. The care services in Stavanger towards 2025*. Strategy document.

⁹⁵Stavanger Municipality (2013): *Strategy for implementation of welfare technology 2014-2017*. Strategy document.

resource-saving. The municipality focuses on using technology in the areas of interaction, safety and security, cognitive support and rehabilitation.

User segments

Stavanger municipality currently has around 1,800 inhabitants with security alarms. Of these, 1,469 users are over 75 years old, and 306 are under 75 years old. In principle, all users use the same security alarm, but simple adjustments can be made according to the user's needs. For example, an alarm can be customized with a larger shutter button for users who are unable to press a standard shutter button.

Users apply for a security alarm. On the basis of this, a decision is made which states whether a resident will be issued an alarm. The starting point is that all residents with a wish for a security alarm are allocated it. The municipality experiences that there has been a steady interest from the inhabitants for the alarms.

The municipality conducts home visits to all residents over the age of 80. Here, potential new users get information about the service. In addition, the municipality informs about the service in other channels, including on the municipality's website.

Welfare technology services

Stavanger municipality has offered security alarms since the last half of the 1980s.

Stavanger is a participant in the National Welfare Technology Program. The municipality is now in the process of working on security packages, including fall alarms, fire alarms and cord pull alarms for about 25 people who are already users of traditional security alarms. The trial started in June 2014 and will be evaluated during the autumn of 2014.

The municipality is also working on the use of new electricity meters (Advanced Measurement and Control Systems), introduced by Lyse Energiselskap. Stavanger has considered the possibility that these can be used as house exchanges.

Organization of alarm reception

The municipality operates with automatic alarm reception for security alarms, and uses the PCvakt system. The system is operated by Vakt & Alarm in Etne. The agreement was entered into about 13 years ago. The alarm reception consists of an automatic answering service that receives the users' calls, and forwards them to the home service in the municipality. The home care service is responsible for answering calls.

If no one in the home care service has the opportunity to answer the calls, they are routed to the emergency room. The PC guard has a so-called "Call center function" with a PIN code that can be used by relatives or others

who need to get in direct contact with the nurse.

The home care service experiences that the alarms can sometimes be a burden at work. This is especially true at times of the day when there is a lot to do. The user may then experience that it takes longer before the home care service can assist.

Statistics show that 14 alarm calls ended up directly at the emergency room in August 2014, even though the calls should have been answered by the home care service. A total of 4,480 alarms were triggered by users in the same period.

Organization of the service chain

When a user presses the alarm, the alarm is automatically routed via PC guard to the home service in the relevant district where the user lives. Each district has a total of three dedicated guard telephones registered with the PC guard. The hotlines are operated by those who are at work in the home service. The employee operating the phone can answer the call and talk directly to the user.

If the first specified contact is busy or does not answer, the call will be forwarded to the next contact in the list. PC guard provides the opportunity to establish other care zones as first-line contact.

If the telephone numbers on the contact list are not answered, the call is routed to the emergency room in the municipality. The emergency room has a separate list with an overview of where the user lives. Routing calls to the emergency room is a discrepancy, and efforts must be made to ensure that this does not occur.

PC-guard logs alarm call reasons according to the following categories:

- Incorrectly triggered alarm
- **Fall**
- Toilet visits / risk of falling
- Social contact / anxiety
- Heart problems
- Diabetes
- Failure of medical technical equipment
- Other reason
- Unknown reason / will not be contacted

IT systems and integrations

Most security alarms are of the Lifeline 400 type. These are manufactured by Tunstall. The municipality has also introduced the Lifeline Vi + alarms from the same supplier. This type of alarm can be linked to several sensors that play together and are programmed according to the user's needs. The municipality has so far chosen not to use such extensions of functionality.

When Tele og Samband, now Vakt og Alarm, won the tender competition for alarm reception, their system was integrated with the nursing and care system CosDoc. The integration works well. The municipality has so far chosen to stick to the same supplier to ensure that the systems communicate with each other.

The municipality's maintenance agreement with Vakt og Alarm includes support for technical personnel at the municipality, monitoring of systems with receipt of error codes throughout the day, as well as free updating and further development.

To ensure that PC Guard is always operational, it is operated by two dedicated servers, one of which is a backup solution. The servers are operated by the IT department in the municipality. The municipality aims to have 100% uptime on its lines. There have been cases where the main server has gone down, but then the reserve server takes over. The provider monitors telephone lines. In the event of a power outage in Stavanger, the municipality has capacity with emergency generators.

Payment and financing

The security alarms are financed by the user paying a deductible to the municipality based on income level. The deductible rates are divided into two categories:

- Under 2G in income - NOK 180 / month.
- Over 2G in income - NOK 285 / month.

In the future, the rates will be changed to the following categories:

- Under 2G - 180 kr / month.
- Between 2 and 3G - DKK 263 / month.
- Over 3G - 525 kr / month.

The municipality covers all costs associated with operating the alarms, including installation, operation and emergency response.

Total salary expenses for personnel, budget for maintenance and purchase of alarms amount to NOK 1,172,000 per year.

Financing of alarms is linked to political decisions, and may have to be considered when transitioning to new systems.

Critical user base

Technically, it is almost unlimited how many users the alarm reception in Stavanger municipality can handle. On the other hand, the number of users is limited by how many users the home service has the capacity to handle.

The home care service receives payment per assignment. If the number of users of security alarms increases, this could contribute to increasing the home service's income base.

Plans for the future

It has been decided that all Norwegian municipalities will use digital security alarms from 2017. As part of Stavanger Municipality's action and financial plan, there are plans to upgrade the alarm reception and the alarm park. PC guard an old system, and the municipality plans to replace this in two years.

6.1.4 Trondheim Municipality⁹⁶

Trondheim municipality is located in Sør-Trøndelag county. The municipality has about 180,000 inhabitants. The municipality also has a significant proportion of students, who together with adjacent municipalities in the Trondheim region provide a total population of approx. 230,000. Trondheim municipality is part of Nasjonalt Welfare Technology Program.

Health care and welfare technology are two major focus areas in Trondheim municipality.

The health guard will make it easy for residents in the municipality to find and get help with unplanned needs for health and welfare services 24/7. The health guard will also contribute to creating increased safety and increased

About Trondheim municipality

County:

Sør Trøndelag

Number of citizens:

about. 180,000

Percentage of inhabitants

over 65 years:

about. 12%

⁹⁶ Brørs KF (2014): Trondheim municipality, interview conducted 22.08.2014.

security for established users of health and welfare services and their relatives by ensuring further inquiries. The health care provider shall have a system for handling welfare technology that supports the provision of services at the user's home.

