Telemedicine in home mechanical ventilation: where are we?

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university of groningen

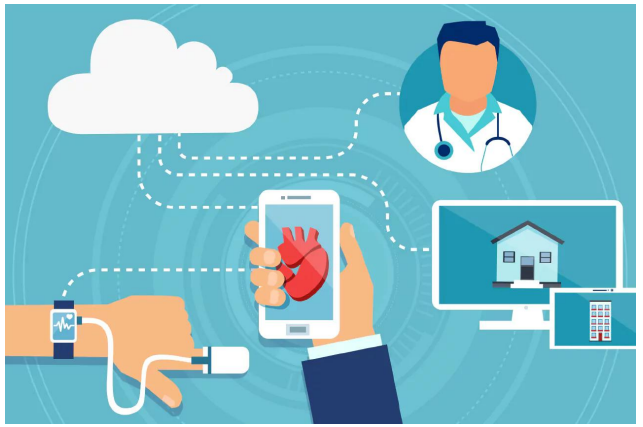
Conflict of interest disclosure

❑ I have the following real or perceived conflicts of interest that relate to this presentation:

Affiliation / Financial interest	Commercial Company
Grants/research support:	RESMED LtD, Philips BV, Vivisol BV, Fisher & Paykel LtD, Löwenstein
Honoraria or consultation fees:	
Participation in a company sponsored bureau:	
Stock shareholder:	
Spouse / partner:	
Other support / potential conflict of interest:	

Why use telemedicine?

- Because it is the future?
- Because it is possible?
- Because it improves outcomes?



- Because makes care more efficient and cost-effective?
- Because patients prefer?
- .....

Because it is the future?
What does the future of health look like in 50 years?

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Value-based high-quality healthcare which is affordable, sustainable, accessible and personal for everyone

AI and machine learning

Personalised medicine (shared decision making)

Wearables

Vision on the future of healthcare at the European Health Summit | Shaping Europe's digital future (europa.eu)

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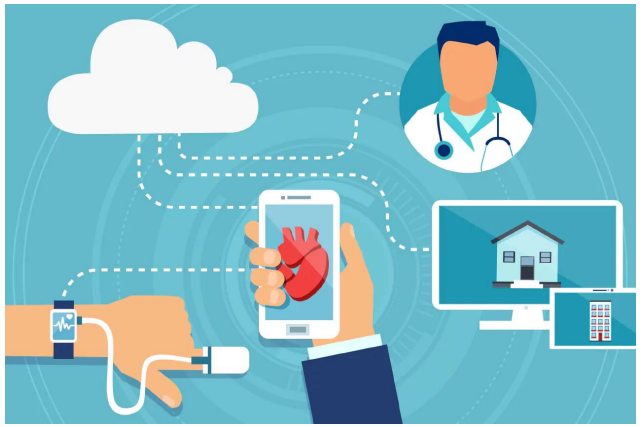

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Because it is possible?
Examples of telemedicine solutions in HMV

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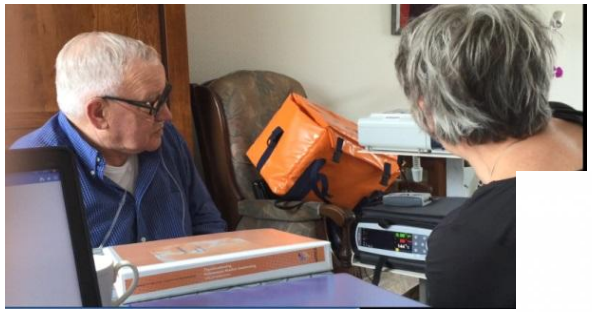

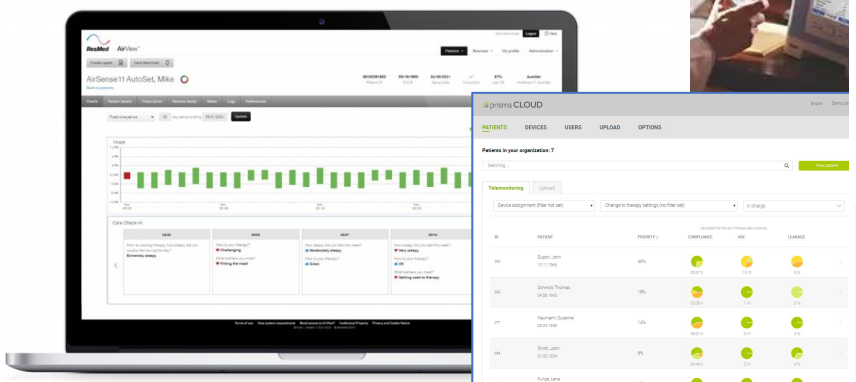

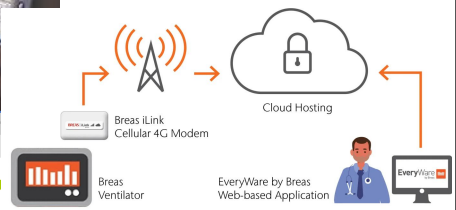

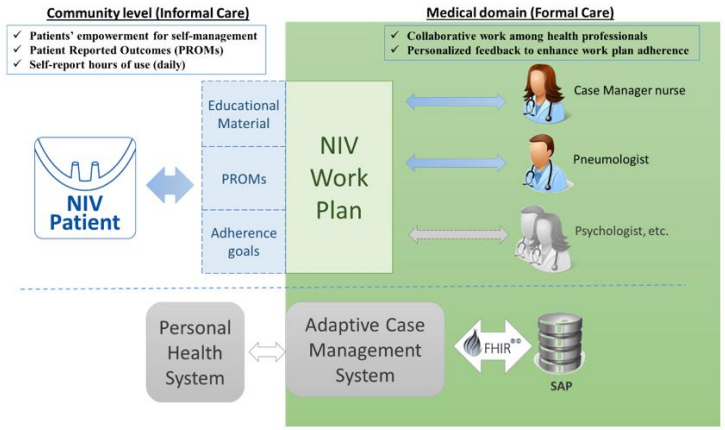

CTBscholing.nl; google; Baltaxe E, Embid C, Aumatell E, Martínez M, Barberan-Garcia A, Kelly J, Eaglesham J, Herranz C, Vargiu E, Montserrat JM, Roca J, Cano I. Integrated Care Intervention Supported by a Mobile Health Tool for Patients Using Noninvasive Ventilation at Home: Randomized Controlled Trial. JMIR Mhealth Uhealth. 2020 Apr 13;8(4):e16395. doi: 10.2196/16395. PMID: 32281941; PMCID: PMC7186864.

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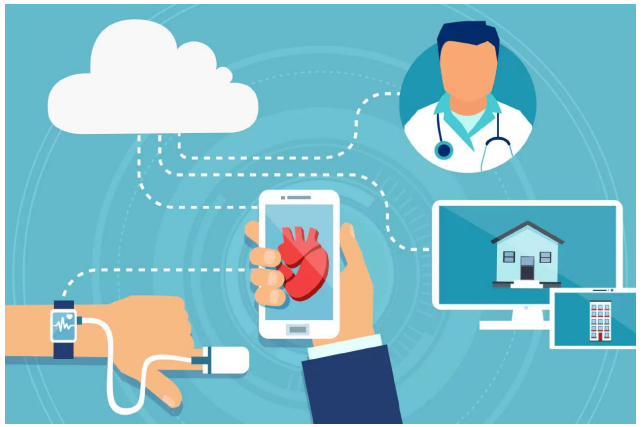

- Because makes care more efficient and cost-effective?
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- .....

