COST-EFFICIENCY EVALUATION OF THE VCARE SOLUTION

vCARE
VIRTUAL COACHING ACTIVITIES FOR REHABILITATION IN ELDERLY

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VCARE COST EFFECTIVENESS STUDY

Aim: measure the effectiveness in terms of quality of life (QoL) compared to the regular rehabilitation

Cost effectiveness analysis

2

VCARE COST EFFECTIVENESS STUDY

Aim: measure the effectiveness in terms of quality of life (QoL) compared to the regular rehabilitation

Cost effectiveness analysis

1. Revision of the literature:
   - ❑ Traditional rehabilitation (at the clinic) vs Telerehabilitation
   - ❑ Systematic review in cardiological and neurological diseases
2. Estimate the effectiveness, utility, and results of vCare
3. Cost analysis of vCare vs traditional rehabilitation
4. Cost-effectiveness of PD pilot test
5. Conclusion

1. REVISION OF THE LITERATURE

Rehabilitation is prescribed to
-enhance the patient's quality of life
-reduce the impact of a health condition
-based on the patient's needs, goals, and preferences.

Telerehabilitation
"the delivery of rehabilitation services at a distance by means of electronic information and communication technologies" (Rosen, 1999)

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In most countries, rehabilitation is not integrated as a standard of care in the public health system

This situation worsens in low- and middle-income countries (World Health Organization, 2017).

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Is telerehabilitation cost-effective?

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Objective: to investigate the costs and results of telerehabilitation in neurological and cardiological diseases.

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Objective: to investigate the costs and results of telerehabilitation in neurological and cardiological diseases.

Methods:

-MEDLINE and EMBASE databases were searched from 2005 to 2021

-A trained librarian performed the searching until January 2021

-Studies that assess the costs and results of telerehabilitation in comparison to traditional rehabilitation (center-based programs)

-Neurological and cardiological diseases

-Three experienced reviewers screened separately the search results using the inclusion and exclusion criteria

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Status: Under review

SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Economic evaluation identified **4** types:

SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Economic evaluation identified **4** types:

- ✓ **Cost-effectiveness** analysis: systematic method of comparing 2 or more interventions by measuring their costs and consequences (health outcomes).
- ✓ **Cost-utility** analysis (similar to cost-effectiveness), but effectiveness is measured in quality-adjusted life years (QALY).
- ✓ **Cost-benefit** analysis measures and compares the net costs of a healthcare intervention with the benefits that arise as a result of the intervention (monetary units)
- ✓ **Cost analysis** only compares costs.

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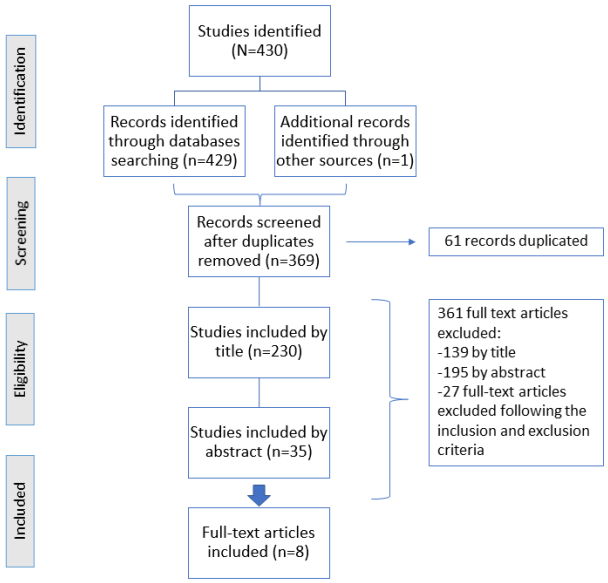

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Results:

-3 studies ⟶ neurological diseases

-5 studies ⟶ cardiological diseases

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Results:

-3 studies → neurological diseases
- 1 cost analysis
- 1 cost-benefit analysis
- 1 cost-effectiveness

-5 studies → cardiological diseases
- cost-utility analysis
  - Questionnaires: EQ-5D or SF-36

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Costs and effects of Telerehabilitation in Neurological and Cardiological Diseases: A Systematic Review

Duration of the telerehabilitation

-Ranged from 6 to 48 weeks.

