



X CONGRESSO REGIONALE CARD PUGLIA

16-17 aprile 2015

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TELEASSISTENZA E TELEMONITORAGGIO NELLA GESTIONE DELLE MALATTIE POLMONARI CRONICHE

DOTT. VITO PICCA

PNEUMOLOGIA-UTIR
OSPEDALE SAN PAOLO BARI

PREMESSA

“Lo spostamento di una parte sempre più cospicua di Assistenza Sanitaria dall’Ospedale al Territorio rappresenta da anni una questione centrale delle politiche sanitarie per via dei progressi intervenuti nelle metodologie di diagnosi e di cura...”.



Modello assistenziale di gestione dei Percorsi Diagnostico Terapeutici e di presa in carico dei soggetti con patologie croniche nel territorio della Puglia

“Progetto Nardino”, generato dall’ARES Puglia

Percorso di assistenza domiciliare e la rete pneumologica



Il documento è stato realizzato a cura di:

Associazione Scientifica Interdisciplinare per lo Studio delle Malattie Respiratorie **AIMAR**

AIPO
ASSOCIAZIONE ITALIANA PNEUMOLOGI OSPEDALIERI

S.I.M.E.R.
SOCIETÀ ITALIANA di MEDICINA RESPIRATORIA

SOCIETÀ ITALIANA DI MEDICINA GENERALE

Con il Patrocinio di:

Associazione Parlamentare per la tutela e la promozione del diritto alla prevenzione



Ministero della Sanità



agenas **ASPIR** ASSOCIAZIONE ITALIANA PER LO STUDIO DELLE MALATTIE RESPIRATORIE

E con l'approvazione di sostegno di:

GARD
Italy GRUPPO ITALIANO DI RICERCA E DIAGNOSTICA

TELEMEDICINA

□ La gestione della cronicità e la continuità dell'assistenza si avvalgono fortemente del contributo delle tecnologie innovative, come la **Telemedicina** per garantire l'attuazione di una modalità operativa a rete che integri i vari attori del percorso assistenziale per la presa in carico globale della persona con patologia cronica.

□ L'implementazione di strumenti di **Telemedicina** garantisce il collegamento tra centri di diverse specialità



PROFESSIONISTI SANITARI COINVOLTI NELLA GESTIONE DEL MALATO CON INSUFFICIENZA RESPIRATORIA (IR) A DOMICILIO

Medico referente ADI

Infermiere professionale "specializzato"

Terapista della riabilitazione respiratoria

Psicologo

Dietologo/Nutrizionista

TELEMEDICINA



OBIETTIVI DELLA TELEASSISTENZA

- Migliorare la qualità di vita dei pazienti
- Migliorare la qualità di vita dei familiari
- Aumentare il grado di sicurezza domiciliare del paziente
- Evitare le riospedalizzazioni
- Ridurre le visite ambulatoriali del medico di medicina generale
- Ridurre le visite ambulatoriali dello specialista pneumologo
- Ridurre gli spostamenti ed i costi ad essi correlati

CRITICITÀ DELLA TELEASSISTENZA

- Possibile perdita di contatto diretto fra medico e paziente
- Problematiche di sicurezza dei dati personali
- Difficoltà di accesso diretto alla rete assistenziale
- Scarsa interattività con i sistemi informatici
- Carenza di politiche omogenee sul territorio nazionale
- Carenza di dati definitivi sui vantaggi di sistema
- Non universalità dei sistemi dedicati
- Carenza di legislazione dedicata ai problemi della sicurezza sia del paziente che del prescrittore