Trondheim municipality's program for welfare technology

The investment in welfare technology in Trondheim has been politically rooted for several years, and in 2014 the politicians adopted a "Theme plan for ICT, digitalisation and welfare technology". Inter-municipal goals and strategies for welfare technology work have been prepared, and this has been dealt with politically by the other municipalities involved. Klæbu, Malvik, Melhus and Midtre Gauldal.

A program for welfare technology is now being established, which will help the municipality to ensure a modern public administration, and meet the resource needs related to welfare services in the years ahead.⁹⁷

During the autumn of 2014, the focus will be on establishing the program and continuing ongoing projects. The municipality's vision is that the investment will provide increased mastery for both residents and employees in the municipality. The program will also be one of the focus areas in the municipality's new strategy for research, development and innovation.

In addition to offering simple security alarms with smoke alarms and adapted user equipment, Trondheim has projects with tests of GPS, door alarms and similar technologies.

User segments

Trondheim municipality has just under 4,000 users of security alarms, of which just over 200 are GSM alarms. The municipality is concerned with user involvement, and has established a municipal council for people with disabilities (KFU), as well as user councils to take care of the user's needs. The municipality also conducts user surveys, to gain insight into the user's perspectives.

When the municipality introduced security alarms, they experienced an immediate increase in the number of users. This has now stabilized, and it is primarily those with actual needs for alarms who have it. The users of security alarms are primarily older.

Through the municipality's program for welfare technology, work is now being done to focus on people with needs of all ages. Several of today's users are of working age.

⁹⁷ Trondheim Municipality (2014): *Theme plan for ICT, digitization and welfare technology 2015-2018*. Strategy document.

Organization of alarm reception and service chain

The municipality has today chosen a solution where alarm reception and alarms are leased from SOS International (SOSI). The Security Patrol unit is responsible for the entire value chain after the user has been granted a security alarm. The security patrol is organized during the home service.

During the day and evening, the unit has three outpatient nurses on duty, at night they are 14. The reason for the increase at night is that the Safety Patrol then also provides home services. The operators at the alarm reception are responsible for assessing the alarm, and if necessary sending ambulatory services from their own unit to the user. In addition, the alarm reception answers telephone for the home services in the evening and at night.

When the user presses the alarm, the user is automatically connected to the Security Patrol. Here, the call is received by a nurse or an assistant nurse, who on the basis of the contact with the user and available information from the work surface (registration tool and patient record) decides on further measures.

In the event of an emergency call, the assignment is reported to the outpatient part of the Security Patrol. The employees have divided the city between them. There is always health professional competence at work in the outpatient department, at night also the nurse (s).

In addition, the municipality has its own technicians and backup solutions, which come into force when needed. The municipality emphasizes that backup is important to provide a robust and future-oriented service.

In total, the 4,000 security alarms in the municipality account for about 12,000 alarm pressures per month, of which about 6-10% of the pressures lead to emergency calls. The large difference between alarm pressure and emergency calls is due to the fact that Trondheim has a very conscious relationship with developing good routines for filtering calls, and that the alarm reception has access to both the reception and the patient's medical record system.

During the autumn of 2014, Trondheim Municipality will also receive alarms from the partner municipalities of Malvik and Klæbu.

Control and measurement

The municipality has defined requirements that will ensure a quick response to the user:

- From a user presses the alarm until contact is made with the alarm reception, a maximum of 30 seconds must elapse
- From the time the user presses the alarm button until the healthcare professional moves out, a maximum of 30 minutes must elapse

IT systems and integration

Trondheim currently uses the software Safecon, leased by SOSI. The municipality is experiencing challenges with the current system not being built for the future. Through the acquisition of the platform for the emergency center in Helsevakta, the municipality has started the work of creating the foundation for a comprehensive platform for receiving all unplanned health needs, including welfare technology. The security center will be in operation with a new reception system from the autumn of 2015.

Among other things, there is a need for integration of more voice channels than security alarms, digital reception and built-in decision support. Welfare technology, including security alarms, will be the next step on the road.

Privacy and information security

In order to ensure information security, the municipality has, among other things, a data processor agreement embedded in the agreement with SOSI.

The municipality follows the norm for information security. All companies in the health sector must enter into a data processor agreement when health and personal information is operated externally. The scope of the data processor agreement must be adapted and limited to the processing of health and personal data that is to be outsourced to the external operating unit.⁹⁸

The municipality considers the central servers used to be secure.

Payment and financing

The municipality offers free security alarms to its users. The operation of the Security Patrol is budgeted based on experience figures. The number of people at work is based on political decisions.

Critical user base

Trondheim municipality has focused on developing good services. Based on the municipality's comparison with other alarm reception centers, the service is efficient, volume taken into account. The security patrol's work as a home service at night contributes to cost - efficiency of operations. Co-operation is achieved at obsolete times, and a larger working environment is created through the night.

Receiving alarms from the neighboring municipalities of Klæbu and Malvik will also contribute to more cost-effective operations.

⁹⁸ Norm for information security (2010): *Use of data processor (external operating unit)*. Support document fact sheet no. 10.

Trondheim municipality assumes that there should be a volume of 3-4000 alarms to be able to operate cost-effectively. The municipality experiences that the technology of the future places demands on increased assessment work. This could lead to a need for more employees in the long run.

The municipality believes that much will depend on the reception software used. The availability of information, decision support and an overview of available resources will be crucial for cost efficiency.

Plans for the future

Since Trondheim municipality started testing welfare technology in 2011, the municipality has experienced many challenges related to the application of the technology. The municipality experiences that welfare technology solutions often work well individually, but when everything is gathered in one security center, new challenges arise. The municipality has therefore worked a lot with infrastructure. This will form the basis for further success with the roll-out of welfare technology.

Trondheim plans to cover more municipalities via the Health Guard. This is closely related to guidelines from government agencies and what the municipalities choose. Technically, the municipality does not experience challenges in scaling up the number of users, but the number of health personnel will have to be increased in order to be able to serve more users.

The host municipality agreement has been entered into between Trondheim, Malvik and Klæbu. This agreement will mean that Trondheim will be responsible for receiving alarms on behalf of the three municipalities.

In the long run, it is also desirable to have access to the record system for Malvik and Klæbu. This could be made possible through integration with the new software in the security center, and that the legislation allows for this from 1.1.2015. This will have a particularly positive effect on the municipalities that are connected to the call center, as the employees will be able to filter a larger percentage of the calls with increased access to information.

6.1.5 Fredrikstad municipality⁹⁹

Fredrikstad municipality is located in Østfold county. The municipality has about 78,000 inhabitants. The overall and long-term goal of the municipality's section for health and welfare is to contribute to the inhabitants increasingly mastering their own lives.¹⁰⁰ Investment in health and welfare technology is one of the six priorities the municipality has for achieving this.