-Common period program: 12 weeks

Predominant type of telerehabilitation

-not "lived"guided by clinicians (telerehab. Was not guided by clinicians when the patient was performing it)

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Telerehabilitation characteristics and study results.

		Telerehab duration & type			Results		
Study	Disease	Duration (weeks)	Type		Telerehab Cost-savings/person	Significant differences	Clinical and QALY results
Neurological diseases							
Housley et al. (2016)	Stroke	12	Home-based robotic rehab device	Not lived guided	$2352	yes	Home-based robot therapy expanded access to post-stroke rehabilitation for 35% of the people no longer receiving formal services and increased daily access for the remaining 65%.
Llorens et al. (2014)	Stroke	6	Home-based telerehab vs in-clinic rehab.	Not lived guided	$654.72	-	No significant differences were found between the groups in any balance scale or in the feedback questionnaires. No significant differences in usability and motivation between groups.
Bendixen et al. (2009)	Chronical diseases (including stroke)	48	Standard care + telerehab vs standard veterans administration care	Not lived guided	-	no	Telerehab increased clinic visits and decreased hospital and nursing home stays.

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Telerehabilitation characteristics and study results.

		Telerehab duration & type			Results		
Study	Disease	Duration (weeks)	Type		Telerehab Cost-savings/person	Significant differences	Clinical and QALY results
Cardiological diseases							
Hwang et al. (2019)	Chronic heart failure	12	Online group-based exercise vs traditional centre-based program	Live guided	$1590	yes	No significant differences in QALY.
Maddison et al. (2019)	Coronary heart disease	12	Exercise-based cardiac telerehab vs centre-based programme	Live guided & not lived guided	£2341	Partially yes	Medication costs were significantly lower in telerehab group No significant differences in hospital service utilization costs. No significant differences in QALY.
Kraal et al. (2017)	Acute coronary syndrome or revascularisation procedure	12	Home-based training with telemonitoring guidance vs centre-based training	Not lived guided	€3160	no	Telerehab was more cost-effective [between 97% and 75% (willingness-to-pay of 0€ and 100,000€ per QALY, respectively)]. Telerehab was associated with a higher patient satisfaction and appears to be more cost-effective.
Kidholm et al. (2016)	Cardiovascular diseases	12	Cardiac telerehab vs Healthcare center based rehab	Not lived guided	€-1700	no	The incremental cost-utility ratio for telerehab was 400,000€ per QALY gained
Frederix et al. (2015)	Coronary artery disease & chronic heart failure	24	Internet-based +conventional centre-based rehab vs conventional centre-based rehab	Not lived guided	€564.40	yes	Incremental cost-effectiveness ratio of €-21707/QALY

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SYSTEMATIC REVIEW IN CARDIOLOGICAL AND NEUROLOGICAL DISEASES

Conclusion

-Compare costs and cost-effectiveness of different interventions is crucial for making evidence-based decisions regarding telerehabilitation implementation in health systems.

-Few studies reported economic evaluation of their rehabilitation

-Telerehabilitation is a good alternative to traditional center rehabilitation
- -increases the accessibility to rehabilitation to more people either due to the geographical situation of the patients or the limitations of the health systems.
- -seems to be as clinical and cost-effective as traditional rehabilitation, even if generally, telerehabilitation was less costly.

-Larger cost evaluation studies are needed to evaluate the effectiveness and the health-related quality of life of patients who performed telerehabilitation.

-More research is needed in other neurological diseases such as Parkinson's disease.

What happens with vCare??

Is it cost-effective?

