

# SAPHE

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# 1 Introduction

## 1.1 Project Description & Objectives

The purpose of SAPHE is to develop a novel architecture for unobtrusive pervasive sensing to link physiological/metabolic parameters and lifestyle patterns for improved well-being monitoring and early detection of changes in disease state. The project addresses both the design of telecare service strategies and the development of innovative technologies to deliver them. In the final stages, a complete system will be integrated and trialled with a Health Authority. Using the results of these trials, the value of this technology for sensing under normal physiological conditions combined with intelligent trend analysis will be demonstrated. This should open up new opportunities for the UK ICT and healthcare sectors in meeting the challenges of the demographic changes associated with the aging population.

The stated project objectives are:

- To provide a pervasive health and social care model that is optimised for the aging population and patients with long-term conditions.
- To develop new sensing and inferencing technology that permits early detection of frailty or changes in disease, and responsive changes to care plans.
- To analyse detailed service needs and developments, including initial field trials in collaboration with primary health and social care providers.
- To assess pervasive technology deployment strategies and services, and their potential commercial and economic impacts. Due to time constraints, the scope of the project aims to provide an evolutionary prototype rather than a model for commercial development.

## 1.2 Scope

This document intends to look at the role of the Community Matron and the problems they encounter in managing their service users. This document will also go on to describe a user scenario for a Community Matron. This has been based upon a number of informal discussions with Community Matrons from a number of PCTs. Though individual PCTs work in different ways the underlying issues are consistent.

# 2 The Role of Community Matrons

## 2.1 Overview

In 2004 the Government defined 'The NHS Improvement Plan' which included a new clinical role for nurses. These Community Matrons are skilled and experienced nurses, who are trained to a higher level, and use case management techniques to deal with patients who are "very high intensity users of health care". Because the Community Matrons are able to give the attention needed, their patients are able to remain at home longer and to have more choice about their health care.

The case management work of Community Matrons is central to the government's policy for the management of people with long term conditions.

Case management by Community Matrons will:

- commission care and design care plans that combine high level assessment of physical, mental and social care needs
- Educate patients to better manage themselves by spotting early indicators of exacerbations
- Encourage patients to take control of their own care

- Move patients through red-amber-green risk categories
- Act as a single point of contact for all stakeholders
- Review medication and prescribe medicines (in collaboration with GPs)
- Respond to requests for assistance
- Co-ordinate inputs from all other agencies, ensuring all needs are met
- Provide support for primary carer
- Provide information so patients and families can make choices about current and future care needs

This may have the following benefits:

- Help to prevent unnecessary admissions to hospital
- Reduce length of stay of necessary hospital admissions
- Improve outcomes for patients
- Integrate all elements of care
- Improve patients' ability to function and their quality of life
- Help patients and their families plan for the future
- Increase choice for patients
- Enable patients to remain in their homes and communities
- Improve end of life care

Some of the interventions a Community Matron may take to support the service user can be very simple. For example the provision of a walking stick for someone who is afraid to go out because of the worry they have about falling.

## 2.2 Key Responsibilities

*“At the heart of the new system is the ‘Community Matron’, a new type of health professional whose role will be to give one-to-one support to the most vulnerable patients with long-term conditions. They will monitor their patient’s health and co-ordinate the care and support they need to achieve a better quality of life.*

*The NHS is committed to having 3,000 Community Matrons in place by March 2007.”*

John Reid, Health Secretary, 2005

Community Matrons are dealing with people who have a high risk of (re)admittance to hospital. Admittance to hospital can be longer than needed, or maybe they did not need to be there in the first place. It is possible for patients to be keen to go into hospital because they are looked after and fed, and this may ease the burden on their friends or family. Also anxiety of their condition can be a significant reason for admittance. These are typically people with chronic long term conditions, as well as other issues (See section 2.4 Who are their Service Users?). They focus on dealing with their individually planned care path.

The Community Matron has to build a holistic view of the patient. The first stage is an initial detailed assessment of patient needs.

Due to the complexity of the Service Users conditions, the Community Matron acts as a ‘detective’ to find the causes, or reasons why they are suffering from certain symptoms. This may be because of dietary, behavioural, lifestyle, habits, living conditions, medication, etc.

Examples:

What medication their paperwork says they are taking is not what they have at home.

They may be eating foods not suitable for their condition, e.g. drinking Bovril as a bed time drink when you suffer from hypertension.

The primary aim is to build a relationship with the patient, to listen, to take notice and to do what we said we would do and to act as advocate. To be somebody the Service User can trust.