Welfare technology projects in Fredrikstad

In the autumn of 2011, Fredrikstad municipality launched a comprehensive project in welfare technology related to the eSenior Interreg project. The project includes a comprehensive platform for patient signaling, security alarms and welfare technology. All eSenior pilot homes must be set up with a basic package and differentiated additional packages for welfare technology. As part of the project, pilots will be carried out to determine the best equipment for night vision, falls and cognitive impairment. The basic package will include eLock, security alarm and audio / video communication. The security packages will help to deal with falls, cognitive impairment, health and nutrition, location and tracking, social contact and communication. The security packages and the platform are based on smart home technology. Deviations must be handled by the user himself or relatives. If the user can not handle the deviation, it strikes the alarm reception,

Fredrikstad is working on preparing a municipal sub-plan and strategy for health, care and social services that will be closely related to ICT. This is done to meet technological development and staffing challenges within these services¹⁰¹.

Technology and new ways of working will contribute to¹⁰²:

- Health-promoting and preventive work
- Comprehensive and coordinated patient and treatment process
- Better collaboration and coordinated services
- That users can stay longer at home and avoid hospitalizations To
- free up resources for more user-oriented services

About Fredrikstad municipality

County:

Østfold

Number of citizens:

about. 77,000

Percentage of inhabitants

over 65 years:

about. 15%

⁹⁹ Evensen UH (2014): Welfare technology, Fredrikstad municipality, interview conducted 22.08.2014.

¹⁰⁰ Fredrikstad Municipality (2014): *Section for Health and Welfare. Action Plan 2014-2017 and Budget 2014.*

¹⁰¹ Reference: Welfare technology in Fredrikstad municipality. Oslo: Sensio (2014).

¹⁰² Evensen UH and Andersen T. (2013): *Holistic approach to welfare technology in Fredrikstad.* Presentation Gardermoen 6 November 2013.

User segments

The municipality has 430 users of security alarms. In addition, 300 users have a private subscription to an alarm provided by SOS International (SOSI). Only residents who have received a decision from the municipality on security alarms are offered this through the municipality.

Basically, the alarms are offered to those who have significant care needs and who are not safe at home alone. Other residents can buy alarms from SOSI.

The primary target group for the alarms is the elderly, the disabled and others who may feel insecure by living alone. Today, there is a predominance of older users, and users with severe disabilities, who use the security alarms. The municipality receives an average of 31 alarms per day (2012). Of these, about 10% are acute.

New, potential users of security alarms must apply to the municipality for the right to security alarms. It is also possible to get others to apply on your behalf, but this requires a power of attorney. In order to make a decision, the municipality obtains the information necessary to decide the case. Usually this includes home visits. In principle, the case must be decided within one month, and the municipality must provide a written justification if processing takes longer. In the event of rejection, the applicant is given the opportunity to appeal to the municipality within a period of three weeks from the decision was received.¹⁰³

Organization of alarm reception

The municipality's alarm reception is located in the emergency room. Basically, the emergency room is responsible for handling all the inquiries in the 1st line. The exception to this is alarms regarding fire, where the inquiries go directly to the fire service. As an extra security, these inquiries go to the emergency room at the same time.

When the user presses the alarm, the alarm automatically goes to the emergency room. The emergency room communicates directly with the user. On the basis of this conversation, an initial assessment of user needs is made. If necessary, the call is routed to the home service. If the user needs a doctor, the doctor moves out. The home care service is primarily responsible for assisting the user.

SOSI communicates directly with the user when the alarm goes off, and makes an initial assessment of the user's needs. SOSI cooperates with line 2 in the emergency room, where health workers receive the calls. Similarly, SOSI routes the call to the home service, if necessary. The home service is then responsible for reaching out to the user.

The municipality experiences that more than 50% of the calls are due to the need for practical assistance and follow-up

¹⁰³ Security alarm. Oslo: Stavanger Municipality (2014).

from the home service. The emergency service's main purpose is to save lives, and such inquiries therefore have a negative impact on the entire service.

The security alarms today use analog signals, and are connected to base stations with the option to connect fire alarms.

Payment and financing

The municipal security alarms are financed by the user paying a deductible to the municipality based on income level. The deductible rates paid by users are divided into two categories, depending on the income level¹⁰⁴:

- 0 - 2G in the household's income - NOK 111 / month, and an annual fee of NOK 1,340
- Over 2G in the household's income - NOK 259 / month, and an annual fee of NOK 3,105

For similar services from SOSI, the price is around DKK 6,000 a year.

Critical user base

The municipality states that critical user base depends on the types of services to be delivered. Whether the municipality only uses 1st line alarm reception, or several services in addition, will determine the size of critical user base.

The municipality believes that even a simple 1st line will require relatively good medical competence, as well as access to medical information about the user, for good mapping of the user's situation and needs. This will be decisive for the size of a reception and geographical coverage area, as well as critical user base.

Plans for the future

The municipality is in the process of clarifying the emergency room and establishing a Health Emergency Service, which combines expertise from, among other things, emergency services, emergency departments, intoxication / psychiatry and home nursing.

In the spring of 2014, the municipality started a process for closer collaboration between home nursing, specialist health services, GPs and emergency services. This involves a new organization of home nursing, where the service will go from ten to four companies.

The municipality sees a need to receive and follow up alarm calls both centrally and decentrally depending on

¹⁰⁴ Security alarms. Oslo: Fredrikstad Municipality (2014).

user and service scope, as well as to route the calls on to the right place as close as possible to the user and service apparatus. Good infrastructure will thus be important, together with a flexible reception system.

The municipality plans to expand the current security packages, with a focus on what is the real need for users combined with an introduction of everyday rehabilitation. In the future, the municipality will work to put this into a system. Fredrikstad is in the process of working on a methodology for the development of the security packages, with the user at the center to ensure the best possible degree of self-mastery and functional level, participation and activity.

The municipality believes they will reconsider the existing organization of the 1st line for emergency services and security alarms, and views positively a collaboration within robust regions. It is important for the municipality that alarms from the user are followed up by a service close to the user. The municipality mentions that they have the platform, opportunity and willingness to take on a role as a joint Health Guard for their region.

6.1.6 Tinn municipality ¹⁰⁵

Tinn municipality is located in Telemark county, and is part of the municipal cooperation Kongsberg region. The municipality has about 6,000 inhabitants. One of the municipality's most important goals within health and care is to provide a comprehensive, coordinated and flexible service offering that ensures continuity in the service to the user.¹⁰⁶ The strategy for achieving the goal involves, among other things, adopting new technology in service production.