Is an appropriate telerehabilitation tool for neurological and cardiological diseases?

2. Estimate the effectiveness, utility, and results of vCare

Clinical and common outcomes

Stroke	Parkinson	Heart Failure	Ischemic Heart
MoCA FIM NIHSS FAC MAS ADL	MoCA UPDRS I UPDRS II UPDRS III UPDRS IV H&Y Schwab & England activities of Daily Living Scale	MLHFQ HADS scale Fagerstrom test for nicotine dependence VO2Max LDL	HADS scale Fagerstrom test for nicotine dependence VO2Max LDL

Note: ADL: activities of daily living FAC: Functional Ambulation Classification; FIM: Functional Independence Measure; HADS: Anxiety and in-hospital depression; H&Y: Hoehn and Yahr; LDL - Low-Density Lipoprotein; MAS: Modified Ashworth Scale; MLHFQ: Minnesota Living with Heart Failure Questionnaire; MoCA: Montreal Cognitive Assessment; NIHSS: National Institutes of Health Stroke Scale; VO2Max - Maximal Oxygen Consumption/Maximal Oxygen Uptake/Maximal Aerobic Capacity; UPDRS: Unified Parkinson's Disease Rating Scale.

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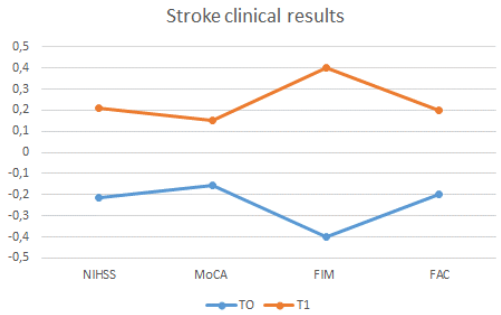
2. Estimate the effectiveness, utility, and results of vCare

Stroke



Period time:
6-10 weeks

Stroke vCare group showed a trend in improvement in most of the clinical scales
-Tendency of improvement in quality of life (anxiety, mobility and usual activities)

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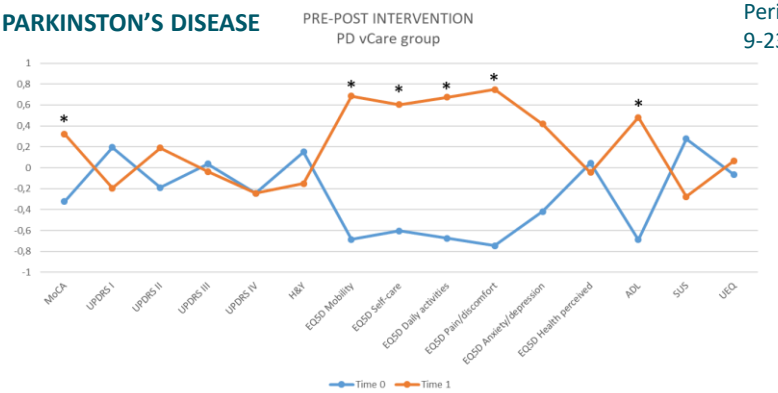
2. ESTIMATE THE EFFECTIVENESS, UTILITY, AND RESULTS OF vCARE

PARKINSTON'S DISEASE



Period time:
9-23 weeks

PD vCare group
Statistically significant improvement:
- -cognitive status
- -better quality of life
- -better capabilities of daily living

