



Monitoring the Chronically Ill Elderly in the Community – User Perceptions and Compliance, and Organisational Challenges

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Home monitoring

- **Help chronic disease management?**
- **Improve Outcomes?**
- **Reduce Costs?**



Key Objectives of the CSIRO telemonitoring trial



Identify and model the impact of introducing telehealth services into existing care models for the management of chronic disease in the community.

- Service utilisation
- Socio economic outcomes
- Impact on patients, carers and clinicians
- Acceptability and usability of telehealth services
- Effect of workplace culture and capacity for organizational change management

Trial Design

- Case Matched controls
- Before-After-Control-Impact (BACI)

Diagnostic for subject selection

At least two unplanned admissions to hospital in the preceding year or four in last five years and one or more of the following chronic conditions;

- Chronic Obstructive Pulmonary Disease
- Cardiovascular Disease
- Hypertensive Diseases
- Congestive Heart Failure
- Diabetes
- Asthma

Telehealth Services Provided

- Vital Signs (provided as appropriate to patient's clinical condition)
 - Blood Pressure
 - Pulse Oximetry
 - Single lead ECG
 - Blood Glucometer
 - Spirometry (FEV1, VC, PEF)
 - Body Temperature
 - Body Weight
- Communications
 - Messaging
 - Video Conferencing
- Questionnaires
 - Large range of Clinical and Wellness questionnaires



Care Models Trialled

- Hospital Based Chronic disease management unit (2 Trial Sites)
- Local Health District and Community/Ambulatory (1 Trial Site)
- Medicare Local led (2 Trial Sites)
- Aged Care Focus (1 Trial Site)

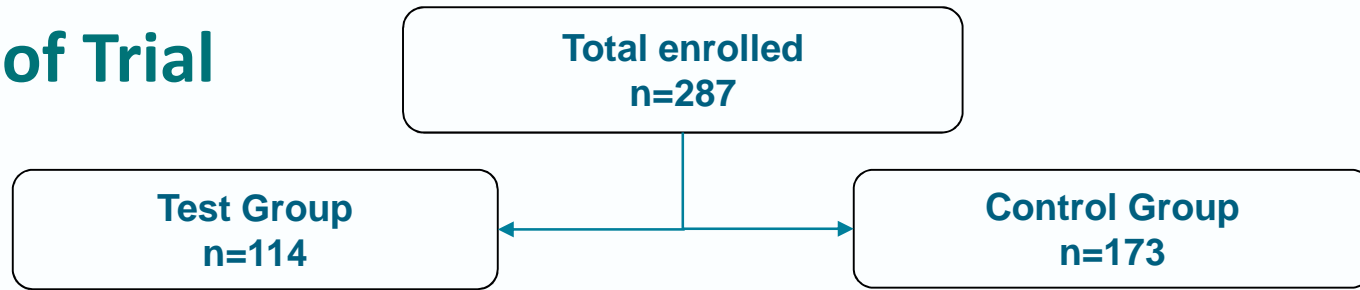
Challenges we had to manage...

- The tests and controls were not recruited simultaneously
- Too few potential controls in all areas besides TAS and VIC
- Compliance with the study
- Change in design (to BACI)
- **Not all monitored for 12 months...**



“Don’t worry, the expectations are the same as ever...only completely different”

At End of Trial



	ACT	NSW	QLD	TAS	VIC	TOTAL
Test	16	17	26	29	26	114
Control	23	12	29	60	49	173

Data Analysed	
Test	Control
100	137

Demographics	Test	Control
Age (Years) mean (SD)	71.1±9.2	72.0±9.5
Male%	65	56
BMI	30.6±8	28.0±7

Withdrawal from trial post deployment

REASON FOR WITHDRAWING FROM TRIAL	Number of times cited
No longer interested / lack of motivation or commitment	4
Do not feel benefits from the intervention	6
Changes in circumstances (no longer meeting inclusion criteria, deterioration of health, difficulty using TMC)	10
Competing life demands (work, family, stress)	4
Logistical reasons	5