Tinn municipality participates in the Kongsberg region's professional network for health and care. Among other things, they work on strategic projects in welfare technology¹⁰⁷.

Welfare technology services and projects

The municipality offers security alarms to users in need of this. The alarms can be connected to several different technologies, such as smoke alarms, epilepsy meters and bed alarms. This functionality is not used today.

About Tinn municipality

County:
Telemark

Number of citizens:
6,000

**Percentage of inhabitants
over 65 years:**
about. 18%

¹⁰⁵ Lilleland AL (2014): Tinn Municipality, interview conducted 17.09.2014.

¹⁰⁶ Tinn municipality (2011): *Health and care plan. From 2011 to 2020.*

¹⁰⁷ Health and care. Oslo: Kongsbergregionen (2014).

In 2012/13, the municipalities in the Kongsberg region carried out a feasibility study related to possible collaboration on the introduction of welfare technology in the municipal nursing and care services. The overall goal of the study was to map the possibilities that lie in using care technology for the municipalities, in addition to looking at proposals on how the municipalities should collaborate on this further.

Based on recommendations in the final report, the municipalities started a preliminary project in March 2013 to roll out selected pilot solutions ¹⁰⁸.

Tinn municipality, in collaboration with the Kongsberg region, has just started a project using electronic pill dispensers. The project will assess whether the use of technology can reduce the number of visits from the home care service, and that patients can control their day freely instead of waiting for home visits. Four residents in the municipality have been selected to participate in the project.

The municipality has also worked with the use of digital night supervision. This is a work that is carried out in collaboration with, among others, the Science Center in Kongsberg, Arena Health Innovation and Buskerud and Vestfold University College. Several other municipalities have participated, including the municipalities of Notodden, Nore and Uvdal and Holmestrand. Despite several challenges, for example related to mobile frequency, stability in the equipment and the collaboration between IT and health workers, the participating municipalities will continue the work in the autumn of 2014. The project started on 1 October 2014, and will last for two months.

User segments

The municipality has 219 users of security alarms. The alarms go via the analogue network, but this can be extended to include GSM. There is one user who has applied for a GSM alarm so far.

Older residents make up the largest proportion of users. In addition, the services are provided to residents who are anxious about being alone at home, including wheelchair users, alcoholics with a high probability of falling and residents with dementia.

Process for referral to security alarm

An application for a security alarm is sent to the municipality's allocation office. As part of the application process, home visits are made to the applicant, and alarms are assigned on the basis of a decision.

Potential users get information about the services on the municipality's website. In addition, information is provided about the service during home visits from the municipality. The municipality is also working on preparing information material that can be distributed in paper format.

¹⁰⁸ Welfare technology. Oslo: Kongsbergregionen (2014).

At a general level, the municipality experiences problems with some users often pressing their alarms. In such cases, the user's case is considered, and the municipality makes a decision on whether the user needs other services.

Organization of alarm reception

The fire brigade in Tinn is responsible for handling the alarm reception. In order to be able to handle emergency reception, the fire brigade was assigned an additional position for manning the emergency telephone. The municipality receives 1 - 8 alarms in the evening, and somewhat less during the day.

Emergency services are handled by the home service in the municipality. This includes auxiliary nurses, assistants and nurses. Primarily nurses operate the telephone. The municipality has two emergency telephones, which are handled by the home service.

Organization of the service chain

When a user presses the button, the fire alarm goes off. The fire service gets access to simple information about the user in their IT system, such as the patient's name, personal details and place of residence.

The fire service first communicates directly with the user, to make an assessment of the user's needs. The fire service then contacts the home service in the municipality.

Unless it can be detected over the phone that the user does not need assistance, the home service will reach out to anyone who presses the alarm.

To get an overview of the alarms that are passed on from the fire service, the municipality has a physical alarm book where they write down all the alarms they receive per user.

Staffing, competence requirements and training

The fire service receives general training in the use of the technology for the alarm reception. The home care service does not receive any special training related to this area.

Control and measurement

The municipality has no defined goals for the use of security alarms. The response time delivered to the user depends on where the home service is when the alarm goes off. Tinn municipality does not want it to take more than 30 minutes from the alarm goes off until the user has received help.

IT systems and integration

The fire service's IT system is not integrated with the municipality's other professional systems. If it is

need to register information about a user in their journal, this is done manually on the basis of information stored in the municipality's physical alarm book. In the future, it is desirable that alarm calls are integrated with patient records, so that this information is stored digitally and automatically in the users' records.

SOS International (SOSI) delivers the municipality's security alarms. Tinn rents these alarms on a monthly basis, and a caretaker in the municipality is used to install and repair the alarms.

Payment and financing

The user must pay a deductible for the security alarm of NOK 110 / month, regardless of income level. To rent the alarms from SOSI, the municipality pays NOK 35 / month. per alarm. This price was previously DKK 100 / month. per alarm, but SOSI recently adjusted the price down to NOK 35 / month. Costs for installation, installation and the like are covered by the municipality via a caretaker.

Today, the municipality does not charge its alarms from users. On the other hand, they are considering starting with this, as it is expensive for the municipality to replace alarms.

Critical user base

Tinn municipality has a relatively high proportion of older inhabitants. Tinn sees no challenges in increasing the number of users from the current level. The number of alarm calls goes in waves, and the load on the home service varies. It is desirable to have an extra nurse on the night shifts to be able to handle periods with many calls.

Plans for the future

Tinn municipality is working to further develop the welfare technology offer in the municipality. The municipality wants to expand the offer with electronic pill dispensers to more users. The number of home visits to pill users in need of assistance will then be able to be significantly reduced, and users will be able to master their own everyday lives to a greater extent than today. The possibility of communicating with the user via a computer screen has also been considered.

The Kongsberg region is working to develop nursing homes that will make greater use of welfare technology, in collaboration with local technology companies and partners from Germany. Tinn has expressed his interest in being part of this project.

The municipality is also considering the possibility of routing the alarm calls directly to the telephones of the home service. In this way, one can save one step in the process, and at the same time ensure that the first person the user communicates with has a health professional background.

6.1.7 Lister regions ¹⁰⁹

The Lister region is located in Vest-Agder county, and includes the municipalities of Farsund, Flekkefjord, Hægebostad, Kvinesdal, Lyngdal and Sirdal. The region has about 36,000 inhabitants. The municipalities collaborate on health and welfare through the Health Network Lists. Welfare technology and telemedicine is one of two focus areas for the health network ¹¹⁰. The main goal the municipalities want to achieve with welfare technology is to give residents the opportunity to live at home longer. The Lister region is part of the National Welfare Technology Program.

Welfare technology services and projects

The Lister region wants the elderly and residents with care needs in the six municipalities to be able to live their lives longer outside institutions. It is a goal that older residents should always feel safe, and never be lonely.