Because it improves outcomes

Telemedicine during follow-up improves adherence

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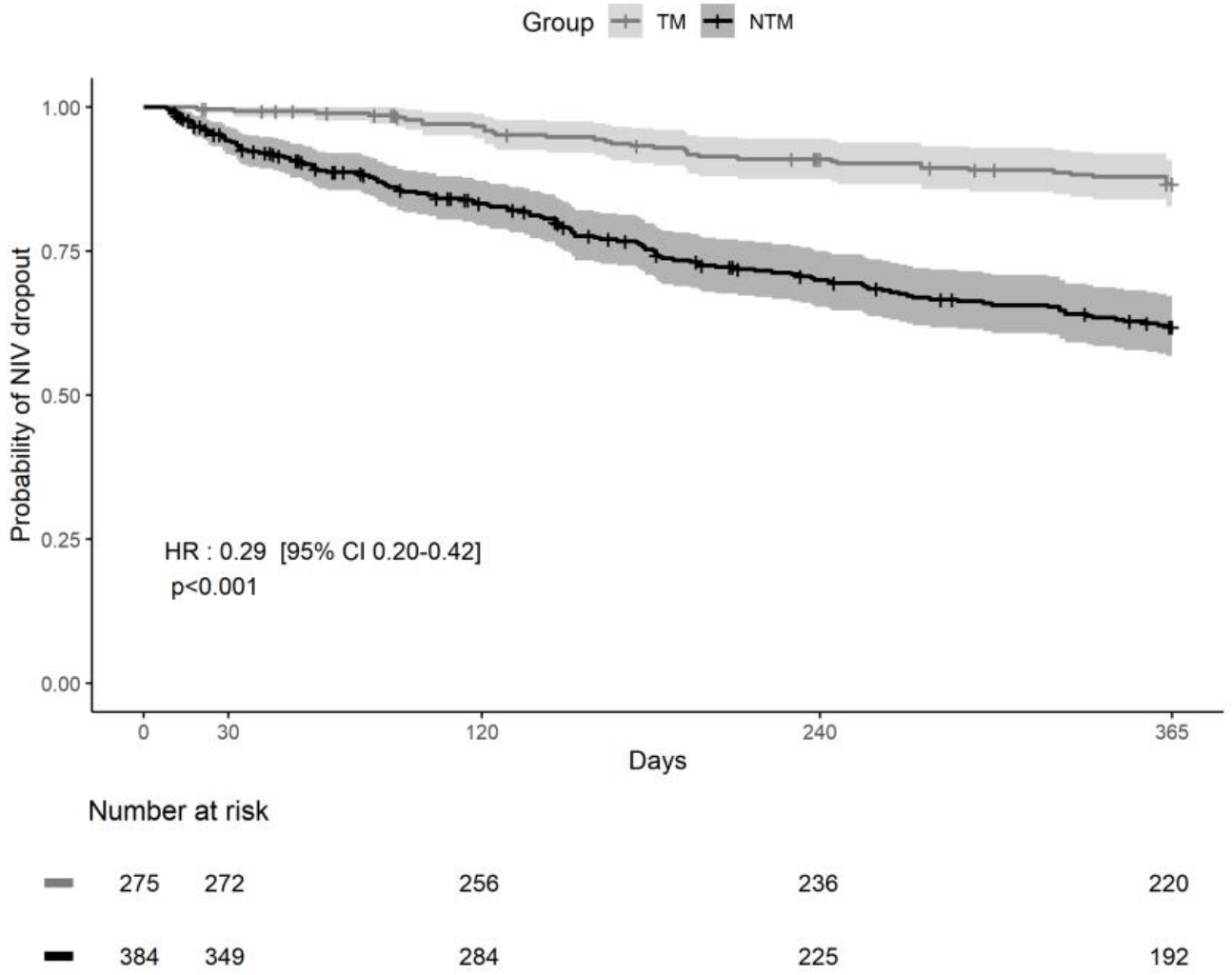
Effect of telemonitoring on the rate of dropout during home non-invasive ventilation: a retrospective study using a home care provider database

Raphael Le Mao [1,2,3] Christophe Gut Gobert,[1,2] Joelle B Texereau,[4,5] Frédérique Kremer,[6] Marion Goret,[1,2] Aurélie Chekroun Martinot,[7] Mathieu Rosé,[7] Wojciech Trzepizur,[8,9] Frédéric Gagnadoux [8,9]



Le Mao R, Gut Gobert C, Texereau JB, Kremer F, Goret M, Chekroun Martinot A, Rosé M, Trzepizur W, Gagnadoux F. Effect of telemonitoring on the rate of dropout during home non-invasive ventilation: a retrospective study using a home care provider database. BMJ Open. 2024 Oct 4;14(10):e088496. doi: 10.1136/bmjopen-2024-088496. PMID: 39366711; PMCID: PMC11459294.

Because it improves outcomes

It is useful to get detailed info about adherence (variance)

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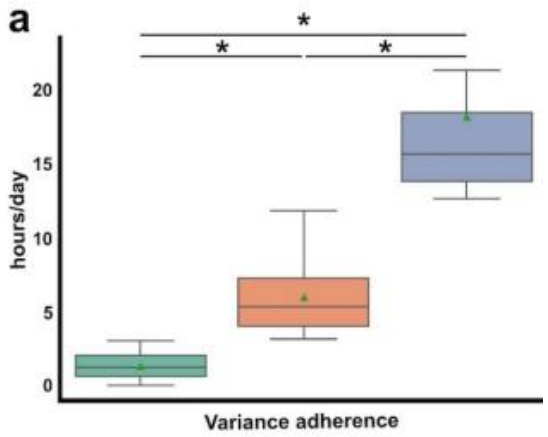
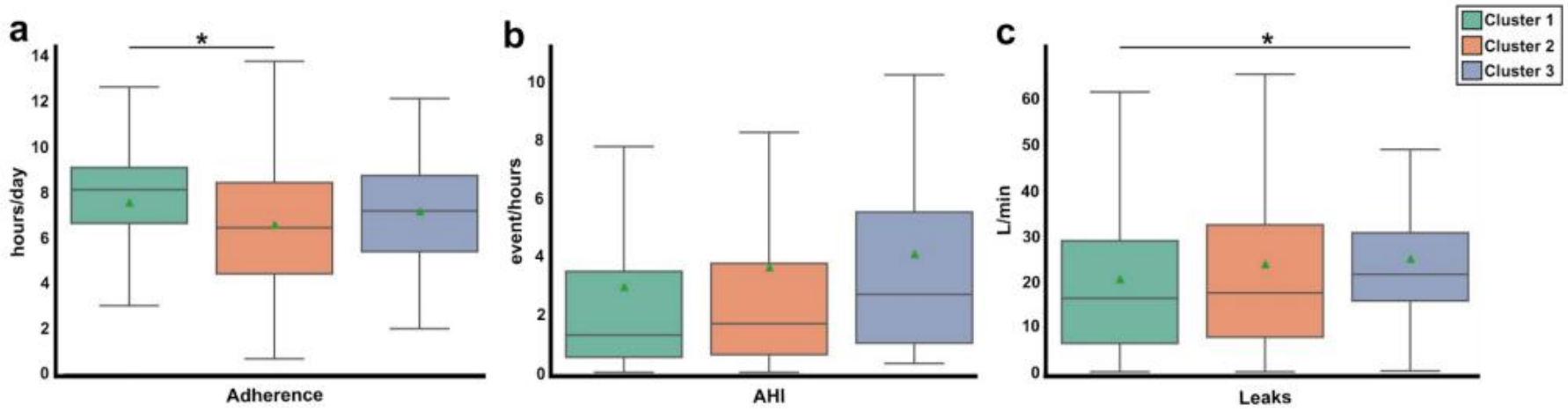
Unravelling telemonitoring data to predict good NIV quality: the E-QualiNIV study

Arnaud Prigent [1,2] Clément Blanloeil,[3] Dany Jaffuel,[4,5] Frederic Gagnadoux,[6,7] Léo Grassion [8,9]





Because it improves outcomes

Telemedicine during follow-up results in better therapy

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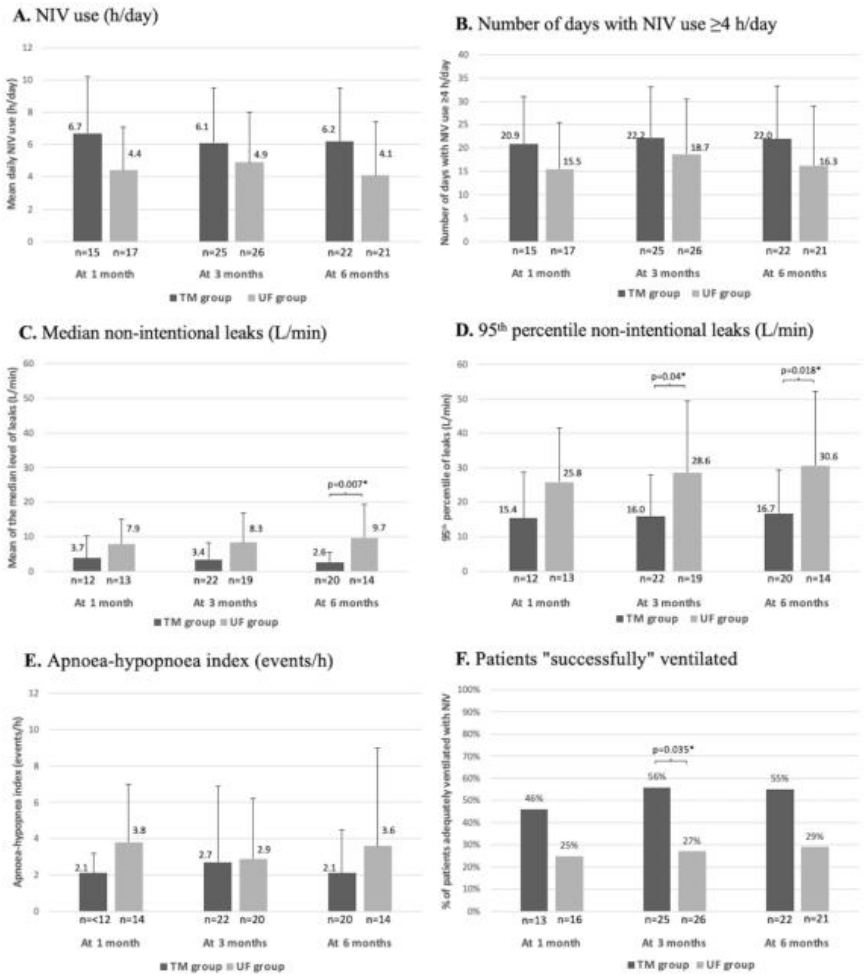
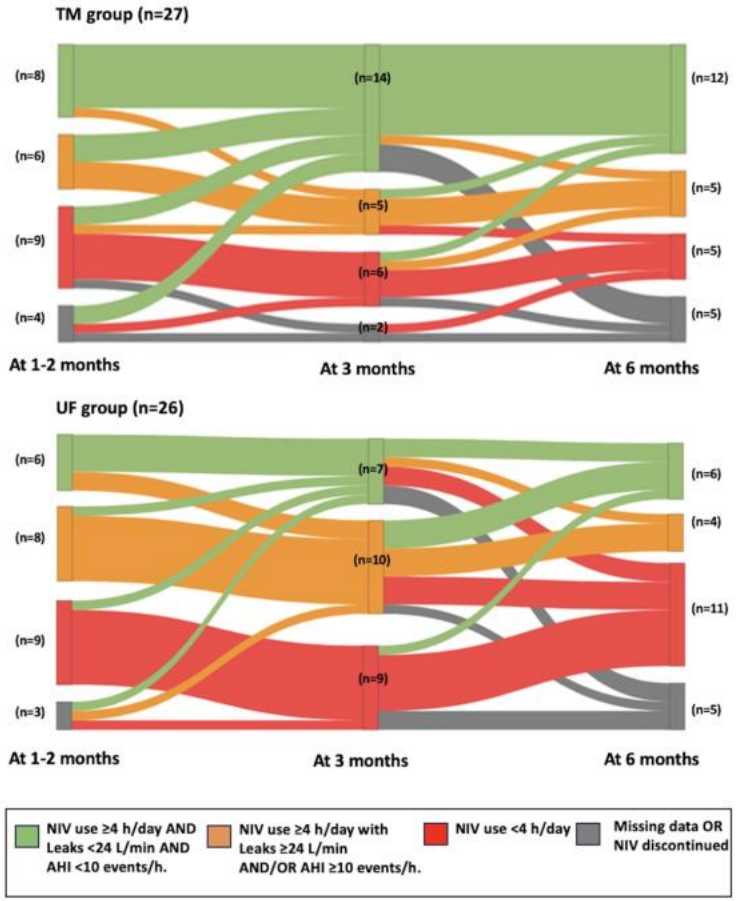