Patient Compliance with Daily Measurement Schedule

	Number of Scheduled Tasks	Number of Tasks Completed	Compliance Percentage
Blood Glucose	12,464	8739	70%
Blood Oximetry	30,834	20,216	66%
Blood Pressure	30,679	20,551	67%
Body Temperature	27,297	17,143	63%
ECG	30,327	19,817	65%
Forced Spirometry	20,692	10,876	53%
Weight	25,122	14,124	56%
Total	177,416	111,466	63%

Patient Compliance with questionnaires

	Number of Scheduled Tasks	Number of Tasks Completed	Compliance Percentage
Anxiety and Depression	943	534	57
Quality of Life	3,761	2,235	59
Medication Adherence	208	93	45
Living With and Managing Medical Conditions	919	621	68
COPD Questionnaire	8,679	4,335	50
User Acceptance and Satisfaction	43	30	70
Dietary Habits and Active Australia	51	33	65
Total	14,604	7,881	54

User perceptions – Telemonitoring device

	N=40	% Agree
Complexity		
Overall, I find the TMD easy to use		88
I sometimes find the TMD system frustrating to use		32
Instructions on the TMD are easy to understand and follow		84
Using the TMD system is cumbersome		20
I needed to learn a lot of things before I could get going with the TMD		23
I found the TMD unnecessarily complex		7
I think that I would need the support of a technical person to be able to use the TMD		13
I feel very confident using the TMD		86
I find the various functions in the TMD are well integrated		84
Compatibility		
TMD is a tool that would be easy to incorporate into my daily routine		89
The TMD fits right into the way I like to manage my health		77
Using the TMD fits well with my lifestyle		71

User perceptions – Telemonitoring service

	% Agree
Observability	
The effects of the telemonitoring service on my chronic condition are apparent to others	39
I would recommend using the telemonitoring service to other people	90
Satisfaction	
Overall how satisfied are you with the telemonitoring service	90
Would you like to continue using the telemonitoring service after the trial?	57
Empowerment	
Daily monitoring of my vital signs has improved my knowledge about the nature of my health condition	69
As a result of using the telemonitoring service	
I have been able to better manage my health condition	61
I feel more secure about my health condition	69
I have improved my self-care	71
I have been involved more in monitoring my health condition	80

Patient comments...

"I have a lot of faith in it and I show it to my mates, it is like having a doctor at home."

"This gives me a great piece of mind. I am getting to know the variations, and when I have a bad reading I take it easy. Without this thing I would just go about like normal and get myself in trouble."

"I know the ladies behind are seeing my data and will call me if need be, it is like seeing my GP."

I tend to stress out a lot over my husband. Since we have the machine at home, I feel I could ring the GP and say to him my husband is sick

Change Management Challenges

Capacity to implement/participate in novel new programs within Local Health Districts very limited

- Delays in site specific ethics due to lack of internal communication
- Non suitable patient list from program causing delays in recruitment
- Patient recruitment delayed (undermined)
- Staff willingness to try new methods of care can be very limited