EBM

TELEMEDICINA: campi di applicazione

Classificazione dei servizi di Telemedicina

TELEMEDICINA					
CLASSIFICAZIONE		AMBITO	PAZIENTI		RELAZIONE
TELEMEDICINA SPECIALISTICA	TELE VISITA	sanitario	Può essere rivolta a patologie acute, croniche, a situazioni di post- acuzie	Presenza attiva del Paziente	B2C B2B2C
	TELE CONSULTO			Assenza del Paziente	B2B
	TELE COOPERAZIONE SANITARIA			Presenza del Paziente, <i>in tempo reale</i>	B2B2C
TELE SALUTE		sanitario	E' prevalentemente rivolta a patologie croniche	Presenza attiva del Paziente	B2C B2B2C
TELE ASSISTENZA		socio- assistenziale	Può essere rivolta ad anziani e fragili e diversamente abili		

* B2B: individua la relazione tra medici

B2B2C: individua la relazione tra un medico e un paziente mediata attraverso un operatore sanitario

B2C: individua la relazione tra medico e paziente



TELEMEDICINA: campi di applicazione

TELEMEDICINA SPECIALISTICA				Monitoraggio	FINALITA'			RELAZIONE*				
	PAZIENTI	AMBITO			Prevenzione	Diagnosi	Cura	Riabilitazione	B2C B2B2C	B2B2C	B2B	
TELEMEDICINA DEI MEDICI SPECIALISTI	tutti	sanitario	TelePatologia (Laboratorio Biomedico e Anatomia Patologica)						Televisita	Telecooperazione sanitaria	Teleconsulto	
			TeleRadiologia									
			TeleCardiologia									
			TelePneumologia									
			TeleDermatologia									
			TeleOftalmologia									
			TelePsichiatria/TelePsicologia									
			TeleNeurologia									
			TeleChirurgia									
			TeleEmergenza									
			TeleRiabilitazione									
TelePediatria												
**												
TELEMEDICINA del TERRITORIO			TeleMMG									
			TelePLS									



TELEMEDICINA e Malattie Respiratorie

Il telemonitoraggio e la teleassistenza nelle strutture di Malattie dell'Apparato Respiratorio trovano spazio in categorie di pazienti affetti da:



- ✓ Asma
- ✓ **BPCO**
- ✓ **OSAS**
- ✓ **Patologie neuromuscolari**
- ✓ **Obesità ed ipoventilazione**
- ✓ Fibrosi Cistica

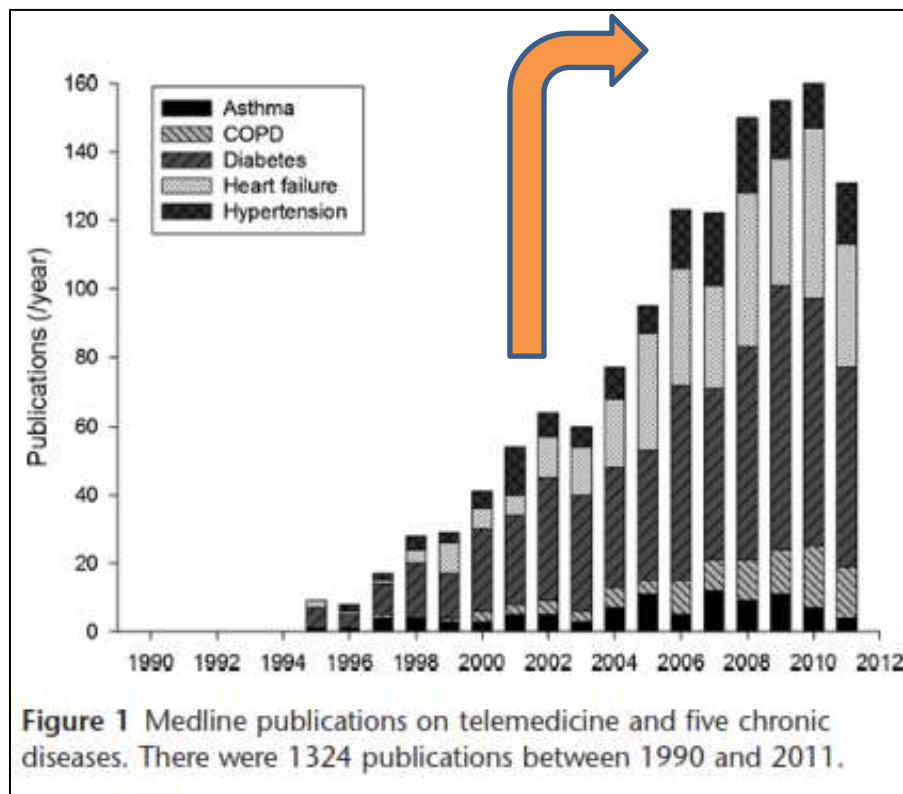
In ventilazione
meccanica e/o
ossigeno tx