ETAPES program

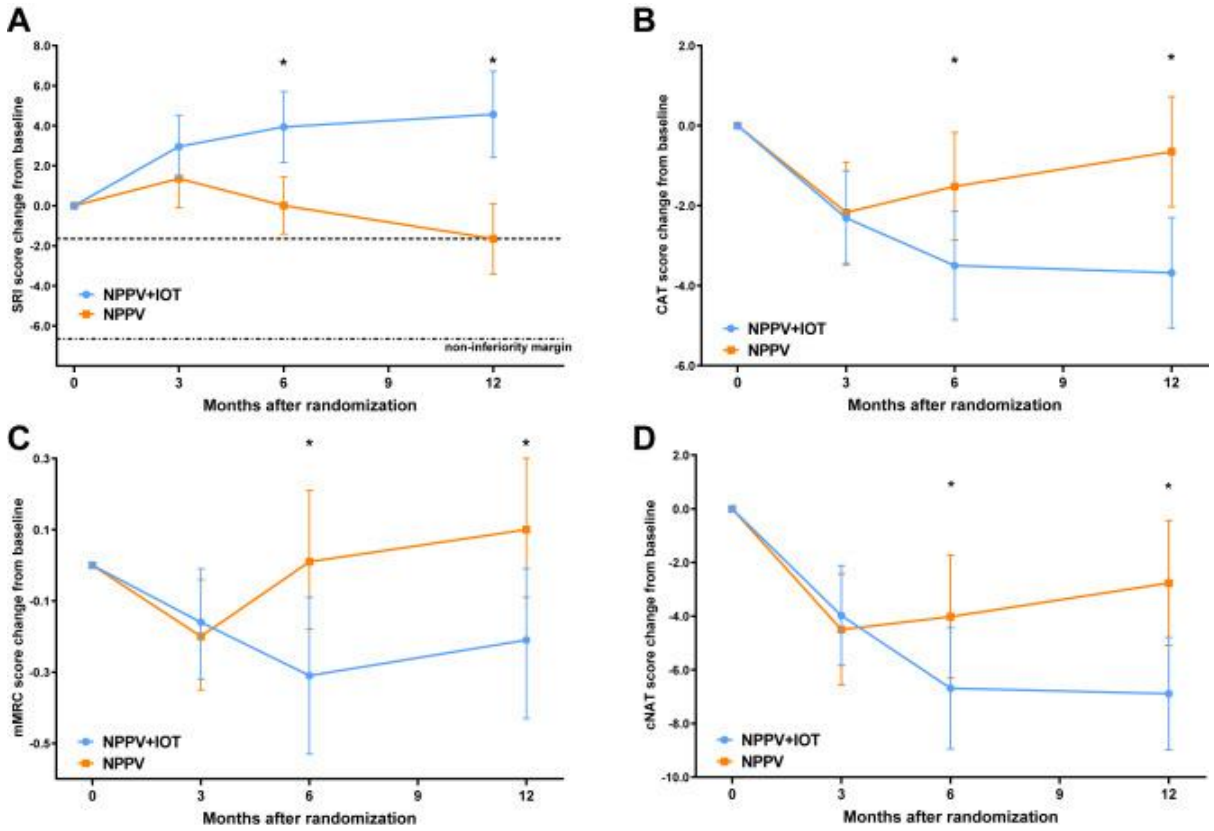
Alerts with
use < 4 h,
leak > 24 L/min,
AHI ≥ 10
over 7 day period

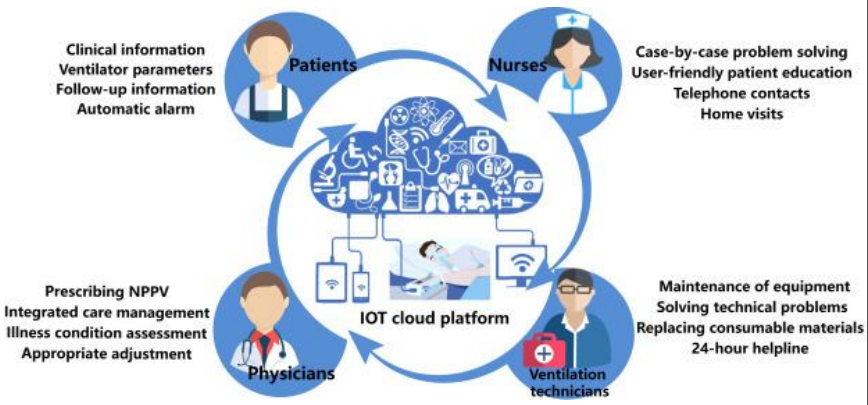
COPD: RR, use

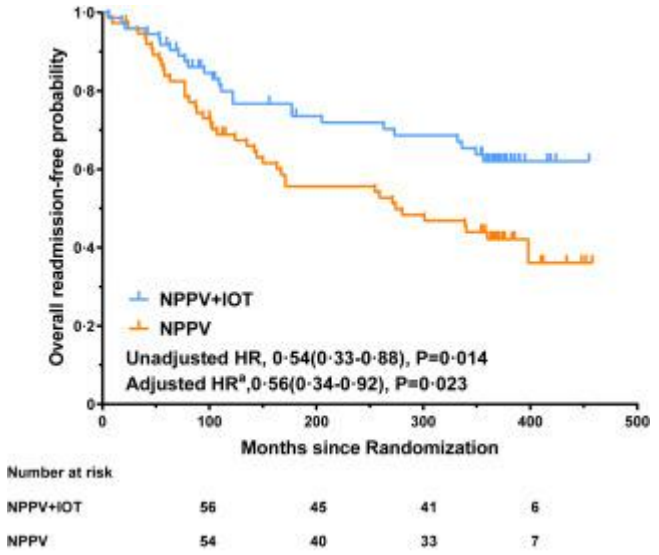
Morelot et al. In press. Thorax.

Because it improves outcomes

Telemedicine during follow-up improves HRQoL and reduces admissions







Adherence
IPAP
Vt
Leak
RR

Jiang et al. eClinicalMedicine 2024. DOI:https://doi.org/10.1016/j.eclinm.2024.102518

ecause it improves outcomes:
re we able to predict of deterioration from (single) ventilator data