The six municipalities are in the process of trying out different measures for all types of users of welfare services. The elderly are an important focus area because they are the largest recipient group of services. At the same time, physically retarded, mentally retarded and users in substance abuse care and important groups are taken care of ¹¹¹.

With project funding from "Together for a better municipality", the six municipalities have entered into a collaboration on the implementation of welfare technology and innovation in the health and care sector. The six municipalities are involved in two joint projects; "Longer in your own life" and "The security package". In addition, they have their own projects in the individual municipality.

The goal of the project "Longer in your own life" is that technology will make it possible for the elderly in the Lister municipalities to be able to live longer in their own homes outside the institution. The project has put welfare technology on the agenda and become an arena for information sharing. Within the project, work is being done on, and knowledge about, Home 2015, Housing 2015, care homes, medical records on boards, multi-dose, advanced medical signal systems, the Safety Package and telemedicine is being exchanged.

The "Security Package" project is part of the National Welfare Technology Program. The municipalities are now in

About the Lister region

County:

Vest-Agder

Municipalities:

Farsund, Flekkefjord, Hægebostad, Kvinesdal, Lyngdal and Sirdal

Number of citizens:

ca.36,000

Percentage of inhabitants

over 65 years:

about. 13%

¹⁰⁹ Bjørnevåg R. (2014): Lister region, interview conducted 14.08.2014.

¹¹⁰ Health Network Lists. Oslo: Lister (2014).

¹¹¹ Ministry of Local Government and Modernization (2014): *For knowledge about welfare technology - see Lists*. Article.

the rigging and testing phase. The Norwegian Directorate of Health has commissioned the Lister municipalities to develop and implement 50 safety packages by the end of 2014. The project has been allocated NOK 3.1 million in 2014. The experiences from the project are also used in the work towards the "Together for a better municipality" projects in Lister .

In addition, the region will carry out a telemedicine project regarding COPD. The project, «United 4 Health», is carried out in collaboration with Sørlandet Hospital and the University of Agder. The project is an implementation project for digital follow-up of patients who are discharged from hospital after COPD worsening. The project will start up in Lister during September 2014.

User segments

The Lister region currently has welfare technology in operation in the municipalities, and 46 security packages have been fully or partially implemented in the region with varying content. The user can access mobile security alarms with GPS, in addition to epilepsy alarms, door sensors, bed sensors and voice sensors that are under development. The technology that has been used varies from municipality to municipality in the region.

Residents in the Lister region must apply to be granted a security package. The applications are processed based on analysis of the user needs.

Organization of alarm reception and service chain

Today, it is up to the individual municipality in the region how alarm reception is organized. This means that there are six different ways of organizing alarm reception, with different actors responsible for the different parts of the alarm services in each municipality.

Four of the six municipalities route alarms to home nursing, Flekkefjord uses the fire brigade, and in Sirdal it is the ambulance service that moves out. Some residents have alarms linked directly to relatives. Relatives know their own well, and will thus be well suited to make an initial assessment of the user's needs.

Staffing, competence requirements and training

In manned receptions, the fire brigade or health personnel are responsible for receiving the alarm call. No assessments have been made in relation to what competence these should have. In contrast to home nursing, the fire brigade has no health professional background. This means making assessments without access to patient records. Home nursing is concerned that it is appropriate to know the user to understand their needs.

IT systems and integration

Five out of six municipalities use the same system for alarm reception.

The lister municipalities have established common regional subject systems within several subject areas, including health and welfare. The specialist systems are not integrated with the alarm reception systems. This entails, among other things, disadvantages of manual record keeping for employees.

Most municipalities have analogue solutions for alarms, and problems with telephone lines are a major challenge for the region. For example, a lightning strike in the summer of 2014 contributed to wear and tear on the copper line in the region. Wear and tear means that it is not possible to route calls further, and resulted in unstable services for the user. At worst, there were ten days of downtime on the security alarms in the region.

The region experiences that the technology is deficient, and that the current infrastructure is limiting. There is a desire to switch to GSM, but today the security alarms are on 2G and not 4G.

Payment and financing

The municipalities in the region have different payment schemes for security alarms, but in all municipalities users have to pay a deductible. The prices are regulated and approved by the municipal council every year. The payment is typically made every month.

Plans for the future

The current organization of alarm reception is now under evaluation. There is a desire to coordinate the municipalities in this area to a greater extent than today. The challenge for the municipalities is long distances, with up to four hours of driving within the region.

The regional co-operation investigates possible solutions for this, for example in connection with inter-municipal solutions for alarm reception. The choice is between a staffed reception center, or emergency reception directly through home nursing. Such an organization will coordinate the region, as well as provide greater flexibility than the current solution. It will also be possible for alarms to be differentiated and routed according to time. Some have advocated for IKS. This is governed by processes around municipal mergers. The Lister region has good experiences with IKS from other contexts.

There is also a desire to establish clear measurement parameters for alarm reception. This is also part of the study work the municipality has implemented in the project ALMO Lists with assistance from the University of Agder.

6.1.8 Oslo, St. Hanshaugen district ¹¹²

St. Hanshaugen district in Oslo municipality has about 36,000 inhabitants. The district is now working to adjust the organization and service offerings within health and care in order to continue to be able to offer good services in an efficient manner to the inhabitants. St. Hanshaugen district's overall goal for the health and care services is to help the district's residents feel that it is best to live as long as possible in their own home ¹¹³. The district is part of the National Welfare Technology Program.

Welfare technology services and projects

St. Hanshaugen district works to offer the inhabitants various welfare technology services. 400 users in the district use the simple security alarm from Oslo municipality.

The welfare technology services include blood pressure monitors connected to fall sensors, GPS monitoring, video communication and more. The district has introduced the use of tablets for communication between employees and residents. 50 alarms are connected to the fire brigade.

In addition, the district measures, for example, O₂ values for residents with severe asthma. Asthmatics are often hospitalized because they are afraid of breathing problems. Now the inhabitants' values are read by nurses, and the nurses go home to the user if the values show a need for supervision.

The district experiences that the introduction of welfare technology prevents hospital admissions, and results in fewer doctor visits.

Organization of alarm reception

The health service in Oslo has entered into an agreement with SOS International (SOSI), on the delivery of security alarm services to the municipality. SOSI is not responsible for alarm reception associated with the welfare technology solutions in St. Hanshaugen district.

The district wants a more personal connection between the user and health personnel for alarm reception using other welfare technology. The district considers it most appropriate to connect alarms directly between health personnel and users, so that health personnel develop a personal relationship

About St. Hanshaugen district

County:

Oslo

Number of citizens:

36,000

Percentage of inhabitants

over 65 years:

about. 3.6%

¹¹² Oldereid E. and Berger SB (2014): St. Hanshaugen district, interview conducted 20.08.14.