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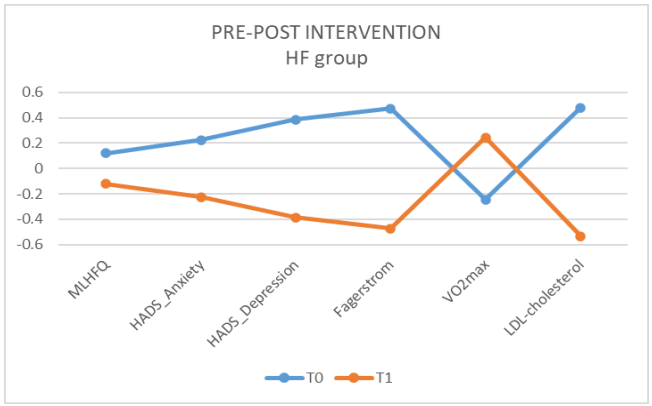
2. ESTIMATE THE EFFECTIVENESS, UTILITY, AND RESULTS OF vCARE

HEART FAILURE



Period time:
2 and 12 weeks

Results obtained at T1 showed an improvement
-anxiety, and depression (a decrease in both conditions)
-nicotine dependence
-effort capacity (objectified by VO2max)
-lipid profile
-Quality of life

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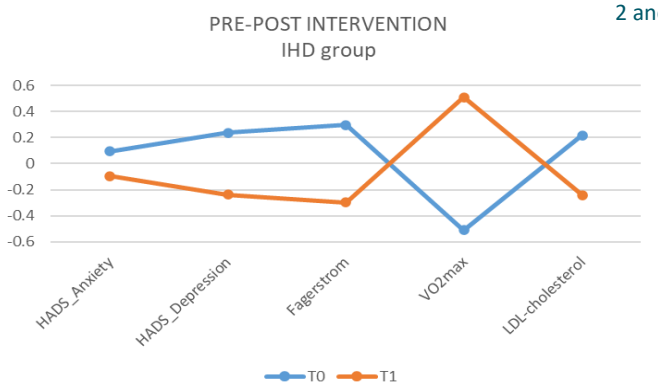
2. Estimate the effectiveness, utility, and results of vCare

Ischemic Heart Disease

Period time:
2 and 12 weeks



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-anxiety, and depression (a decrease in both conditions)
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-effort capacity (objectified by VO2max)
-lipid profile
-Quality of life

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3. Cost analysis of vCare vs traditional rehabilitation

Stroke: Milan, Italy

PD: Bizkaia, Basque region, Spain

HF and IHD: Bucharest, Romania

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

STROKE

vCare project: to perform 6 days of rehabilitation every week, 4 alternative days for motor session and 2 for cognitive session.

The virtual coach guided the patient, supported by a telephone consultation which usually was taking place once a week.

Traditional rehabilitation is guided by a clinician (physiotherapist or neuropsychologist)

Both types of rehabilitation perform two consultations at the beginning and at the end of the process, which usually lasts 2 months.

3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

STROKE

Structure of both rehabilitations for Stroke (one sample week)

		Regual rehabilitation			vCARE tele rehabilitation			
		Motor rehabilitaion	Cognitive rehabilitaion	Occupational therapy	Motor rehabilitaion	Cognitive rehabilitaion	Occupational therapy (eLearning)	Telephone consultation
Weekly programme	Monday							
	Tuesday							
	Wednesday							
	Thursday							
	Friday							
	Saturday							

3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

STROKE Costs per patient of both rehabilitations for Stoke

Resource Use	Regular rehabilitation	COST (Hospital Information System)	TOTAL COST Regular Rehabilitation	vCare telerehabilitation	COST (Hospital Information System)	TOTAL COST vCare
Face-to-face neurological Consultation (First)	1	€ 230	€ 230	1	€ 230	€ 230
Face-to-face neurological Consultation (Successive)	1	€ 115	€ 115	1	€ 115	€ 115
Face-to-face NPS Consultation	1	€ 120	€ 120	1	€ 120	€ 120
Face-to-face Motor Consultation	1	€ 103	€ 103	1	€ 103	€ 103
Motor Rehabilitation	44	€ 52	€ 2.270	44	€ 52	€ -
NPS Rehabilitation	20	€ 60	€ 1.200	20	€ 60	€ -
Occupational treatment	10	€ 52	€ 516	10	€ 52	€ -
Telephone Consultation (1 hour a week)	0	€ -	€ -	8	€ 26	€ 206
vCare System Costs					vCare Cost	
Avatar voice (AIT)				350 €/year	29,17€ per month	€ 58
Rehability (Imaginary)				60€ (100 patients a month)	60 € per month	€ 120
vCare maintenance (SIMAVI)				25 € (100 patients a month)	25 € per month	€ 50
Devices				2140€ all the devices/3 months of use	178,34 € per month	€ 357
Desing of motor session				Physiotherapist 2 hour	51,6 per hour	€ 103
Desing of cognitive session				Neuropsychologist 2 hour	60 per hour	€ 120
Installation/Uninstallation				50€/hours technician x 4hours	50 per hour	€ 200
			€ 4.555			€ 1.783