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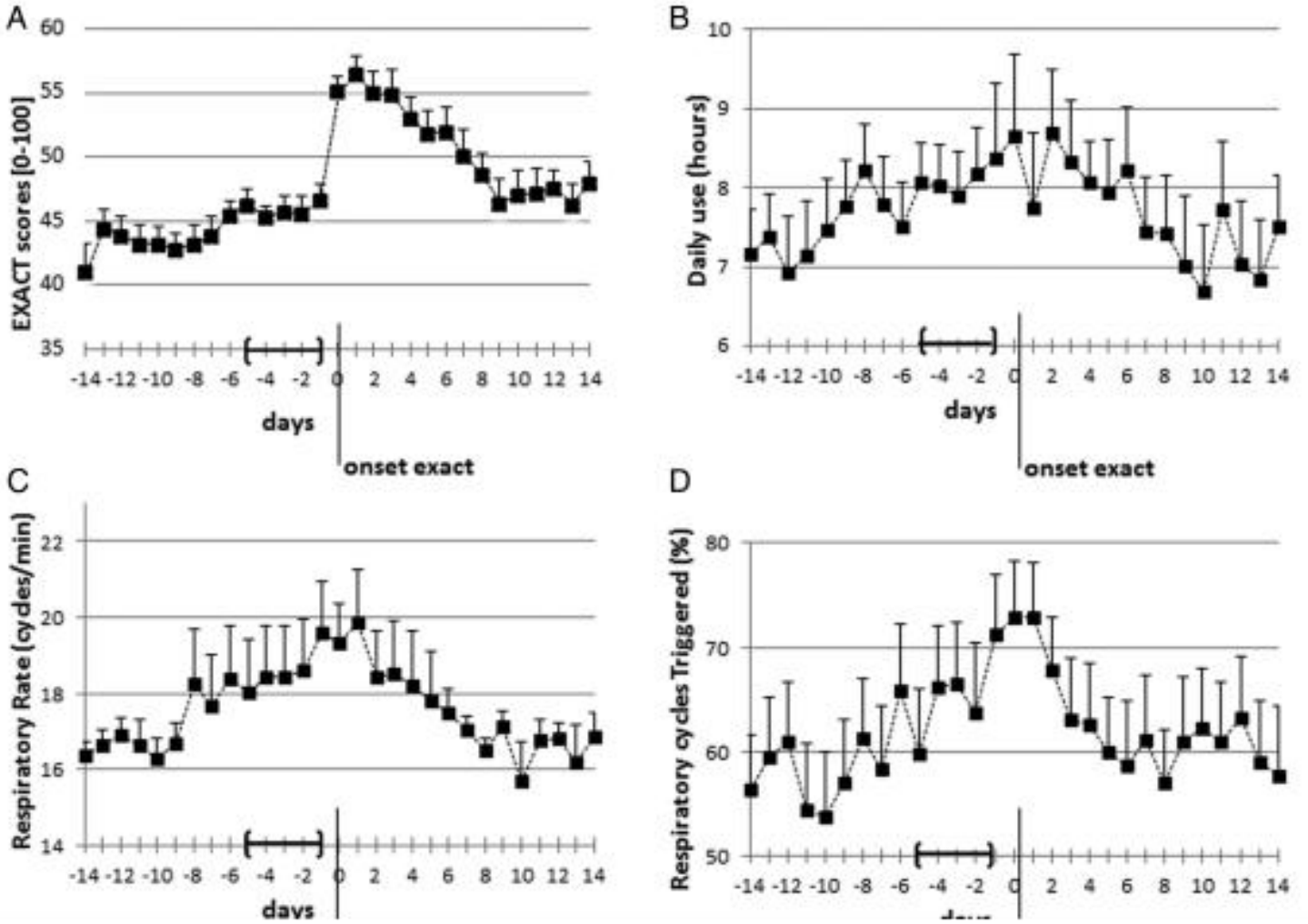

orel et al. Thorax. dem0Acaken

Prediction of deterioration from ventilator data

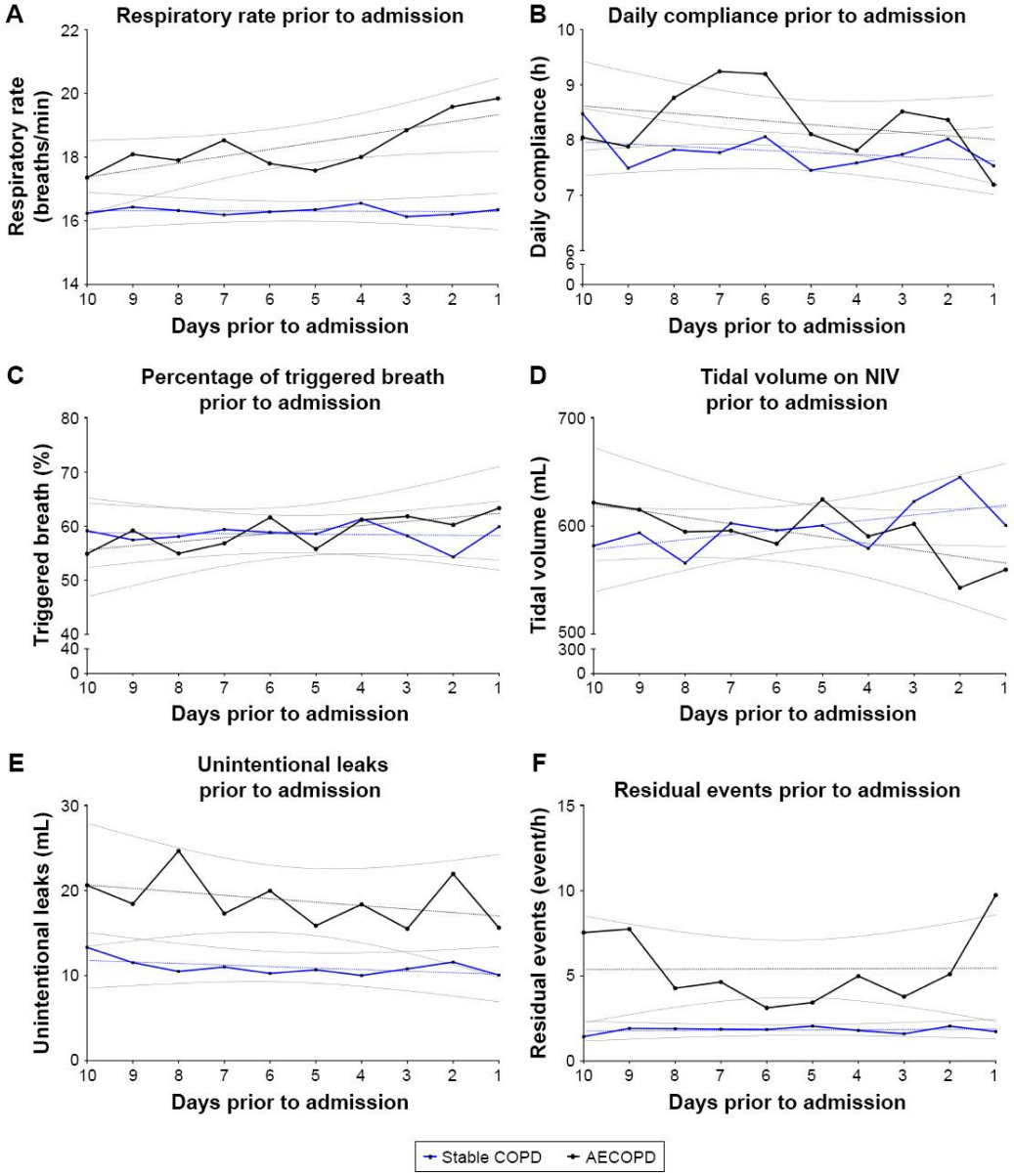

Table 4 Performance of parameters recorded by ventilator to predict severe AECOPD

	Area under the curve (95% CI)	*P*-value	Cutoff value	Sensitivity	Specificity	PPV	NPV	Relative risk (95% CI)	*P*-value
Respiratory rate									
Method A	0.675 (0.518–0.833)	0.025	2 days	57.1	87.8	70.6	0.8	3.3 (1.8–6.8)	<0.001
Method B	0.694 (0.550–0.838)	0.013	2 days	57.1	80.5	60.0	78.6	2.8 (1.4–5.5)	0.004
Method C	0.67 (0.523–0.816)	0.03	3 days	57.1	61.0	42.3	73.5	1.6 (0.8–3.3)	0.191
Method D	0.689 (0.538–0.840)	0.015	SD: 1.53	61.9	75.6	56.5	79.5	2.8 (1.3–5.6)	0.006
Daily use									
Method A	0.537 (0.392–0.682)	0.634							
Method B	0.605 (0.468–0.742)	0.178							
Method C	0.729 (0.59–0.867)	0.003	6 days	61.9	80.5	61.9	80.5	3.2 (1.6–6.4)	0.002
Method D	0.703 (0.565–0.841)	0.009	SD: 1.085	81.0	63.4	53.1	86.7	4.0 (1.5–10.5)	0.001
Percentage of triggered breath									
Method A	0.578 (0.419–0.737)	0.319							
Method B	0.629 (0.490–0.768)	0.099							
Method C	0.51 (0.361–0.66)	0.894							
Method D	0.58 (0.423–0.736)	0.308							
Tidal volume									
Method A	0.537 (0.392–0.682)	0.634							
Method B	0.663 (0.514–0.812)	0.037	2 days	66.7	56.1	43.8	76.7	1.9 (0.9–4.0)	0.112
Method C	0.646 (0.496–0.796)	0.062							
Method D	0.525 (0.380–0.670)	0.749							
Leaks									
Method A	0.505 (0.350–0.66)	0.953							
Method B	0.549 (0.400–0.699)	0.527							
Method C	0.551 (0.396–0.707)	0.513							
Method D	0.523 (0.368–0.679)	0.766							
Residual events									
Method A	0.671 (0.525–0.817)	0.029	3 days	47.6	82.9	58.8	75.6	2.4 (1.3–4.6)	0.016
Method B	0.623 (0.469–0.777)	0.115							
Method C	0.524 (0.374–0.675)	0.755							
Method D	0.531 (0.366–0.696)	0.693							
Overnight breaks									
Method A	0.574 (0.422–0.726)	0.345							
Method B	0.614 (0.466–0.763)	0.143							
Method C	0.517 (0.362–0.671)	0.829							
Method D	0.492 (0.337–0.648)	0.923							

Abbreviations: AECOPD, acute exacerbation of COPD; NPV, negative predictive value; PPV, positive predictive value; SD, standard deviation.