The consequence of this role is that the Community Matron has to co-ordinate with a large number of services:

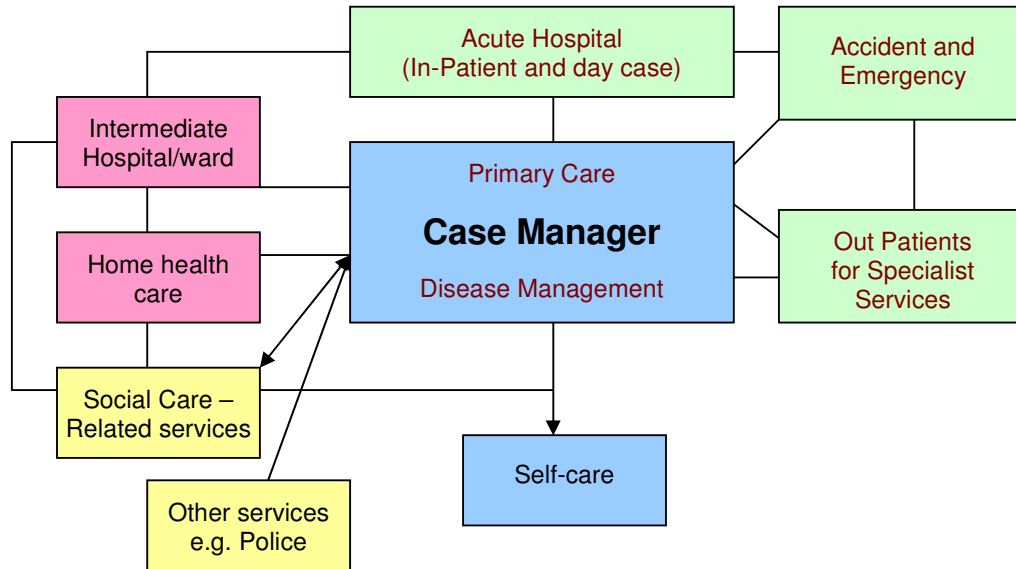


Figure 1 Source modified from: *Case management* Dr David Cochrane, Cochrane Consulting, Community Matrons Conference 2006

## 2.3 Skills

The Community Matron has to build up a number of new skills on top of their nursing expertise. These include a number of Masters level studies:

- Physical Assessment
  - Heart and Lungs
  - Eyes
  - Chest Auscultation
- Chronic Disease Management
- Medicine Management

There are a number of informal skills that need to be built up to enable to the Community Matron to:

- Get stakeholder buy-in
- Develop criteria for inclusion on caseload
- Sort out working relationships and processes
- Integrate with other services
- Organise training, supervision and audit

- Monitor and audit – feedback
- Consider impact on other services such as district nursing
- Link with organisational objectives

## 2.4 Who are their Service Users?

The Service Users are typically people who are 65+ with more than 1 chronic condition. These are characteristically non compliant patients. They can also have unrecognised conditions/difficulties such as mental health problems, learning difficulties, sickness role behavioural problem.

### 2.4.1 Risk Factors

#### Clinical

Clinical conditions represent the underlying clinical problems, but in themselves are not factors making patients “difficult to manage”:

- Parkinson’s disease
- Dementia
- Depression
- COPD
- Anxiety
- Osteoarthritis
- Heart disease
- Diabetes
- Osteoporosis

#### Falls

These risks may be due to problems such as loss of balance or to do with their situation. Quite often the fear of falling itself can lead to isolation.

#### Dementia

People with dementia often present management problems. However it should be noted that these “problems” are often outcomes of factors.

- Wandering at night
- Irregular sleep patterns
- Security—leaving door open

#### Support Network

Many people are reliant on help by informal carers, such as a spouse or children. However, the ability of carers to cope and changes in the level of support may lead to breakdowns in the ability to remain independent. This is particularly significant with the death of their spouse.

## Anxiety

Anxiety can cause a condition to get worse. Anxiety is significant factor in the management of COPD. By management of the anxiety it can help in the management of the condition. Anxiety about falls can lead to isolation.

## Other Factors

- Patient personality and attitudes - People do not always give the “true” picture, or even deny the situation to themselves.
- Negative habits
- Mobility
- Nutrition
- Self-neglect
- Depression
- Isolation

# 3 Community Matrons Environment

Community Matrons will have a typical case load of 40 to 70 patients covering 4-6 GP surgeries. They will spend a considerable proportion of time (~60%) out of the office or writing up notes. They have a high amount of face to face contact with the most needy patients (Red). Some Community Matrons use the Red, Amber, Green (RAG) categorisation of cases, and adjust the level of contact appropriately.