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

STROKE Costs per patient of both rehabilitations for Stoke

Cost of 2 months:

Traditional rehabilitation =€4.555,20

vCare system=€1.783,43.

This difference is based on the fact that the physical presence of the professional is not necessary when performing rehabilitation using the vCare system, since the professional designs and configure the rehabilitation program using the KIOLA platform and the games, sessions, difficulty and time to perform the exercises are defined in REHABILITY.

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

PD

Structure of both rehabilitations for PD

Weeks		Regular Rehabilitation		vCare telerehabilitaton			
		Motor Rehabilitation	Cognitive Rehabilitation	Motor Rehabilitation	Cognitive Rehabilitation	Telephone neurological consultation	Telephone neuropsychological consultation
Week 1	Monday						
	Tuesday						
	Wednesday						
	Thrusday						
	Friday						
	Saturday						
	Sunday						
Week 2	Monday						
	Tuesday						
	Wednesday						
	Thrusday						
	Friday						
	Saturday						
	Sunday						
Week 3	Monday						
	Tuesday						
	Wednesday						
	Thrusday						
	Friday						
	Saturday						
	Sunday						
Week 4	Monday						
	Tuesday						
	Wednesday						
	Thrusday						
	Friday						
	Saturday						
	Sunday						
Week 5	Monday						
	Tuesday						
1 Month		9	9	9	9	2	2

4 days of rehabilitation
2 alternative days for motor session
2 for cognitive session every week.
Duration: 45 mins

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

PD

Costs per patient of both rehabilitations for PD

Resource Use	Regular rehabilitation	COST (Hospital Information System)	TOTAL COST Regular Rehabilitation	vCare telerehabilitation	COST (Hospital Information System)	TOTAL COST vCare
Face-to-face neurological Consultation (First)	1	124,03	124,03	1	124,03	124,03
Face-to-face neurological Consultation (Successive)	1	62,01	62,01	1	62,01	62,01
Face-to-face NPS Consultation (First)	1	194,84	194,84	1	194,84	194,84
Face-to-face NPS Consultation (Successive)	1	97,42	97,42	1	97,42	97,42
Telephone NPS Consultation	0	0	0	1	77,94	77,94
Telephone NPS Consultation (Successive)	0	0	0	5	38,97	194,85
Face-to-face Motor Consultation (First)	1	121,98	121,98	1	121,98	121,98
Face-to-face Motor Consultation (Successive)	1	60,99	60,99	1	60,99	60,99
Telephone Motor Consultation (First)	0	0	0	1	48,79	48,79
Telephone Motor Consultation (Successive)	0	0	0	5	24,4	122,00
Motor Rehabilitation	27	63,68	1.719,23	27	63,68	0,00
NPS Rehabilitation (First)	1	194,84	194,84	1	194,84	0,00
NPS Rehabilitation (Successive)	26	97,42	2.532,92	26	97,42	0,00
vCare System Costs					vCare Cost	
Avatar voice (AIT)				350 €/year	29,17€ per month	87,51
Rehability (Imaginary)				60€ (100 patients a month)	60 € per month	180,00
vCare maintenance (SIMAVI)				25 € (100 patients a month)	25 € per month	75,00
Devices				2140€ all the devices/3 months of use	178,34 € per month	535,02
Desing of motor session				Physiotherapist 1 hour	30,96 per hour	30,96
Desing of cognitive session				Neuropsychologist 1 hour	47,43 per hour	47,43
Installation (OSA/BCB)				36,46€/hours technician x 4hours	36,46 per hour	145,84
Uninstallation (OSA/BCB)				36,46€/hour technician x 1hours	36,46 per hour	36,46
			5.108,26			2.243,07