Sensitivity not very high and calculation requires days

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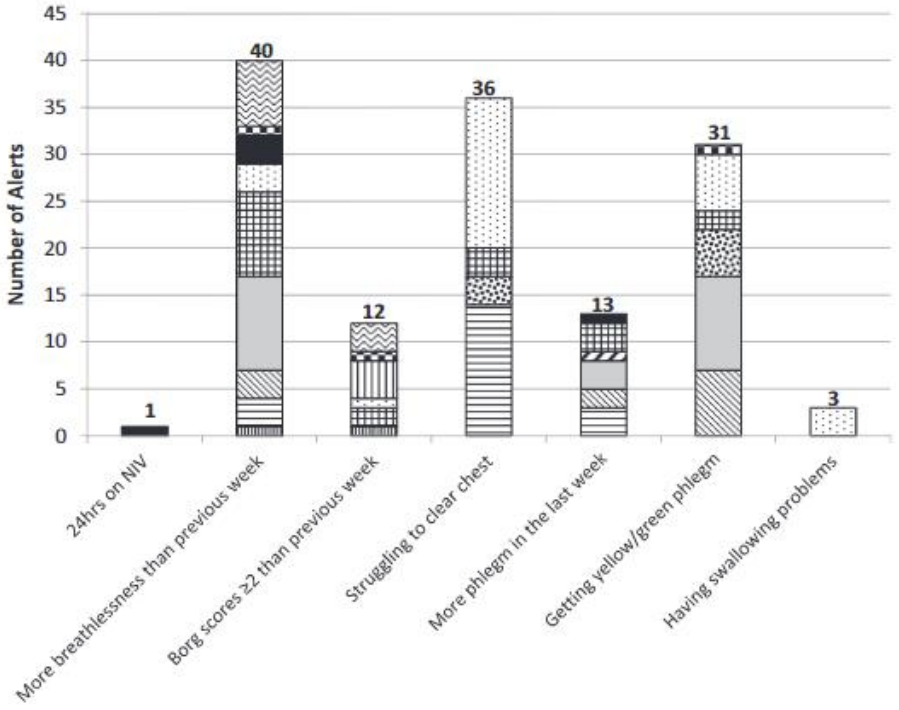
Prediction of deterioration from symptoms?



61 interventions (10 patients outside regular care)
Only 6 interventions were triggered by suboptimal overnight oximetry readings

13 patients, 24 –weeks
5.7 (2-10) notifications per week

Table 5. Intervention category during 24-week trial.

Intervention category	Intervention details	Number of interventions (number of participants)
Arranging a new appointment ($n = 12$)	Outpatient appointment	2 (2)
	Home visit	7 (7)
	Elective admission	3 (3)
Treatment adjustment ($n = 16$)	NIV adjustment (IPAP increase)	11 (8)
	Cough assistor adjustment	5 (3)
Equipment provision ($n = 19$)	Accessories e.g. masks	13 (9)
	Second NIV or exchange NIV	4 (3)
	New cough assistor	1 (1)
	Humidifier	1 (1)
Referral ($n = 14$)	Advice from another professionals	13 (7)
	GP review advised	1 (1)

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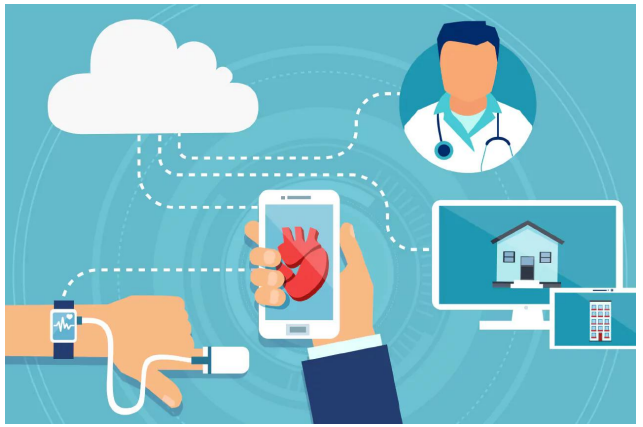

- Because makes care more efficient and cost-effective?
- Because patients prefer?
- .....

Because makes care more efficient

Telemedicine during initiation

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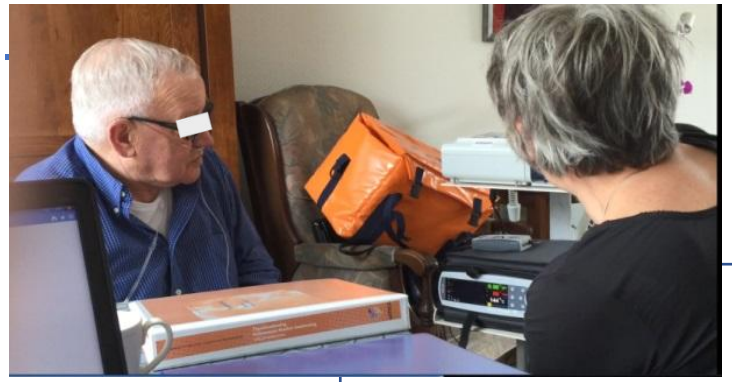
Home initiation of chronic non-invasive ventilation in COPD patients with chronic hypercapnic respiratory failure: a randomised controlled trial

Marieke L Duiverman [1,2] Judith M Vonk,[2,3] Gerrie Bladder,[1,2] Joost P van Melle,[4] Jellie Nieuwenhuis,[1,2] Anda Hazenberg,[1,2] Huib A M Kerstjens,[1,2] Job F M van Boven,[2,5] Peter J Wijkstra[1,2]



Initiation of home mechanical ventilation at home: A randomised controlled trial of efficacy, feasibility and costs

A. Hazenberg [a,b,*], H.A.M. Kerstjens [a,b], S.C.L. Prins [c], K.M. Vermeulen [d], P.J. Wijkstra [a,b]

A Randomized Trial of Initiation of Chronic Noninvasive Mechanical Ventilation at Home vs In-Hospital in Patients With Neuromuscular Disease and Thoracic Cage Disorder

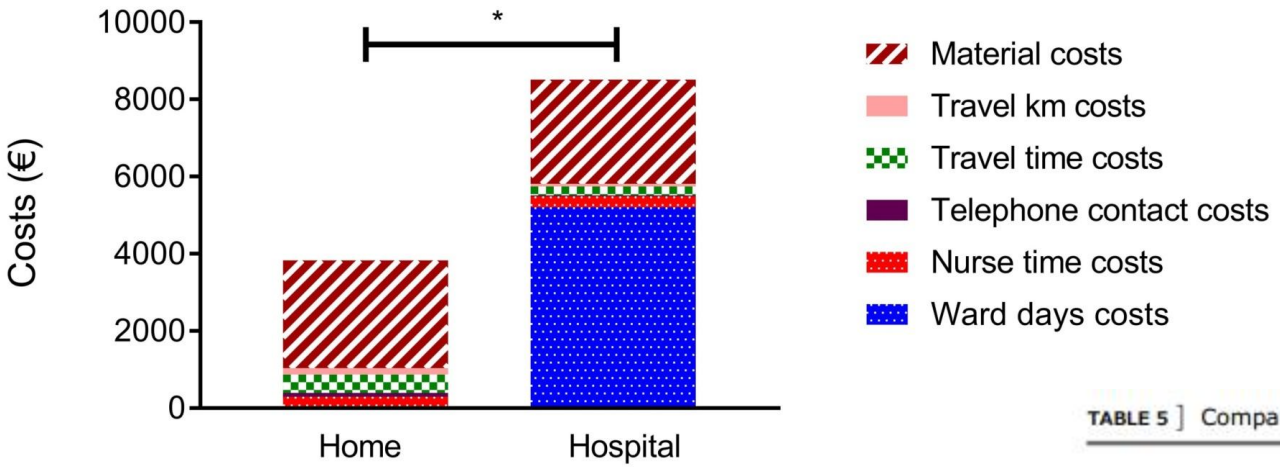
The Dutch Homerun Trial

	Adjusted mean difference in change in daytime $PaCO_2$	95% CI
RECONSIDER_ COPD	0.04 kPa	-0.31-0.38 kPa
HOMERUN _NMD/RTD/OHS	0.01 kPa	-0.36-0.38 kPa

Hazenberg et al. Respir Med. 2014 Sep;108(9):1387-95.
van den Biggelaar RJM et al. Chest. 2020 Jul 16:S0012-3692(20)31897-3.
Duiverman ML et al. Thorax. 2020;75(3):244-252.

ecause it saves costs?