¹¹³ Oslo Municipality, District St. Hanshaugen (2013): *Elderly care in the district of St. Hanshaugen - 2 years with the Co-operation Reform*. Welfare and health department, case presentation.

the service user.

Feedback the district has received indicates that closer contact between user and health personnel contributes to increased security, fewer emergency calls and generally calmer users.

The St. Hanshaugen district therefore does not want to link the welfare technology services to a common alarm reception. They consider this an unnecessary intermediary, and have no plans to integrate Oslo Municipality's security alarm service more closely with the other welfare technology services in the district.

IT systems and integration

In the work with security alarms, the district mainly uses the nursing and care system Gerica. Gerica is not integrated with alarm reception for welfare technology.

Payment and financing

The users in the district used to pay a deductible for the use of alarms. In 2014, it was decided that there should be no deductible for security alarms.

Plans for the future

The development projects in the district are carried out in close collaboration with academia, other districts, national actors and various suppliers.

The district aims to reduce the use of nursing homes in the future, and believes that welfare technology will be crucial to achieve this. The municipality wants to increase the focus on everyday coping, and avoid treating users as patients. St. Hanshaugen district wants applications for help to be turned into applications for what one can do to master their own everyday life.

6.1.9 SOS International ¹¹⁴

SOS International (SOSI) merged with Hjelp24 Trygghetsentralen in the summer of 2014. SOSI is today Norway's largest private provider of health professional emergency services. The company delivers technological health services to the home that will contribute to increased security and quality of life for users.

Today, the company has 110 municipal customers who use alarm services, and eight municipal customers

¹¹⁴ Bakken A. and Østreng S. (2014): SOS International, interview conducted 19.09.2014.

which uses outpatient services. SOSI's customers include small, medium and large municipalities spread across the country.

In total, this constitutes a customer base of 32,000 users of security alarms, just over 40% of Norway's security alarm users in total. SOSI is also connected to 1,200 private users of security alarms. The services the individual municipality receives depend on local wishes and needs. Every year, SOSI receives around 605,000 health-related inquiries, and 20,000 emergency room inquiries.

SOSI provides the following services to its customers:

- Health professional staffed alarm reception
- Security alarm
- Emergency phone
- Response services for municipalities
- GPS / GSM security alarm
- Equipment for welfare technology including medically approved measuring equipment
- 2-way communication up to the municipalities' EHR system
- Technical reception
-
- Rear guard reception
- Rental of reception / satellite telephone

SOSI has two physical alarm reception centers in Oslo and Sandvika, respectively, where Oslo is by far the largest. The two receptions serve inquiries from all over the country.

SOSI delivers full coverage of alarm services to six municipalities in the Greater Oslo region, including Oslo, Bærum and Asker. This involves responsibility for installation, repair and emergency response to the user.

Every year, the company carries out around 20,000 health emergency calls in the Oslo area from its two emergency rooms.

The company has publicly approved health personnel on duty at all hours of the day all year round. In total, SOSI's alarm reception delivers a screening rate of 75%.

Critical user base

According to SOSI, it is important to achieve significant volumes when alarm reception is established. SOSI points out that it is necessary to invest in larger, robust units with sufficient competence and logistics to be able to deliver good services to the user. The company's own assessments show that it is necessary to be associated with a minimum of 4,000 users in order to achieve economies of scale and thus be able to operate good and cost-effective alarm reception.

SOSI believes it is important that personnel with a nursing education handle alarm calls, in order to provide the user with the best assistance and to be able to react quickly in critical situations.

CHAPTER 7 ANALYSIS OF FINDINGS AND RECOMMENDATIONS



7 ANALYSIS OF FINDINGS AND RECOMMENDATIONS

This chapter presents the common features for the implementation of welfare technology and the organization of alarm reception in each individual country. The most important findings from each country are presented and analyzed. Based on the survey, six different models are proposed for organizing alarm reception in Norway. The models are evaluated, and a recommended model is presented.

7.1 Common features for organizing welfare technology and alarm reception

7.1.1 United Kingdom

The British authorities are working consciously with increased integration of health and care services with the user in focus, and have clear goals for the citizen to manage on their own and live longer at home. The United Kingdom uses telecare and telehealth as key tools in this work. The state has made significant investments in infrastructure, and implements comprehensive programs and campaigns related to process integration and profit realization from welfare technology services.

The common features for the implementation of welfare technology in British municipalities can be summarized as follows:

- British municipalities implement telecare on a large scale
- Welfare technology measures are defined and prioritized on the basis of data from emergency reception and health and care statistics
- Welfare technology solutions are integrated into the municipality's other health and care services
- The municipalities are focused on establishing the end-to-end process
- The referral process for telecare is thorough, as it collects comprehensive information about needs, possible risks and potential benefits of introducing welfare technology for the individual user
- The municipalities focus on measuring actual benefits and avoided costs the services entail

The common features of alarm reception in British municipalities can be summarized as follows:

- Responses that do not require health personnel are handled by dedicated response teams from the municipality or private suppliers
- Employees who receive alarms and response teams are often personnel without a health professional background

- Relatives involved in the alarm reception service chain About 90%
- of incoming alarms are handled by alarm reception
- Statistics from calls are deliberately used in the alarm reception centers 'and municipalities' planning work. The alarm reception centers work well with other service areas in the municipalities, but lack integration with professional systems.

Overall assessment of the organization of alarm reception in British municipalities:

- Dedicated response teams and the involvement of relatives reduce the burden on the home care service, emergency services and emergency services
- The use of personnel without a health professional background reduces wage costs associated with the emergency rooms and increases access to resources
- Good information and knowledge about the user as well as smart systems ensure a high degree of screening for incoming alarms
- The use of statistics enables efficient resource planning
- Welfare technology appears as an integrated service offering in the municipalities
- Lack of integration with municipal professional systems hinders efficient information flow

7.1.2 USA

The United States has experienced an increasing focus on welfare technology after the introduction of the Affordable Care Act (2010) which will make health services available to more population groups.

Welfare technology has been proven to have a positive effect on important measurement parameters in the municipalities, such as number of readmissions of patients. Technology-based home services are run on a larger scale by large players, such as the provider Kaiser Permanente (KP). KP envisages a future where the home will be the hub for health services, so that scarce resources are utilized to a greater extent than today. The goal is for the user to experience a seamless service offering.

KP is restrictive with regard to the sharing of information, and the report can therefore not reproduce further details regarding the organization of alarm reception at the provider.