One site was eventually decommissioned

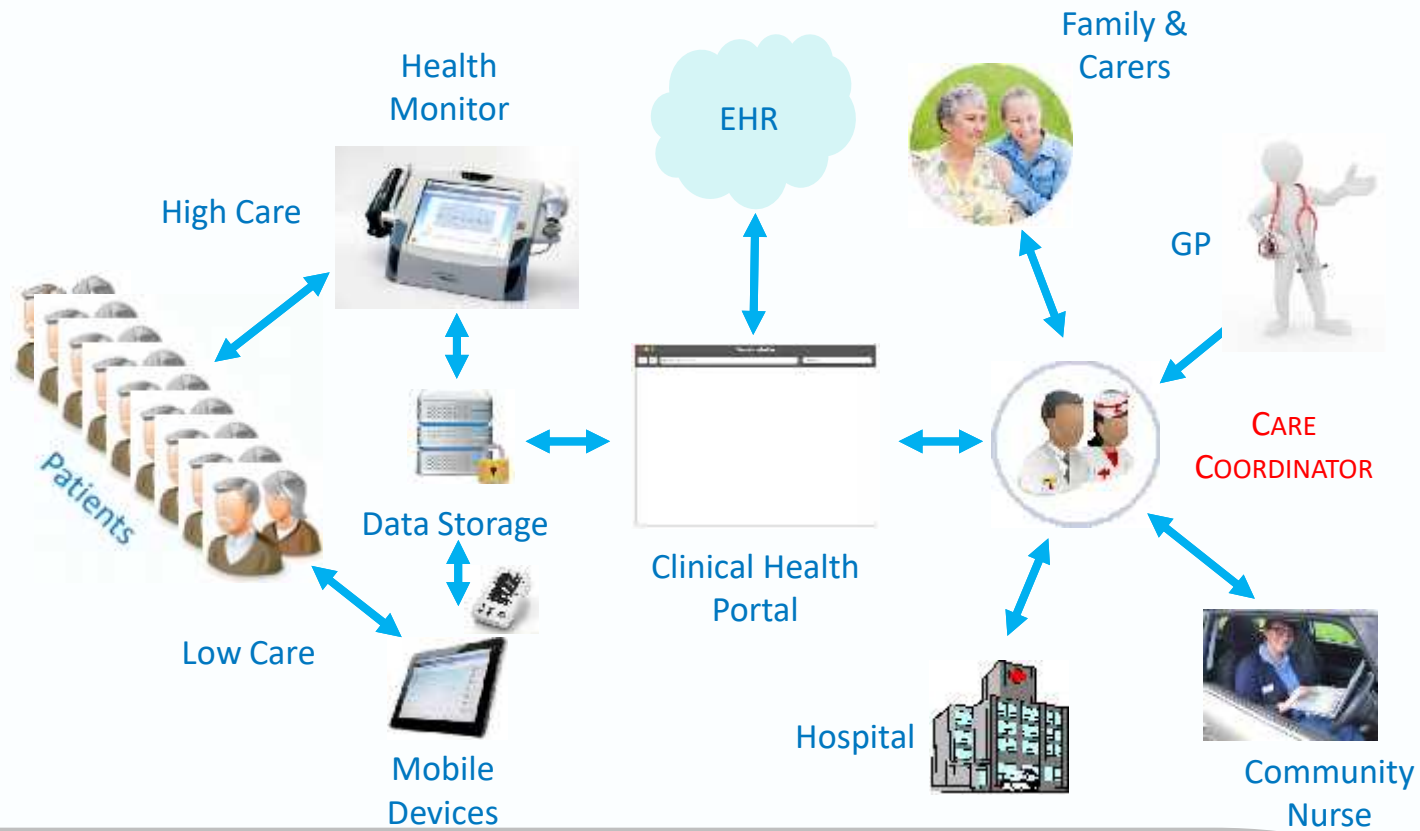
Workplace cultures sometimes in opposition to objectives of the project

- Could only manage 5-8 of the total 25 patients due to model of care
- Providing care than coordinating care
- Additional patient selection criteria introduced without consultation with site PI

Summary of Results of Telehealth Trial

- Primary health care services (MBS) fell by **24%** over the first year
- Unscheduled admissions to hospital fell by **24-36%** over one year
- Length of stay (LOS) when admitted to hospital fell by **34-42%** (7.5-9.3 days) over first year
- Mortality was reduced by 32-48%
- > **83%** user acceptance and use of telemonitoring technology
- > **89%** of clinicians would recommend telemonitoring services to other patients

A Systems Approach to Telehealth



Summary

- The main reasons for withdrawing from the trial were changes in circumstances
- Compliance with daily measuring schedule and completing questionnaires was generally high
- At home telehealth monitoring is well accepted by (most) clinicians and patients alike who can readily appreciate the benefits, despite entrenched workplace cultures in some sites
- The process of implementing a telehealth service is relatively straight forward, providing there is sufficient clinical buy-in and a capacity for organisational change
- The critical role of Clinical Care Coordinators in any telehealth program

Thank you

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