



EVERY MINUTE. EVERY HOUR. EVERY DAY. WE CARE.

Telehealth Research Across the Community (TRAC)

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- What is Telehealth?
- Objectives
- Methods
- Intervention
- Case Studies
- Data Collection
- Results so far



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What is Telehealth?



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- Remote monitoring from the client's own home
- Daily measurements of vital signs
- Nurse monitors daily readings for deterioration in condition

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So what is Telehealth? The simplest way of describing Telehealth is that it is specialised equipment that is used to remotely monitor people's health from their own home. For example, patients with chronic diseases are provided with equipment to measure their vital signs daily, which often include blood pressure, blood oxygen levels, pulse, temperature and weight. These measures are then automatically transmitted via telephone to a nurse/GP who can then monitor the person's health status without the patient having to leave their home. The nurse monitors daily readings to look for trends that could indicate a deterioration in the client's condition with the ultimate aim of keeping them out of hospital because of exacerbations of their condition.

Objectives





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- To implement and evaluate a model of chronic disease self management which incorporates Telehealth self monitoring supported by remote clinical monitoring
- To determine if the Telehealth monitoring results in a reduction in hospital admissions and emergency department visits
- To determine whether there are any changes in clients' self assessed quality of life as a result of the Telehealth monitoring
- To seek feedback from clients and their Consultants/GP's as to their satisfaction with the program and its perceived effectiveness in increasing individuals' self management of their disease and improving health outcomes

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These are the four main objectives of the trial. Ideally we are wanting to implement a model of chronic disease self management that will determine if telehealth monitoring results in a reduction in hospital admissions and emergency department visits.

We are also interested in determining whether the Telehealth monitoring results in any changes in the clients Quality of Life and to investigate clients and their consultants satisfaction and perceptions on using this kind of service. And also whether using telehealth monitoring increases individuals self management of their chronic disease.

Methods   SILVER CHAIN

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- **RCT**
 - 120 Chronic Heart Failure
 - 80 Chronic Obstructive Pulmonary Disease
- **Eligibility**
 - Silver Chain client
 - English speaking
 - Diagnosis of COPD or CHF
 - Receiving Oxygen Services (COPD)
 - Not palliative
 - No diagnosis of dementia
- **Recruitment**
 - Required specialist/GP consent


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The study design for TRAC is a Randomised Controlled Trial which will compare the outcomes for 120 CHF clients, (60 intervention and 60 Control) and 80 COPD clients (40 intervention and 40 control).

To be eligible to participate in the study clients need to be currently receiving services from Silver Chain, be English speaking, have a diagnosis of COPD or CHF, be receiving oxygen services (this is for COPD clients only). They cannot be receiving palliative care or have a diagnosis of dementia.


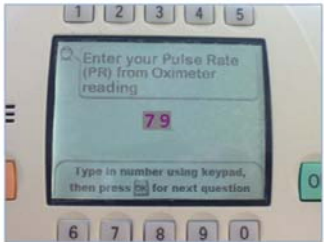
Clients who meet the eligibility criteria are recruited via a letter and information statement which was sent to them inviting them to participate. The letter was then followed up with a phone call several days later by our Research Assistants who would then further explain the trial and if a client was interested make a time with them to visit. The Research Assistant would then visit the client in their home and ask them to sign a consent form and then randomise the client to either the Telehealth or information only group. Once clients had consented to take part in the project their consultant/GP were also sent an information statement and consent form as they were required to take clinical governance for their patient to participate in the project.

Telehealth Intervention



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- Daily measurements of weight, pulse, blood oxygen levels, temperature and additional questions specific to condition
- GP sets parameters based on what would be considered 'normal' for their clients
- Measurements outside set parameters trigger alerts
- Nurse phones client when alerts are triggered

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So once the client was allocated to the Telehealth Group a nurse will visit and set up the equipment and show the client how to use it and provide the them with a trouble shooting manual.

They are required to take daily measurements of their weight, pulse, blood oxygen levels, blood pressure, temperature and answer some additional questions specific to their condition. For example for COPD we have questions on type of cough, if they are experiencing any difficulty breathing, kind of sputum produced etc. For Chronic Heart Failure we have questions on fluid intake, sleeping in a chair and chest pain.