7.1.3 Denmark

The Danish authorities are consciously investing in the use of welfare technology, and have a clear focus on this in their

strategic investment in health and care. The Fund for Welfare Technology has been established to ensure targeted work with the dissemination of welfare technology solutions.

The common features for the implementation of welfare technology in Danish municipalities can be summarized as follows:

- Focus on pilot / implementation through state-funded joint municipal investment projects
- Focus on the use of telecommunications health in welfare technology
- Varying degree of integration between welfare technology solutions and other health and care services in the municipalities
- Increasing focus on measuring gains

Alarm reception is handled differently across Danish municipalities. The common features are:

- Several Danish municipalities have chosen, or are considering, decentralized solutions where the calls are transferred directly from the user to the home service
- About 50-60% of incoming alarms are handled by alarm reception
- The alarm receptions are not integrated with the municipality's professional systems

Overall assessment of the organization of alarm reception in Danish municipalities:

- Decentralized solution where the home service has direct contact with the user, leads to increased security and an individual approach for the citizen
- Low degree of strain puts a strain on the home care service
- Lack of integration with municipal professional systems hinders efficient information flow

7.1.4 Sweden

Sweden has a strong focus on welfare technology, and a consequence of this is that the country has come further in the work with standards for communication in welfare technology solutions compared with Norway. For example, all security alarms in Sweden must be digital by the end of 2015.

The Swedish model for organizing welfare technology and alarm reception is characterized by a centralized approach.

More than 2/3 of the Swedish municipalities have chosen to buy services from two central providers of alarm reception. The central reception first communicates with the user, and then routes any

alarms on to the local home service.

A few of the municipalities that are associated with a central solution only use central IT solutions from the alarm reception providers. These municipalities still have their own alarm reception centers.

Only one Swedish municipality has been mapped, and there is therefore not a sufficient basis for specifying common features for internal organization in the municipalities.

Overall assessment of the organization of alarm reception in Swedish municipalities:

- Central solution ensures critical user base and efficient operation
- The Swedish model can handle a high signal volume
- The municipalities focus on their core tasks, rather than the operation of alarm reception
- The central receptions are larger units that can establish robust technological solutions, a strong competence environment, high security and redundancy.
- The actors are able to professionalise the work and ensure high quality of the services
- The central receptions generate a comprehensive data base, and make statistics available that can be used in municipal planning
- Central reception is far from the user, and there may be challenges related to perceived security by the citizen
- The interface between the alarm reception and the home service can be more challenging than the local reception.
- Centralization of reception in countries with few inhabitants entails a concentration around a few, large suppliers

7.1.5 Norway

Norway's investment in welfare technology is considered to have been somewhat shorter compared with other geographies described in the report. The National Welfare Technology Program has been established, among other things, to contribute to good models for the introduction and use of welfare technology.

The common features for the implementation of welfare technology in Norwegian municipalities can be summarized as follows:

- Norwegian municipalities test and pilot small-scale welfare technology

- Welfare technology solutions are to a limited extent integrated into the municipality's other health and care services
- Security alarms and welfare technology solutions do not appear as integrated services in most municipalities
- The municipalities have almost no measurement of actual benefits and avoided costs the services entail
- The municipalities appear to be focused on welfare technology products rather than processes, organization and competence
- Norwegian municipalities are awaiting government recommendations and guidelines regarding standards and infrastructure

Norwegian alarm reception centers are handled differently across municipalities. The common features are:

- Alarm reception is organized differently from municipality to municipality
- Alarm reception and associated services are performed by personnel with a health professional background
- Municipalities involve the home service and the emergency services in emergency reception
- Proportion of incoming alarms handled by alarm reception is significantly lower than in the UK (often 50%)
- Call statistics are used to varying degrees as a basis for decision-making for the municipalities. The alarm reception centers are often separate units that do not work very well with the rest of the municipality.
- Small municipalities use a significant proportion of their resources to maintain the quality of the alarm receptions
- The alarm receptions are not integrated with the municipality's professional systems

Overall assessment of the organization of alarm reception in Norwegian municipalities:

- Even small municipalities operate with dedicated personnel for emergency reception. This is perceived as inefficient and results in varied quality of services
- The use of personnel with a health professional background entails high salary costs, and challenges in the recruitment work
- Low degree of strain creates a stressful situation for the home care service
- Involvement of emergency services can lead to challenges related to prioritization of emergency reception Lack of use of statistics prevents effective planning and makes municipal decisions challenging
- Lack of integration with the municipality in general, prevents focus on a holistic user process Small and medium-sized municipalities will experience challenges related to the future organization of alarm reception when the volume of signals from welfare technology solutions increases

7.2 Important considerations and assessments for future organization of alarm reception

The choice of future model for organizing alarm reception in Norwegian municipalities should take into account the following important factors:

Degree of burden on the home care service, emergency services and emergency services: Future organization of alarm reception should result in a low burden on the municipalities' home services, emergency services and emergency services. Future organization should ensure that the home care service can handle the increasing number of people in need of care, and emergency services should have the opportunity to focus on their core tasks.

Ability to handle high signal volume: Future volumes of signals from welfare technology are expected to increase significantly in the future ¹¹⁵. It is therefore important to facilitate technically robust solutions with the ability to handle volume increases.

Opportunity to achieve critical user base: Critical user base is important to achieve efficient operation and sufficient quality of services. Critical user base in Norway is considered to be a minimum of approx. 20,000 users based on experience figures presented in the report.

Opportunity to meet high demands on network capacity and security: Increased use of rich data from sensors and cameras is expected in connection with an increased degree of camera surveillance ¹¹⁶ and telecommunications health ¹¹⁷. This places significant demands on increased network capacity and security.

Opportunity to maintain user orientation: The White Paper "Tomorrow's care" describes that health and care services will to a greater extent be arranged according to user needs. Future organization of alarm reception should ensure that user orientation is maintained.

7.3 Assessment of possible models

Possible models for future organization of alarm reception in Norway:

- **Model 1 «Own reception»:** Each municipality operates its own alarm reception.
- **Model 2 «Regional solutions »:** Regional alarm reception centers will be established with a minimum of five participating municipalities.

¹¹⁵ The Norwegian Directorate of Health (2012): *Welfare technology. Technical report on the implementation of welfare technology in the municipal health and care services 2013-2030*. IS-1990 Report.