Reduction in costs of home initiation vs. in-hospital



Cost saving ~€3000 - €4000 per patient

TABLE 5] Comparison of Costs and Cost-Effectiveness Between the Home and Hospital Groups

Parameter	Home Mean (SD)/Mean (95% CI Bootstrap)	Hospital Mean (SD)/Mean (95% CI Bootstrap)
QALY, 6 mo[a]	0.26 (0.16)	0.25 (0.15)
Direct medical costs		
Hospital admission	€0 (0-0) [$0 (0-0)]	€3,045 (2,528-3,421) [$3,609 (2,996-4,055)]
Nurses	€781 (663-921) [$926 (786-1,092)]	€496 (404-578) [$588 (479-685)]
General practitioner	€161 (107-218) [$191 (127-258)]	€95 (67-120) [$113 (79-142)]
Medical specialist	€296 (162-542) [$351 (192-642)]	€354 (252-456) [$420 (299-540)]
Miscellaneous caregivers	€77 (32-132) [$91 (38-185)]	€28 (6-56) [$33 (7-66)]
Indirect nonmedical costs		
Absenteeism	€185 (0-524) [$219 (0-621)]	€707 (11-1,939) [$838 (13-2,298)]
Total (social perspective)	€1,500 (1,166-1,970) [$1,778 (1,382-2,335)]	€4,725 (3,716-5,731) [$5,600 (4,404-6,792)]

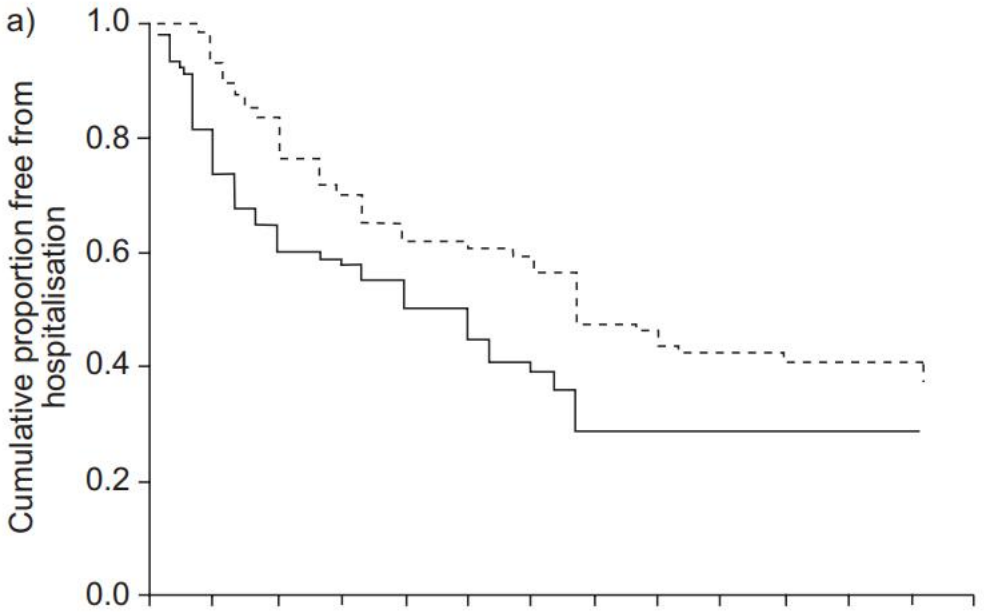
QALY = quality-adjusted life-year.
[a]Max score is 0.5 because the study period was only 6 mo.

van den Biggelaar RJM et al. Chest. 2020 Jul 16:S0012-3692(20)31897-3.

Duiverman ML et al. Thorax. 2020;75(3):244-252.

Because it saves costs?

Telemedicine might reduce costs once it reduces admissions



Cost-effectiveness and budget impact analyses are lacking

TABLE 1 Costs for tele-assistance (TA) activation and healthcare service (HCS) costs

	Cost per unit	Factor to multiply	All patients		COPD patients	
	€		TA €	Control €	TA €	Control €
Telemedicine costs						
Call centre costs[#]	20	Number of calls per patient	716±504	0	821±537	0
Pulsed saturimetric device[¶]	127 per patient	1 for patient	127	0	127	0
Trend pulsed saturimetric device[+]	187 per patient	1 for patient (when requested)	187	0	187	0
TA costs with pulsed saturimetric device						
Total			843±504	0	948±537	0
Monthly			86±56		95±61	
TA costs with trend pulsed saturimetric device						
Total			903±504	0	1008±537	0
Monthly			94±61		104±66	
HCS costs						
Hospitalisations in RW	4000 for admission	Number	4610±5600	6588±7669	5754±6415	8727±9221
ER admissions	62	Number	38±84	57±87	39±63	80±105
Hospitalisation in ICU[§]	According to DRG	Number	3998±15114	7509±22906	3842±15082	15365±31897
Outpatient visit	32	Number	4±12	104±39	6±14	98±41
Urgent GP visit	30	Number	20±41	48±80	23±51	72±110
Antibiotics use (12 days)	55	Number	86±109	203±184	108±129	273±196
Steroids use (14 days)	6	Number	3±7	16±18	5±9	24±21
Home nurse visits	20	Number	148±328	178±367	108±282	82±253
Private costs						
Transportation	0.23 per km	Distance km	0.8±3	27±25	1.2±3.2	21±7
Total HCS costs			8907±17580	14728±28694	9886±17534	24743±39484

Vitacca , azza , ianchi , ilè S, ssoni , Porta R, ertella , iorenza , arbano , omini , Scalvini S. Tele-assistance in chronic respiratory failure: patients' characterization and staff workload of ken-year activity. Telemed ealth. dem0Aca0 pr;Acahuis(isch):demgengen-isch0ken. doi: Aca0.Aca0ningen/tmj.dem00gen.0AcaAcaken. P : dem0Zie0huis AcaAcaGro.

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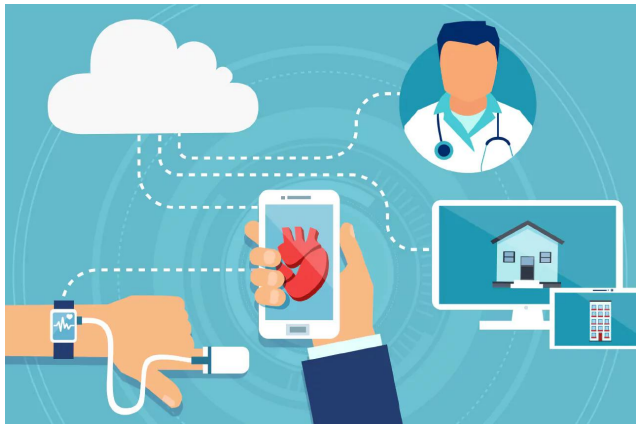

- Because makes care more efficient and cost-effective?
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- .....

Because patients prefer?

Patients are increasigly convinced of the benefits

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Attitudes and preferences of home mechanical ventilation users from four European countries: an ERS/ELF survey

Sarah Masefield[1], Michele Vitacca[2], Michael Dreher[3], Michael Kampelmacher[4], Joan Escarrabill[5], Mara Paneroni[2], Pippa Powell[1] and Nicolino Ambrosino[6]

Would you be happy for your health professional to monitor your ventilator remotely (telemonitoring) to make sure the settings are always correct and comfortable for you?		
Yes	47%	62%
Maybe	30%	22%
No	23%	16%

Focus group:

- being at home in a more trustworthy environment
- fewer hospital visits
- lower infection risks
- less travelling
- better remote communication with their physician
- easier access to physicians.
- More confidence
- Self-management

Experience of telehealth in people with motor neurone disease using noninvasive ventilation

Hikari Ando[a], Helen Ashcroft-Kelso[b], Rob Halhead[c], Biswajit Chakrabarti[d], Carolyn A. Young[e], Rosanna Cousins[f] and Robert M. Angus[d]

5 themes:

- Benefits of timely intervention
- Reducing the unnecessary
- Increased self-awareness
- Taking initiative
- Technical challenges

(2a) I go to [hospital 1] every six months with [neurologist] and that [it] lasts for between 30 seconds and 2 minutes. He goes, "How are you? Yeah, yeah. Okay. See you then."

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Because patients prefer? Not only telemedicine