When the client commences on the trial the GP sets parameters for these daily measurements, based on what would be considered 'normal' for their clients. So in general a GP would ask for an alert to be generated if the clients temperate is above 38 degrees or below 35 degrees.

If any measurements are outside these set parameters they then trigger alerts and the nurse will then phone the client to discuss this with them.

Daily Measurements



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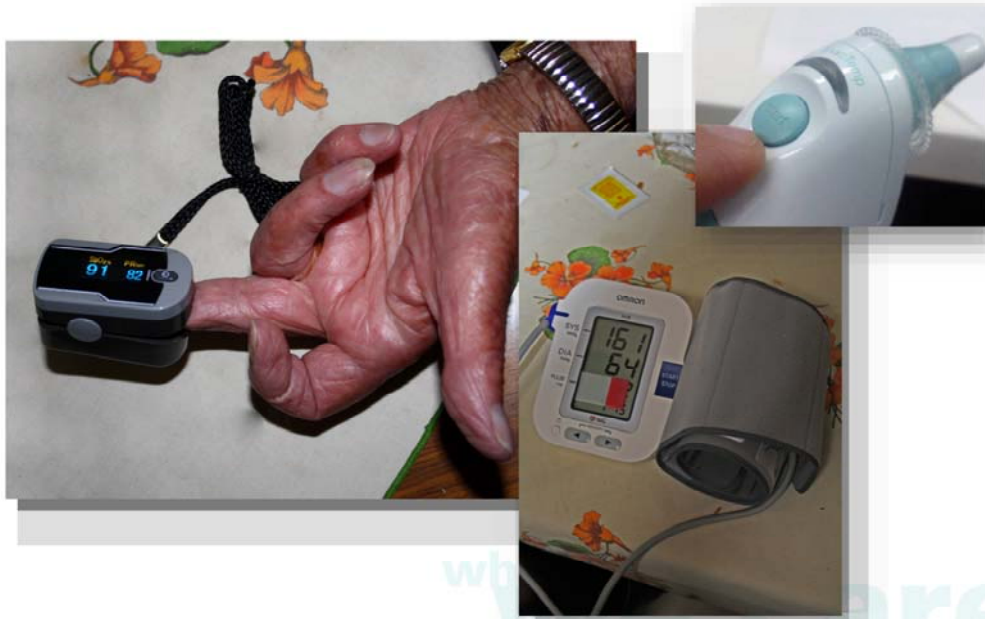
These pictures show one of our participants entering her daily data, taking her blood pressure and weighing herself on the scales.

Equipment



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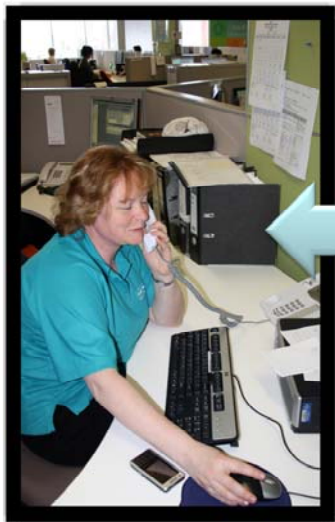
This is a closer look at some of the equipment used to measure the daily vital signs. Blood Pressure Cuff and monitor, thermometer and the pulse oximeter which clips onto the individual's finger to measure blood oxygen level and heart rate.