3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

PD Costs per patient of both rehabilitations for PD

Cost for 3 months:

Traditional rehabilitation=€5108.26

vCare system= €2243.07.

This difference is based on the fact that the physical presence of the professional is not necessary when performing rehabilitation using the vCare system, since the professional designs and configures the rehabilitation program using the KIOLA platform and the games, sessions, difficulty and time to perform the exercises are defined in REHABILITY. In traditional rehabilitation, the professional is physically with the patient while the rehabilitation is being done.

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

HF Structure of both rehabilitations for HF

Weeks		Regular Rehabilitation		vCare telerehabilitation	
		Motor Rehabilitation		Motor Rehabilitation	
		Aerobic Training	Resistance Training	Aerobic Training	Resistance Training
Week 1	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 2	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 3	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 4	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 5	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
1 Month		15	15	15	15

2-3times a week
Duration: 30-45 mins

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

HF

Costs per patient of both rehabilitations for HF

Resource Use	Regular rehablitation	COST (Hospital Information System)	TOTAL COST Regular Rehabilitation	vCare telerehabilitation	COST (Hospital Information System)	TOTAL COST vCare
Blood samples	2	58.00 €	116.00 €	2	58.00 €	116.00 €
Chest X-Ray	1	6.46 €	6.46 €	1	6.46 €	6.46 €
Echocardiography + Doppler	1	11.00 €	11.00 €	1	11.00 €	11.00 €
ECG	12	16.80 €	201.60 €	2	16.80 €	33.60 €
ECG Stress Test	2	27.20 €	54.40 €	2	27.20 €	54.40 €
Cardiology Consultation	1	7.20 €	7.20 €	1	7.20 €	7.20 €
Cardiology Control	1	5.00 €	5.00 €	1	5.00 €	5.00 €
Aerobic Training Sessions	45	8.50 €	382.50 €	45	8.50 €	0
Resistance Training Sessions	45	8.50 €	382.50 €	45	8.50 €	0
vCare System Costs					vCare Cost	
Avatar voice (AIT)				350 €/year	29,17 € per month	87.51 €
Rehability (Imaginary)				60 € (100 patients a month)	60 € per month	180.00 €
vCare maintenance (SIMAVI)				25 € (100 patients a month)	25 € per month	75.00 €
Devices				775€ all the devices/3 months of use	64,59 € per month	193.77 €
Desing of motor session				Physiotherapist 1 hour	16 € per hour	16.00 €
Installation (UMFCD)				9€/hours technician x 4hours	9 € per hour	36.00 €
Uninstallation (UMFCD)				9€/hour technician x 1hours	9 € per hour	9.00 €
			1,166.66 €			**830.94 €**

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

HF

Costs per patient of both rehabilitations for HF

Cost for 3 months:

Traditional rehabilitation=€1166.66

vCare system= €830.94

This difference is based on the fact that the physical presence of the professional is not necessary when performing rehabilitation using the vCare system, since the professional designs and configures the rehabilitation plan using the KIOLA platform and the motor games, sessions, difficulty, heart rate adaptations and time to perform the exercises are defined in REHABILITY. In contrast, in traditional rehabilitation, the professional is physically with the patient while the cardiac rehabilitation is performed.