Molti soggetti vengono monitorati da un punto di vista **dell'insufficienza respiratoria** , in particolare soggetti con ossigenoterapia a breve e lungo-termine e/o in ventilazione meccanica domiciliare

► Twenty years of telemedicine in chronic disease management – an evidence synthesis

Richard Wootton

Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway



Aumento di 5 volte del numero di pubblicazioni

► Twenty years of telemedicine in chronic disease management – an evidence synthesis

Richard Wootton

Norwegian Centre for Integrated Care and Telemedicine, Tromsø, Norway

Methods

The analysis was confined to RCTs in which one or more telemedicine interventions had been compared with a control group. It was restricted to patients with one of the following common chronic diseases: asthma, COPD, diabetes, heart failure, hypertension. **The telemedicine intervention could include** telephone support, telemonitoring, videoconferencing, etc. The “value” of the trial result was defined in terms of the outcomes specified by the investigators in each study individually. A synthesis was carried out by meta-regression.

► Twenty years of telemedicine in chronic disease management – an evidence synthesis

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Table 2 Identification and selection of studies

	Asthma	COPD	Diabetes	Heart failure	Hypertension	Total
Systematic reviews	1	5*	6	9	1	22
No of papers retrieved in initial search	21	20	106	75	42	264
No of papers included in the present study	20	11	39	57	14	141
No of interventions**	20	11	39	61	17	148

*one review concentrated on the organizational process, rather than health care outcomes⁹