Nurse Monitoring



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Customer Centre



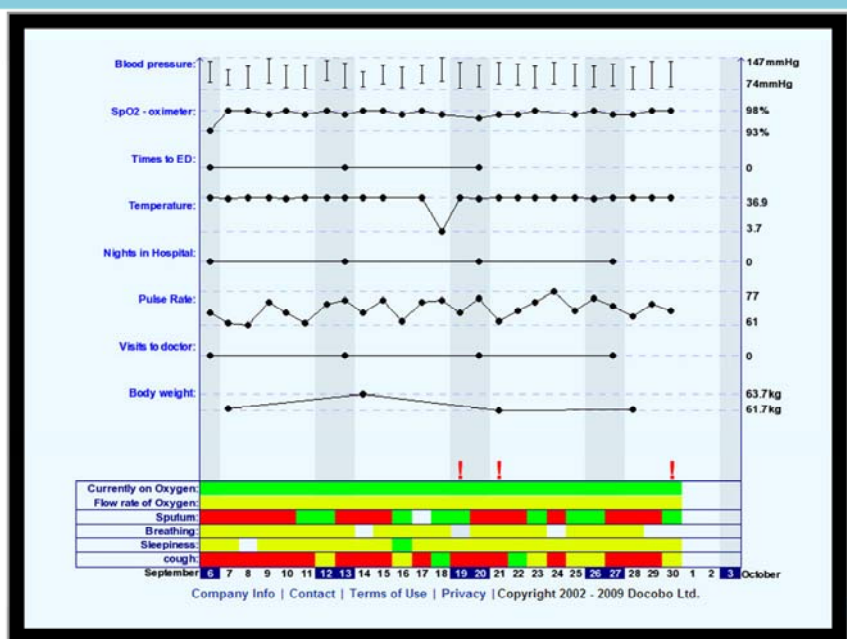
Every day the Telehealth nurse reviews all clients measurements and as I just mentioned Alerts are raised if a client records any observations that are outside their normal parameters that have been set by their GP or consultant. This is a photo of our Telehealth Nurse in the Customer Call Centre phoning the client to discuss her measurements.

Case Study 1



SILVER CHAIN

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This is an example of the screen the nurse will see when monitoring the clients. You can see it has daily vital signs in blue on the left and the scale for the parameters on the right in black. We can also see that there has been 3 interventions recorded down the bottom by the red exclamation marks. So if we look at the 29 Sep we can see all vital signs look normal however the client is showing red alerts in the areas of cough and sputum. So if we take a look at the intervention registered by the nurse she has said "clients data shows productive cough and expectorating green sputum, he will see his GP today" She also followed up later that afternoon to report that the client had indeed been to see the GP and was having other various tests on Friday.

So this is one of the benefits of the monitoring that the nurse is able to encourage the client to see the GP as they may have an infection requiring antibiotics that can potentially keep them out of hospital if it is treated promptly.

Case Study 1 SILVER CHAIN

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Day measurements in detail

09:42 (UTC+8)	Blood pressure - manual	137/80 mmHg
09:42 (UTC+8)	What is your temperature?	36.7
09:43 (UTC+8)	Are you currently on Oxygen?	Yes
	What is the flow rate of Oxygen machine?	Greater than 2 but lower than 4
09:43 (UTC+8)	SpO2 reading - manual	SpO2: 98%
09:43 (UTC+8)	Enter your Pulse Rate (PR) from Oximeter reading	68
09:43 (UTC+8)	Describe your cough today?	Dry-non productive
09:43 (UTC+8)	How much did you feel sleepy during waking hours?	Slightly
09:44 (UTC+8)	What kind of sputum are you producing?	No Sputum
12:19 (UTC+8)	Intervention registered	Clients data shows productive cough and expectorating green sputum. he will see GP today. Tks Anne
14:44 (UTC+8)	Intervention registered	Client has been to GP today. Having various tests on Friday 2/10/09. Tks Anne

30.9.2009
Exit

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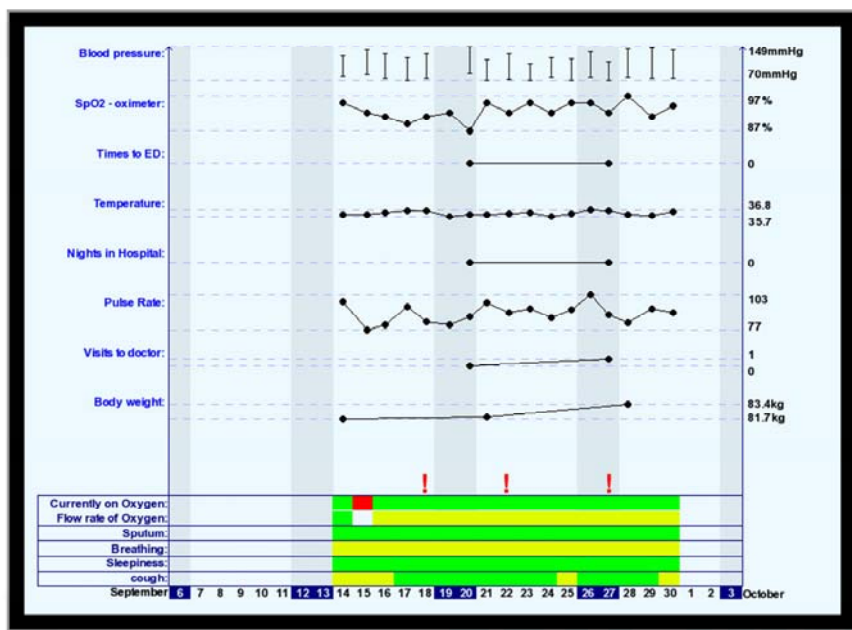
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Case Study 2