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

IHD

Structure of both rehabilitations for IHD

Weeks		Regular Rehabilitation		vCare telerehabilitation	
		Motor Rehabilitation		Motor Rehabilitation	
		Aerobic Training	Resistance Training	Aerobic Training	Resistance Training
Week 1	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 2	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 3	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 4	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
Week 5	Monday				
	Tuesday				
	Wednesday				
	Thursday				
	Friday				
	Saturday				
	Sunday				
1 Month		15	15	15	15

2-3times a week
Duration: 20-30 mins

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

IHD

Costs per patient of both rehabilitations for IHD

Resource Use	Regular rehablitation	COST (Hospital Information System)	TOTAL COST Regular Rehabilitation	vCare telerehabilitation	COST (Hospital Information System)	TOTAL COST vCare
Blood samples	2	58.00 €	116.00 €	2	58.00 €	116.00 €
Chest X-Ray	1	6.46 €	6.46 €	1	6.46 €	6.46 €
Echocardiography + Doppler	1	11.00 €	11.00 €	1	11.00 €	11.00 €
ECG	12	16.80 €	201.60 €	2	16.80 €	33.60 €
ECG Stress Test	2	27.20 €	54.40 €	2	27.20 €	54.40 €
Cardiology Consultation	1	7.20 €	7.20 €	1	7.20 €	7.20 €
Cardiology Control	1	5.00 €	5.00 €	1	5.00 €	5.00 €
Aerobic Training Sessions	45	8.50 €	382.50 €	45	8.50 €	0
Resistance Training Sessions	45	8.50 €	382.50 €	45	8.50 €	0
vCare System Costs					vCare Cost	
Avatar voice (AIT)				350 €/3 months of use	29,17 € per month	87.51 €
Rehability (Imaginary)				60 € (100 patients a month)	60 € per month	180.00 €
vCare maintenance (SIMAVI)				25 € (100 patients a month)	25 € per month	75.00 €
Devices				575€ all the devices/3 months of use	47,92 € per month	143.76 €
Desing of motor session				Physiotherapist 1 hour	16 € per hour	16.00 €
Installation (UMFCD)				9€/hours technician x 4hours	9 € per hour	36.00 €
Uninstallation (UMFCD)				9€/hour technician x 1hours	9 € per hour	9.00 €
			1,166.66 €			**780.93 €**

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3. COST ANALYSIS OF VCARE VS TRADITIONAL REHABILITATION

IHD Costs per patient of both rehabilitations for IHD

Cost for 3 months:

Traditional rehabilitation=€1166.66

vCare system= €780.93

This difference is based on the fact that the physical presence of the professional is not necessary when performing rehabilitation using the vCare system, since the professional designs and configures the rehabilitation plan using the KIOLA platform and the motor games, sessions, difficulty, heart rate adaptations and time to perform the exercises are defined in REHABILITY. In contrast, in traditional rehabilitation, the professional is physically with the patient while the cardiac rehabilitation is performed.

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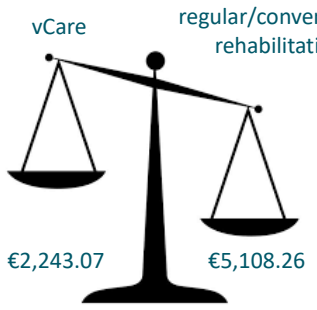
4. COST-EFFECTIVENESS OF PD PILOT TEST

A micro-cost study: to quantify the consumption of resources that would be needed in conventional rehabilitation since Osakidetza-Basque Health Service does not provide conventional rehabilitation for this type of pathology, PD.



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4. COST-EFFECTIVENESS OF PD PILOT TEST

PD receive follow-up consultations but no rehabilitation.