**some trials had multiple experimental arms

APPENDIX

Table 3 Asthma RCTs

Study	No of subjects	Type of pt	Intervention	Telemonitoring?	Duration (months)	Outcomes	Result	Overall value of intervention
Bynum 2001	49	Asthma	Inhaler tuition ("telepharmacy counselling") given by videoconf on 3 occasions at schools; control received written instructions	N	1	Inhaler technique checklist	Sig improvement on technique in T/M group compared to control	POSITIVE
Chan 2007	120	Persistent asthma	Web-based interaction, including uploading of home videos of inhaler and PF technique	Y	12	Adherence; Inhaler technique; QoL; Asthma knowledge	Significantly better inhaler technique than control; better submission of asthma diary data	MILDLY POSITIVE
Chan 2003	10	Persistent asthma	Web-based education; web diary and uploading of data/videos	Y	6	Adherence; Symptoms; QoL; Asthma knowledge	No differences	NONE
Chatkin 2006	271	Persistent asthma	Telephone calls every 2 weeks from nurse educator	N	3	Adherence	Sig higher adherence in T/M group	POSITIVE
Clark 2007	808	Women with asthma	Telephone counselling (6 calls) from nurse educator	N	12	Nights with symptoms; Days off work/school; ED visits; GP visits	Sig better results in all outcomes for T/M group	POSITIVE
de Jongste 2009	151	Children with asthma	Airway inflammation monitor and symptom diary – results sent daily to monitoring centre	Y	7	Symptom-free days; Symptom scores; Medication dose; Lung function	No sig diff in symptom-free days between T/M and control group No diff in other outcomes	NONE
Donald 2008	71	Asthma	Weekly telephone calls from asthma educators	N	12	Hospital admissions; Various secondary outcomes	Sig fewer admissions in T/M group than control group; most secondary outcomes NS	POSITIVE
Gruffydd-Jones 2005	194	Asthma	Telephone review by asthma nurse every 6 months	N	12	ACQ; Asthma Control Questionnaire; QoL; Costs	No sig change in ACQ in T/M group compared to control; Sig improvement in QoL; Sig reduction in costs	MILDLY POSITIVE
Guendelman 2002	134	Asthma	Daily use of electronic diary (Health Buddy) for symptoms, peak flow readings etc with automatic transmission to nurse	Y	3	Limitations in activity; Symptoms; Absence from school; Yellow/Red zone PEF readings	Significant improvement in limitations-of-activity, and low PEF readings compared to control group	POSITIVE
Jan 2007	196	Persistent asthma	Electronic diary with upload of spirometer data via PC	Y	3	QoL; Asthma knowledge	Significantly improved symptoms and QoL in T/M group compared to control group	MILDLY POSITIVE
Khan 2004	310	Discharged from ED following asthma	Follow-up telephone consultation with asthma educator	N	1	Number of days of wheezing	No sig diff between T/M and control group	NONE
Kokubu 1999 & Kokubu 2000	Unclear	High-risk asthma	Telephone advice from nurse	Unclear	6	Hospitalization	Sig reduction in hospitalizations in T/M group compared with control	POSITIVE
Ostojic 2005	16	Moderate persistent asthma	Daily SMS transmission of PF data	Y	4	Symptoms; Lung function	Significantly better symptom scores compared to controls; sig better FEV1	MILDLY POSITIVE
Pinnock 2005	278	Symptomatic asthma	Telephone review. Control patients were offered FTF review	N	3	Whether patient reviewed within 3 months; Cost	Sig more T/M patients reviewed than control; NS difference in cost per consultation	POSITIVE
Prabhakaran 2010	120	Asthma	SMS monitoring and education	Y	3	ACT; Asthma Control Test; No of nebulizations; ED visits	No sig differences	NONE
Rasmussen 2005	300	Definite asthma	Electronic diary with upload of spirometer data either via telephone or via web Decision-support tool for doctors	Y	6	Symptoms; Asthma QoL; FEV1; Airway hyper-responsiveness	Significantly improved symptoms, QoL and FEV1 compared to groups treated by specialists or by GPs	POSITIVE

Table 3 Continued

Study	No of subjects	Type of pt	Intervention	Telemonitoring?	Duration (months)	Outcomes	Result	Overall value of intervention
van der Meer 2009	200	Doctor-diagnosed asthma	Daily FEV and symptoms reported via the web	Y	12	Asthma QoL; Asthma control	QoL sig better in T/M group compared with controls; Some control outcomes better	POSITIVE
Vollmer 2006	6948	Asthma	Three automated telephone calls (IVR system) approx 5 months apart	N	10	Healthcare utilization; Medication use; QoL	NS diffs	NONE
Willems 2008	109	Asthma	Electronic spirometer uploaded data every month	Y	12	QoL; Symptoms; Medication	NS differences	NONE
Xu 2010	121	Doctor-diagnosed asthma	One group had telephone/email support from asthma nurse. One group had IVR support	Y	6	Health resource utilization; QoL	NS diffs in QoL between groups; Lower costs in the two T/M groups (but not sig)	NONE