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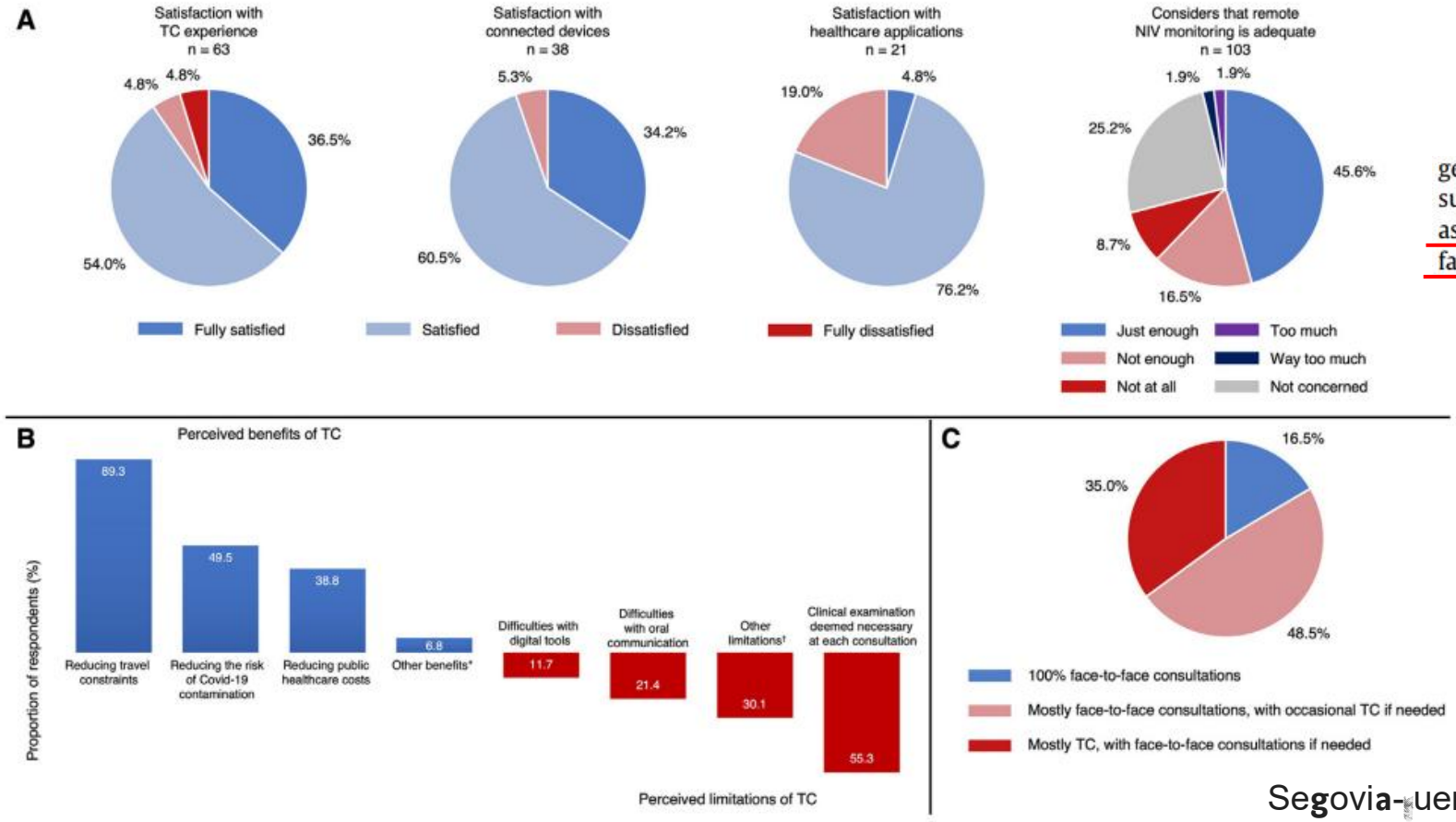
Tele-medicine experiences and expectations from patients with neuromuscular diseases treated with non-invasive ventilation

Sandrine Segovia-Kueny[c,1], Mathieu Delorme[c,e,f,1], Caroline Stalens[c], Julie Lejeune[c], Frédéric Lofaso[a,d], Hélène Prigent[a,b], Antoine Leotard[a,b,#]

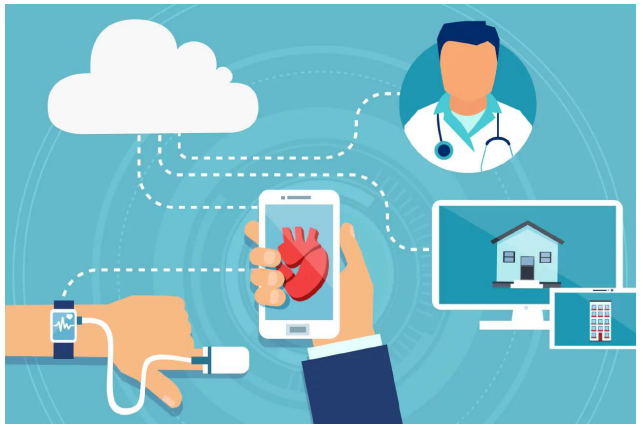


general population with perfect accuracy. Nevertheless, these results suggest that, rather than being systematic, TC should be considered as a situation-oriented tool that might avoid unnecessary face-to-face consultations and possibly reduce consultation delay. Although

Segovia-Kueny S et al. Respir Med Res. 2020 Dec;79:100765. doi:

Why use telemedicine?

- Because it is the future?
- Because it is possible?
- Because it improves outcomes?



- Because makes care more efficient and cost-effective?
- Because patients prefer?
- .....

Is Telemonitoring really needed?
Initiation at the outpatient clinic; why (not)?

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Non-invasive home mechanical ventilation: Effectiveness and efficiency of an outpatient initiation protocol compared with the standard in-hospital model

Manel Luján, Amalia Moreno, Carmen Veigas, Concepción Montón, Xavier Pomares, Christian Domingo*

P: 16, mainly NMD
I: multiple sessions of OP daytime titration
C: in-hospital
O: =PaCO2 and adherence

Improved survival with an ambulatory model of non-invasive ventilation implementation in motor neuron disease

Nicole Sheers, David J. Berlowitz, Linda Rautela, Ian Batchelder, Kim Hopkinson & Mark E. Howard

P: 12 vs. 17 MND patients
I: Day model (4 hours session)
C: prior to day model
O: =PaCO2, ↓waiting time, better prognosis

Saves hospital days

Seems to be suitable for less complex patients only

Daytime ventilation

No supervision during sleep

Still frequent travels for disabled patients

Randomised trial of inpatient versus outpatient initiation of home mechanical ventilation in patients with nocturnal hypoventilation

Michelle Chatwin*, Annabel H. Nickol, Mary J. Morrell, Michael I. Polkey, Anita K. Simonds

P: 28, mainly slowly progr. NMD
I: OP daytime titration (1-3 sessions)
O: =PaCO2 and adherence (~4 h)

Home-Based Adaptation to Night-Time Non-Invasive Ventilation in Patients with Amyotrophic Lateral Sclerosis A Randomized Controlled Trial

Eleonora Volpato [1,2,*], Michele Vitacca [3], Luciana Ptacinsky [1], Agata Lax [1], Salvatore D'Ascenzo [1], Enrica Bertella [3], Mara Paneroni [3], Silvia Grilli [1] and Paolo Banfi [1]

P: 58 ALS patients
I: Home daytime titration (8 sessions)
C: OP daytime titration
O: =PaCO2 and adherence; SF-36 better

Patients experience regarding home mechanical ventilation in an outpatient setting

Carla Ribeiro [1], Cristina Jácome[2], Pedro Oliveira[3], Sara Conde[1], Wolfram Windisch[4], and Rui Nunes[5]

Is it really needed?
Home initiation without telemonitoring: Why (not)?

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Cost-effectiveness of outpatient versus inpatient non-invasive ventilation setup in obesity hypoventilation syndrome: the OPIP trial

Patrick Brian Murphy [1,2] Maxime Patout [3,4] Gill Arbane,[1] Swapna Mandal,[5] Georgios Kaltsakas,[1,2] Michael I Polkey [6] Mark Elliott,[7] Jean-François Muir,[8,9] Abdel Douiri,[10] David Parkin [11] Jean-Paul Janssens,[12] Jean Louis Pépin [13,14] Antoine Cuvelier,[15] Clare Flach,[10] Nicholas Hart[1,2]

Table 3 Cost-effectiveness analysis of inpatient and outpatient non-invasive ventilation setup in obesity hypoventilation syndrome

	UK		France	
	Difference (outpatient–inpatient) (n=47)	95% CI*	Difference (outpatient–inpatient) (n=28)	95% CI*
Fixed costs (£)	−209.82		360.46	
OHS healthcare utilisation costs	93.04	−160.87 to 346.96	317.32	55.95 to 578.69
Non-OHS healthcare utilisation costs	0.38	−92.38 to 93.14	22.40	−13.36 to 58.17
Total costs (£)	−116.40	−393.82 to 161.02	700.18	435.85 to 964.51
Seemingly unrelated regression	Difference (n=45)	95% CI†	Difference (n=28)	95% CI†
Total costs (£)	−140.64	−400.09 to 118.81	700.18	449.04 to 951.32
QALM	0.24	−0.34 to 0.81	−0.57	−1.50 to 0.37
SRI summary score‡	−1.37	−11.29 to 8.55	−1.49	−10.96 to 7.97

Of importance is that the **outpatient arm required more healthcare contacts** (outpatient hospital visits, telephone calls, hospital stays and emergency home visits) and **more frequent modification of ventilator settings** (ventilator setting changes post initial NIV setup: inpatient 56% vs outpatient 62%).

urphy P. et al. Thorax. dem0demisch an; Gronin(Aca):demZie-isch Aca.