Community Matrons are part of a multidisciplinary team. They will have a close relationship with the Service User. They will use medical monitoring devices for assessment of the Service User's condition, but this does differ significantly from PCT to PCT. Some Community Matrons will use minimal equipment, and send in the specialist nurses to look at a particular condition, whilst other Community Matrons will carry out assessment themselves.

Identification of potential people to become service users will usually be done through:

- PARR (Patients at Risk of Re-admittance)
- Referrals (Hospital, GP surgeries, Social Services)
- Research at the hospital and from the GP medical records

Note: PARR referrals can be unreliable as they quite often offer about 20% who have already died. It also can miss other people who are ideal candidates for the services of a community matron. There is another model called the combined model that combines data from; Out Patient data, In-patient data, GP practice data and A&E data. The barrier here is getting all this data together.

Service User engagement is the key to success; Assess, Inform, Educate and Encourage.

It is important to understand “what are their goals”:

- Some just want to be able to manage their condition
- One wanted to be able to go out on their electric scooter
- One wanted to go back to work having been advised by the GP that they could not work. (This was successfully achieved)

Face to face monitoring of key aspects is essential as you need to generate trust. They need to believe (know) that you will do what you say you will.

The processes behind the Community Matrons all seem to be paper based, with the main paper work held at the Service Users home.

Other problems that occur in the delivery of the service:

- A lack of access to multidisciplinary clinical teams.
- A lack of joined up services between medical and social services.
- Financial levers which encourage the substitution of hospital care by home care or residential care.
- Access problems with (multiple) GP systems. Each GP system can be different.
- Sharing of information with A&E.
- Required to keep duplicate case notes – paper copy for patients.
- Carry considerable amount of equipment and books on their visits.
- Restricted work space.
- Battery life of current communications devices insufficient.
- Time consuming initial assessment (6 hours over 3 visits).

## 4 Telecare

Telecare has to support the Service Users lifestyle in an unobtrusive way while maintaining independence but it must be remembered that everybody is different. Telecare needs to be very personalised to individual patients and it should be based on the trigger factors for their previous admission. There is a worry over the 'Big brother' aspect of telecare. This may arise because of the advocate role of the Community Matron. There can be issues to do with assent from people with dementia and people with learning disabilities.

Community Matrons would welcome anything which helps to develop a better picture of patients. Some patients are only visited to check if their care plan is ok and take measurements. It should be flexible enough to be able to disregard stable parameters. It should only identify those which have changed. Disturbed sleep would be very much of interest.

Community Matrons already have too much equipment to carry. They also can't talk and type because it would destroy the relationship building time with the Service User.

Community Matrons will spend a large amount of time at different GP surgeries updating medical records.

Service requirements must not be forgotten (support, maintenance, reliability, security).

## 5 SAPHE User Scenario

### A Day in the Life of a Community Matron

Alison Knight is a Community Matron for Eastshire PCT. She has spent 15 years as a district nurse and has been a Community Matron for 18 Months. This has meant that she has had to complete a Masters course covering assessment, leadership, long-term conditions, case management and prescribing. Alison finds it difficult to fit the learning into her work schedule and still have some family life. She covers 5 GP surgeries and her current case load is 55.

Alison's day starts by checking messages. There are a number of things that need to be dealt with, which she adds to her to do list. This includes calling the Occupational Therapist to change an appointment, chasing the results of an out patients visit, renewing a prescription, etc.

#### Dashboard

Next she looks at the SAPHE dashboard. This indicates the status of all her cases. Her red cases are the top of her list as these are the ones that should be reviewed on a daily basis. There are a couple of greens that have also flagged.

#### **Ron**

Reviewing these she sees that Ron has had his fifth bad night in a row, and he does not seem to be using the kitchen very much. She calls him and he tells her that he has been having poor sleep for a few nights, but he did not think it was important and he felt OK. Alison is still worried so she suggests she visits in the afternoon.

#### **Lesley**

Yesterday Alison fitted Lesley, a current SAPHE system user, with a 24 hour ECG monitor. She had a dizzy spell causing a fall. It was thought that the cause could be cardiac in origin. On looking at the ECG results and seeing the activity levels where pretty typical Alison concludes there were no signs of arrhythmia. Alison then calls Lesley, and asks her to remove the electrodes, and unit etc, ready to be collected during the next home visit. She reassures Lesley and says that she will keep monitoring her activity. She asks Lesley to keep a diary of any dizzy spells, so they can cross check them with any particular activities or readings.