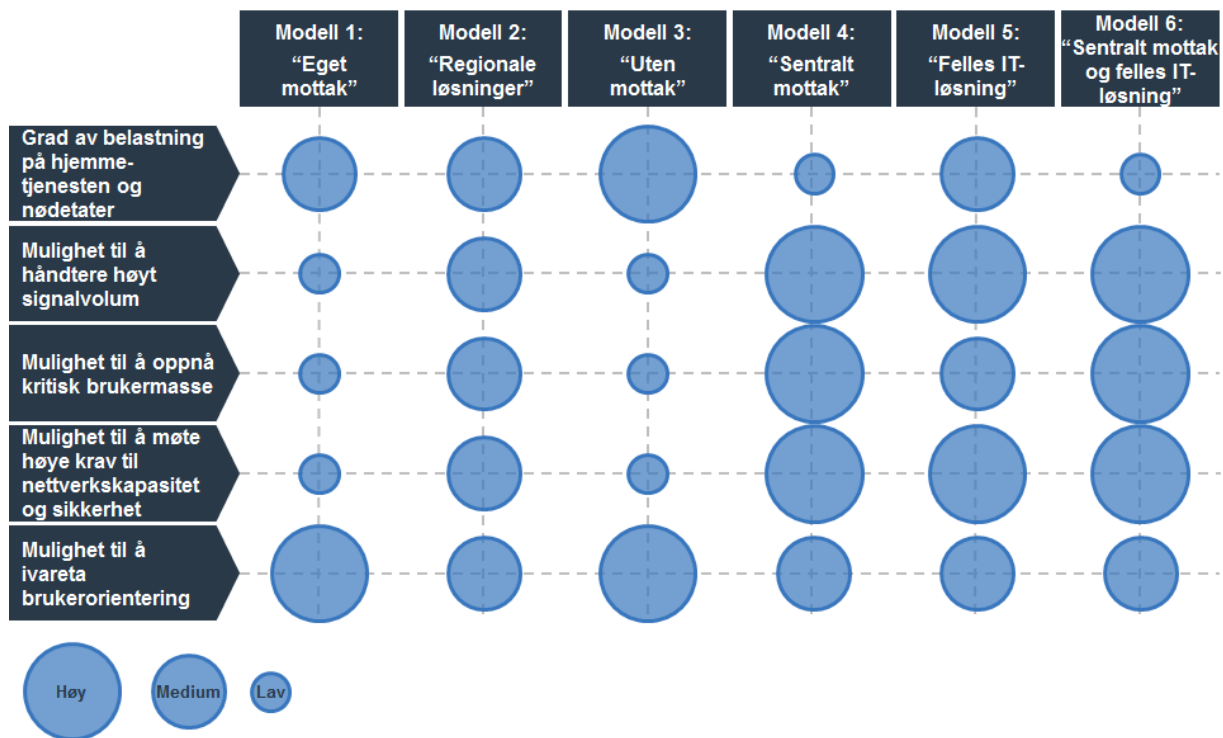
¹¹⁶ Hübner, A. and Svenske P. (2014): CareTech AB, interview conducted 24.09.2014.

¹¹⁷ Experiences taken from Kaiser Permanente in the USA, described in Chapter 4.

- **Model 3 «Without reception»:** Municipalities are cutting the use of alarm reception, and the signals go directly to the home service.
- **Model 4 «Central alarm reception»:** Two to four central alarm receptions will be established. Central operators handle 1st line response. The municipalities' home service functions as a 2nd line response.
- **Model 5 «Common IT solution»:** A central technical solution is established that municipalities can connect to. The alarm reception is located locally in the municipality.
- **Model 6 «Central alarm reception and common IT solution»:** A combination of Models 3 and 4 is established, and the municipality is given the opportunity to only use a common IT solution.

Assessment of possible models for organizing alarm reception in Norway follows below. The size of the bubbles in the figure below indicates a qualitative assessment of the criteria.

Figure 23 Assessment of possible models for organizing alarm reception in Norway



7.4 Recommendation of a model for organizing alarm reception in Norway

Based on the mapping and assessment above, the following model is recommended:

Model 6: «Central reception and common IT solution».

Strengths of the model:

- The degree of burden on the home care service, emergency services and emergency services is limited and the municipality can focus on core tasks
- The municipality can handle high signal volume
- Alarm reception achieves critical user mass and is operated efficiently. A strong competence environment is ensured
- The services are professionalised and quality is maintained
- Robust technical solutions are established with a high degree of redundancy, which meets high requirements for network capacity and security
- User orientation is ensured through the use of a rich data base
- Municipalities are guaranteed freedom of choice to maintain alarm reception locally

Model weaknesses:

- Challenging to create a well-functioning interface between the central reception and the municipalities' home service
- The reception is far from the user using a central solution
- The model can create a few, dominant suppliers

7.5 Recommendations for further work

The following activities should be included in the further work around the organization of alarm reception:

- The Norwegian Directorate of Health, KS and Norwegian municipalities should jointly evaluate possible models. The recommended model should be detailed before purchasing processes and implementation start
- The detailing should address recommendations for a total operating model for alarm reception, including central and local user travel, central and local staffing and expertise, information flow, technological standards, infrastructure and facilities, as well as requirements for processes, reliability, measurements and control.
- The Norwegian Directorate of Health and KS should further prepare proposals for how Norwegian municipalities can implement the recommended model

7.6 Other aspects related to the organization of welfare technology

The report highlights major differences in the investment in Norway compared with other countries. The following aspects should be taken into account to ensure desired gains from the total work with welfare technology in Norway:

Fact-based prioritization: Norwegian municipalities have facts concerning the municipality's population, service users and associated health and care costs. This type of fact should to a greater extent be used as a basis for decision-making when prioritizing the further welfare technology implementation.

From technology focus to organizational and user focus: Norwegian municipalities are piloting and testing a wide range of welfare technology products. This means a greater focus on technologies than on users, organization and profit realization. The municipalities should ensure that the IT departments build competence on the technology, and that health and care personnel rather focus on needs, implementation and integration of welfare technology as a natural part of the work process.

Focus on profit realization: Focus on gain realization is almost absent in the welfare technology projects in Norwegian municipalities. Many have initiated follow-up research with effect studies that will not be available in the near future. Requirements should be set by the municipal management that projects carry out thorough profit analyzes, prepare profit realization plans and establish measurement parameters already now. KS KommIT's «Profit cookbook for ICT projects in the municipal sector» can be used for this purpose.

Focus on telecommunications health: Norwegian municipalities focus less on telecommunications health as part of the welfare technology initiative, compared with, for example, Denmark, the USA and the United Kingdom. Telecommunications health brings great benefits, and the investment in this as part of the welfare technology implementation in Norway should be intensified.

Common standards and requirements: Norwegian municipalities are calling for recommendations and guidelines regarding standards and requirements for welfare technology, and the supplier industry wants greater predictability. The Norwegian Directorate of Health and KS should continue the work with the Continua framework, with a special focus on infrastructure and networks that are critical for the implementation of welfare technology on a larger scale.

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