European Respiratory Society Clinical Practice Guideline on Telemedicine in Home Mechanical Ventilation

Marieke L. Duiverman, Carla Ribeiro, Thomy Tonia, Anda Hazenberg, Stien van Meerloo, Hans van Meerloo, Stefanie Werther, Christopher Schöbel, Aylin Özsancak Ugurlu, Jean-Christian Borel, Christina Jácome, Maxime Patout, Karen Ward, Clare Williams, Begum Ergan, Chris Carlin, Patrick Murphy, Raphaela Dellacà, Michele Vitacca, Claudia Crimi

Telemedicine in home mechanical ventilation

ERS EUROPEAN RESPIRATORY SOCIETY

Visual summary of a clinical practice guideline

Eight evidence-based recommendations about remote health service delivery (telemedicine) in home mechanical ventilation

PICO questions | Narrative questions

1
Neuromuscular disease
Restrictive thoracic disease
Initiation of long term home mechanical ventilation with or without telemedicine
Conditional in favor of telemedicine
Certainty of evidence
Very low

2
Chronic obstructive pulmonary disease
Initiation of long term home mechanical ventilation with or without telemedicine
Conditional in favor of telemedicine
Certainty of evidence
Very low

3
Obesity hypoventilation syndrome
Initiation of home mechanical ventilation with or without telemedicine
Unable to recommend for or against
Certainty of evidence
None

Recommendation strength

A 2024 design by **Will Stahl-Timmins**

Read the full guideline:
http://bit.ly/link-goes-here

ERS

IT technology

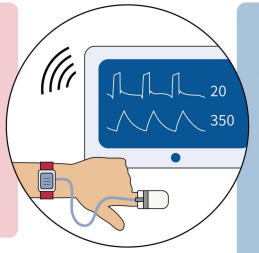
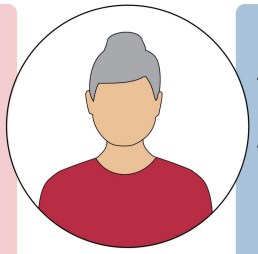
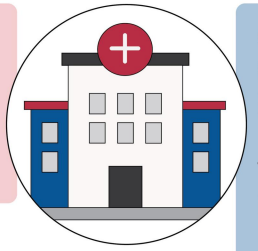
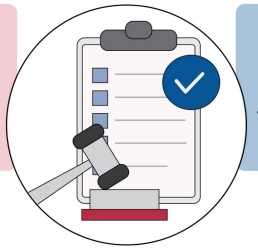
SES/ health literacy

Costs

Limited evidence

Legal Frameworks

Reimbursement

BARRIERS		FACILITATORS
Requirement for a fixed telephone line Communication issues (video/audio lag) Data extraction speed Manual data transmission Insufficient interoperability between e-health solutions	 TECHNOLOGY	Increased access Opportunities for rural areas User-friendly devices and platforms Improved audio and video quality No increase in internet costs Compatibility between monitoring devices and telemonitoring platforms
Patient costs (electricity) Limited access to broadband internet Patient's physical limitations Patient's decreased working memory Low socioeconomic status Low digital literacy Regional disparities in accessing ICT services Economic disadvantages	 PATIENT	Enhanced self-awareness Access to urgent calls Improved adherence and duration for NIV Active engagement in care Reduced travel distance Decreased visits to specialty physicians Decreased hospitalizations Flflexibility in therapy adjustments Cost savings
High start-up costs Limited large scale cost-effectiveness evidence Lack of transparency in the utilization of collected data	 INSTITUTE	Care efficiency Cost savings Effective education and communication with patients Training healthcare providers Evidence-based clinical protocols and guidelines
Inadequate or fragmented legal frameworks Lack of reimbursement schemes Absence of reimbursement mechanisms	 REGULATORY	Collaboration with regulatory agencies Simplification of privacy/security issues Adequate reimbursement Clear regulatory frameworks

Acces to care

Enhanced self awareness and management

Travel

Reduction in hospitalizations

Efficient

Flexibel

Personalized

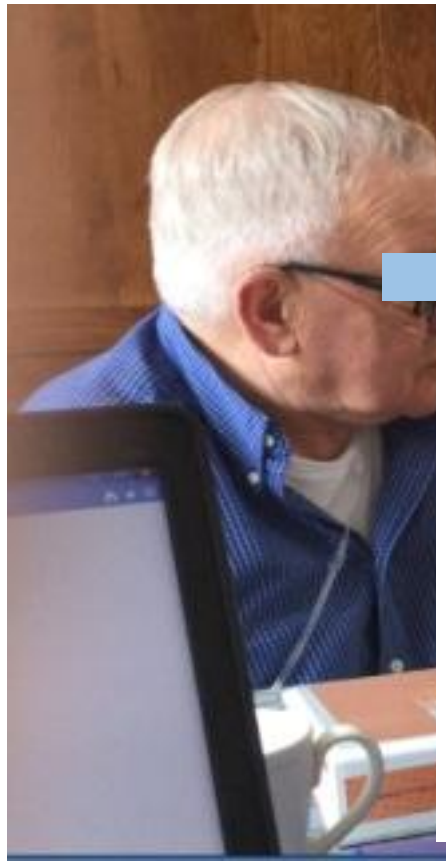
Patient frendly

Take home messages and future perspectives

HMV is a complex expertise treatment

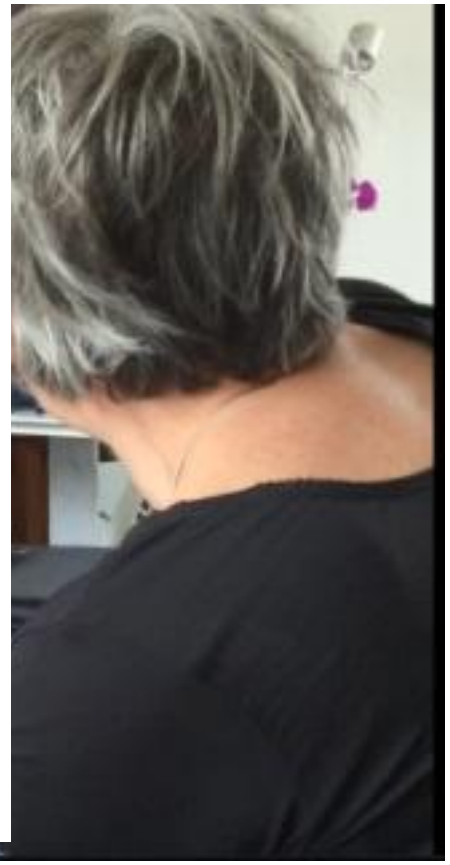
Diverse patient group with multiple needs

Initiation of HMV starts with proper intake and education



Why use telemedicine

- Multiple options
- Because it makes live easier
- Telemedicine is not the goal but a manner



There is a clear need for research into parameters to be monitored, protocols and useful algorithms during follow-up, and investigating critical outcomes like HRQoL, long-term critical events, cost-effectiveness and budget and organisational impact

Research is needed to find out what is the optimal set-up for HMV initiation

Patients prefer the home situation, but probably the how is more important than the where

To conclude

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- Telemedicine contributes to our goals in times of increased prevalence and shift of resources: *Value-based high-quality healthcare which is affordable, sustainable, accessible and personal for everyone*

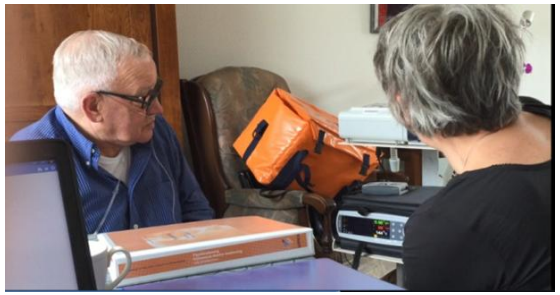
- TM increases patient (and family) empowerment and enables patient- and family-centred care. Patients prefer a mix.

- The benefits of telemedicine depend on its goal: it should not used as fancy add-on but to replace or prevent hospital care.

- Research is needed investigating which telemonitored parameters predict relevant outcomes

IMPORTANCE

The European Positive Airway Pressure & Home Ventilation Registry



ERS EUROPEAN RESPIRATORY SOCIETY every breath counts

ELF EUROPEAN LUNG FOUNDATION

IMPORTANCE

The European Positive Airway Pressure & Home Ventilation Registry

October 2025

Monthly Update

Manufacturers & Homecare providers Survey

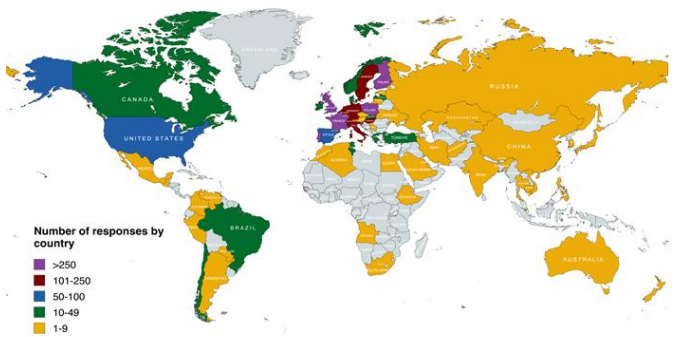
Reply & Share
https://www.surveymonkey.com/r/Z6B3CGB

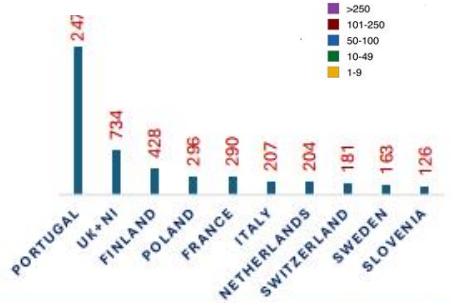
Closing date: December 31st

Patient Survey

6113 answers from 68 countries

88 from Spain
31 languages





Closing date: December 31st
Check our email for each country's numbers

https://www.surveymonkey.com/r/IMPORTANCEHMV

Tips for engaging patients

- ✓ Contact Patient associations
- ✓ Print & Display flyer on waiting rooms
- ✓ Engage with homecare providers
- ✓ Print & Display QR code in the back of your laptop

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IMPORTANCE

The European Positive Airway Pressure & Home Ventilation Registry

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