#### **Fred**

The system has flagged that Fred has been going out less over the last 4 days and has been less active, spending a lot of time in lounge. Alison gives him a call but Fred indicates all is well and that he has just been watching the Bowls championships on the TV.

#### **Bob**

Bob was diagnosed with diabetes three months ago but has actively participated in his own care programme which requires him to measure his blood glucose every morning. Alison is alerted that for the last five days no readings have been received from Bob even though he is still at home. The number of missed readings has gradually increased over the last month. Alison suspects that Bob may no longer be bothered as much with the readings as his condition has improved. Alison decides to send Bob some reminder messages and links to educational content which he can access on his TV to prompt him back into action. SAPHE is able to provide information and education material to help Bob understand the need to manage his condition.

#### **Doris**

Doris has emphysema. She has trouble breathing and doesn't feel safe leaving the house. She is getting fed up of being cooped up at home but is scared to go out. Alison had suggested that she go for a short walk whilst wearing the E-AR sensor that monitors activity and SPO2. Alison now looks at the SPO2 and activity levels and seeing everything is ok phones Doris to allay her fears. She suggests that over the next few weeks Doris takes longer and longer walks knowing

Alison will be monitoring her. SAPHE has allowed Alison to support Doris by helping her deal with her anxiety.

### **Jane**

A week ago Alison diagnosed Jane with a UTI after noticing that Jane had increased night-time toilet visits for three days running, Alison prescribed oral antibiotics for Jane which avoided a possible hospital admission if left undiagnosed. Alison is now considering whether she needs to visit because she is concerned that Jane may not have continued with her medication. Alison checks the system to see if the symptoms have returned and is reassured to find Jane has not been getting up at night for the last 3 nights. Being able to check SAPHE has saved her a needless journey.

### **Jim**

The SAPHE system flags two changes in Jim's social activities: his trips outside the house have become almost non-existent, while the number of visits by other people have stopped. Jim is an elderly widower who lives alone. He is in early stages of dementia. Although he is quite forgetful, he is still able to live independently with the support of his sister. He likes to go out and get his supplies from the local shopping centre.

Alison became concerned about this as Jim is prone to feeling depressed. Also, he needs someone to keep an eye on him to make sure he has enough food and he is taking care of himself. She decides to add him to her visits today. SAPHE has alerted Alison to a situation that may need her attention. This allows her to support Jim more effectively.

She then chases the different services providers of the current care plans to check that results are being looked at and that the services are being provided as promised.

## **Visits**

### **Ron**

When she visits Ron, she can see immediately that he is not well. On checking his lungs and asking him questions she diagnoses a chest infection. She prescribes antibiotics and spends some time with him going through the signs of infection to look for so he can spot it himself in future. She updates his paper record in his house as well as updating the SAPHE record. The use of SAPHE has allowed Alison to spot a possible exacerbation which may have led on to a hospital stay.

### **Mike**

While Alison is on her rounds she gets a call from Mike. Mike has not been sleeping so well and he is getting up in the night a few times to use the toilet. Alison uses her PDA to access the SAPHE application and sees that Mike's sleeping pattern is within reasonable parameters. His concern worries her and she suspects this might be due to incorrect medication for his diabetes or that the diabetes might be getting worse. She sends an email to the diabetes nurse suggesting she visits Mike sometime in the next week, and she sets a threshold on the SAPHE system to raise a flag if his sleep/toilet patterns do not improve.

### **Jim**

Alison visits Jim and discovers that he has had problems with his feet that make mobility very difficult, while his sister is preoccupied with caring for her sick husband. In this situation he was unable to buy food and other essentials. Alison arranges Chiropody treatment as it is a cheap and effective solution to his immediate needs. SAPHE has certainly prevented an inevitable breakdown in Jim's ability to live independently at home and the possible avoided an acute admission into hospital.

## 6 References

- [1] Rimmer, S (2007), *SAPHE - HCI and User Engagement - Literature Review*, Delivery D05a.
- [2] Sixsmith, A (2007), *SAPHE project: Interviews with community matrons and social workers*, Internal Report

### Revision History

Revision	Date	Details	Editor
01	19/11/07	Initial version	Simon Rimmer
02	19/11/07	After review from Richard Bower	Simon Rimmer
03	4/12/07	After feedback from Amrit Bhachu and Nigel Barnes	Simon Rimmer
04	14/12/2007	After feedback from Andrew Sixsmith and restructuring by Simon Rimmer	Simon Rimmer
05	21/12/2007	After minor review comments	Simon Rimmer
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