This follow-up (consultations)= €661.27

Motor and neuropsychological rehabilitation

regular/conventional rehabilitation

vCare

€2,243.07 €5,108.26

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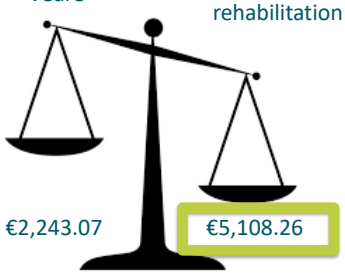

€2,243.07 €5,108.26

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4. COST-EFFECTIVENESS OF PD PILOT TEST

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4. COST-EFFECTIVENESS OF PD PILOT TEST

MAFEIP

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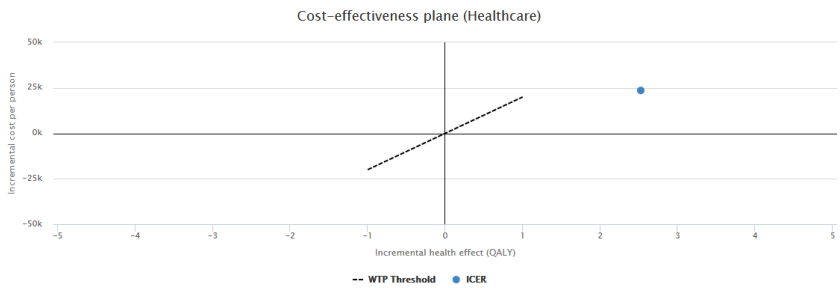
Current treatment cost=€661.27
vCare cost=€2,243.07
[given a threshold of €20,000 per QALY (Vallejo-Torres, García-Lorenzo, Serrano-Aguilar, 2018)]

Incremental cost and HRQoL effects	
Incremental cost (Healthcare)	23523.87
Incremental effects	2.528
Incremental cost-effectiveness ratio (Healthcare)	9304.71



WTP Threshold: ○ €15K/QALY ◉ €20K/QALY ○ €30K/QALY ○ €50K/QALY ○ €80K/QALY

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4. COST-EFFECTIVENESS OF PD PILOT TEST

https://tool.mafeip.eu/

Current treatment cost=€661.27
vCare cost=€2,243.07
[given a threshold of €20,000 per QALY (Vallejo-Torres, García-Lorenzo, Serrano-Aguilar, 2018)]

✓ **Telerehabilitation is shown as a cost-effective alternative**

If conventional rehabilitation were performed
If the improvement in quality of life would not have been greater than through telerehabilitation

✓ **Telerehabilitation** would be the **dominant alternative** since it would be the most effective one, and **the least expensive alternative**

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5. CONCLUSIONS

PD

✓ Telerehabilitation in PD is as a cost-effective alternative compared to conventional rehabilitation

✓ which recommends its implementation.

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5. CONCLUSIONS

PD

- ✓ Telerehabilitation in PD is as a cost-effective alternative compared to conventional rehabilitation
- ✓ which recommends its implementation.

In addition, it is important to highlight that vCare is not only a motor and cognitive telerehabilitation tool

- ✓ It is a virtual coach system that includes telerehabilitation, as well as an artificial intelligence and machine learning system that makes it possible for the rehabilitation and the avatar to adapt and personalize itself to each patient.

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5. CONCLUSIONS

STROKE

- ✓ vCare, with a cumulative saving of about €2.500 for patient, is good alternative compared to conventional rehabilitation

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5. CONCLUSIONS

HF AND IHD

- ✓ vCare has lower costs than conventional rehabilitation

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5. CONCLUSIONS

- ✓ vCare is a clinically and cost-effective tool compared with the clinical results from the control group that followed the traditional rehabilitation at the clinic.
- ✓ The vCare system seems to be an optimal tool to be used as a virtual coach and telerehabilitation tool.

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OSA/BCB team for the economic evaluation

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THANK YOU VERY MUCH

MUCHAS GRACIAS!

ESKERRIK ASKO!

vCARE
VIRTUAL COACHING ACTIVITIES FOR REHABILITATION IN ELDERLY

Rocío Del Pino, Ph.D

www.vcare-project.eu

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