SILVER CHAIN

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We have also learnt so far that there can be some false positives, for example we can see with this client that their pulse on the 26th September had risen to 103 so the nurse rang the client to check this out and this is the intervention she registered, "Spoke with client as pulse over 100. Client states that he was watching AFL Grandfinal and getting upset with the outcome of the match and he had not realised that this would make a difference in his pulse. Nil other concerns at this time." So this is an example of where there can be false alarms!

Case Study 2



SILVER CHAIN

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Day measurements in detail		
10:42 (UTC+8)	Intervention registered	Spoke with clt as pulse over 100 (but within 15% of mean average), clt states he was watching AFL final and getting upset with outcome of match. He had not realised that it would make a difference to his pulse. Nil other concerns at this time. tks Lynne.
12:24 (UTC+8)	Blood pressure - manual	113/70 mmHg
12:24 (UTC+8)	What is your temperature?	36.6
12:24 (UTC+8)	Are you currently on Oxygen?	Yes
	What is the flow rate of Oxygen machine?	Greater than 2 but lower than 4
12:24 (UTC+8)	SpO2 reading - manual	SpO2: 92%
12:25 (UTC+8)	Enter your Pulse Rate (PR) from Oximeter reading	88
12:25 (UTC+8)	Describe your cough today?	No cough
12:25 (UTC+8)	How much did you feel sleepy during waking hours?	Not at all
12:25 (UTC+8)	Do you have any difficulty breathing today?	Short of breath whilst hurrying
12:25 (UTC+8)	What kind of sputum are you producing?	No Sputum
12:25 (UTC+8)	How many times did you visit a doctor this week?	1
12:25 (UTC+8)	How many times did you go to an Emergency Department this week?	0
12:25 (UTC+8)	How many nights did you spend in Hospital this week?	0

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Exit

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Data Collection



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- Hospital Admissions, Emergency Department visits and GP visits
- Health Related Quality of Life
- Participant and Stakeholder Satisfaction
- Comparative total costs

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Hospital admissions, ED visits and GP visits will be recorded in a monthly calendar at the time they occur for the 6 month trial period. Each month the research assistants will phone the clients to record any visits, the reason for the visits and any treatments received and they will also check that they are filling out their calendar.

Quality of life will be measured at baseline and at the end of the trial using the chronic respiratory questionnaire for COPD and the Minnesota Living With Heart Failure Questionnaire for CHF clients.

Clients and key stakeholders will be surveyed at the completion of the trial to determine their satisfaction with the service and whether they felt that using the telehealth monitoring had increased their ability to self-manage their chronic disease.

Comparative total costs will be calculated to determine the cost effectiveness of providing the telehealth service.

Results So Far



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Recruitment

- 68 COPD (32 Telehealth 36 Information)
- 2 CHF

Follow-up phone calls

Group	Number Called	Hospital	Emergency Department
Telehealth	10	0	0
Information	16	2	0

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For our results so far - we have almost completed recruitment for COPD with 68 out of the 80 clients needed and we have just started recruitment for CHF with 2 clients on board.

We have begun the one month follow-up phone calls and so far none of the Telehealth Group have been to hospital, however two of the information group have. But obviously this is very early days so far and the final analysis is expected to be completed in August 2010, so stay tuned!

Acknowledgements



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- SHRAC, Department of Health WA
- Department of Health and Ageing
- All of the Silver Chain staff who have assisted
- Silver Chain's clients who are participating



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Thank you.