BPCO

Table 4 COPD RCTs

Study	No of subjects	Type of patient	Intervention	Telemonitoring?	Duration (months)	Outcomes	Result	Overall value of intervention
Bourbeau 2003	191	Hospitalized acutely at least once in previous year	Educational programme; monthly telephone calls to follow-up	N	12	Hospital admissions; Doctor visits; QoL; Lung function	Sig fewer hospitalizations in T/M group than controls; fewer ED visits; fewer unscheduled GP visits; improved QoL; no change in lung function	POSITIVE
Casas 2006	153	Previous hospitalization for at least 2 days (24% were on LTOT)	Educational programme; web-based call centre; Patient-initiated and scheduled telephone calls	N	12 (max)	Hospital admissions; Survival	Lower hospitalization rate; fewer admissions. No change in mortality	POSITIVE
de Toledo 2006	157	COPD	Nurse home visit with telemetry; web-based education	Sort of	12	Hospitalizations; ED visits; Mortality	Reduced hospitalizations	POSITIVE n.b. the patients didn't do telemonitoring themselves (it was the nurses during home visits)
Egan 2002	66	FEV < 50%	Case manager; regular telephone calls	N	1.5	QoL; Hospitalizations	Improved QoL. No change in re-admissions	MILDLY POSITIVE
Farrero 2001	122	LTOT	Monthly telephone call plus quarterly home nurse visits	N	12	ED visits; Hospitalizations; Costs; QoL	Sig fewer ED visits, hospitalizations in T/M group compared with controls; Lower costs; no diff in QoL	POSITIVE
Garcia-Aymerich 2007	113	COPD	Individualized care post-discharge. Six teletelephone calls from nurse specialist; Web-based call centre	N	12	Clinical status; QoL	NS differences in clinical status or QoL	NONE
Koff 2009	40	COPD stage 3 or 4	Educational programme; home monitoring (Health Buddy)	Y	3	QoL; Healthcare costs; Exacerbations	Sig improvement in QoL in T/M group compared to controls; costs were lower but NS	POSITIVE
Lewis 2010a, b	40	mod/severe COPD	Daily telemonitoring (Q&A, temp, oximetry)	Y	6	QoL; Hospital admissions; ER visits; Primary care contacts	NS diff in QoL between T/M and control; No diff in admissions or ER visits; Sig fewer primary care contacts	MILDLY POSITIVE
Nguyen 2008	50	COPD with mild impaired FEV1	Symptom and exercise data sent via PDA to nurse at time of exercise	Y	6	Dyspnoea; Exercise; QoL	NS diff between groups in primary outcome; Marginal improvement in exercise performance; NS diffs in other outcomes	NONE
Vitacca 2009	240 (110 with COPD)	COPD (LTOT)	Scheduled telephone calls with nurse; PSTN transmission of SpO2 data on request	On request	12	Hospitalizations; Exacerbations; GP calls; Costs	Sig fewer hospitalizations, exacerbations, GP visits in T/M group than controls; lower costs (but NS?)	POSITIVE
Wong 2005	60	COPD	Two follow-up telephone calls	N	3	Self-efficacy; Health centre use	Self-efficacy improved; No change in health centre use	MILDLY POSITIVE

Categorisation of the value of the intervention

Value	Criterion	Score
Positive	Primary outcome significantly better ($P < 0.05$) in the intervention group compared to control	5
Weakly positive	One or more secondary outcomes significantly better, if the primary outcome was not significantly better	4
No effect	No significant difference between intervention and control groups	3
Weakly negative	One or more secondary outcomes significantly worse, if the primary outcome was not significantly worse	2
Negative	Primary outcome significantly worse in the intervention group compared to control	1

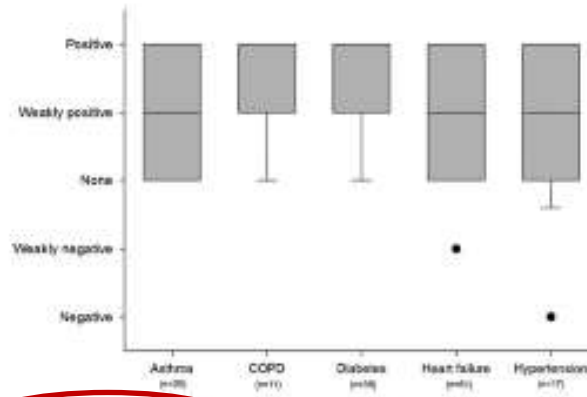


Figure 5 Disease type. The boundaries of the boxes indicate the 25th and 75th percentiles, and a line within the box marks the median. The whiskers (error bars) above and below the boxes indicate the 90th and 10th percentiles. Potential outliers are shown individually.

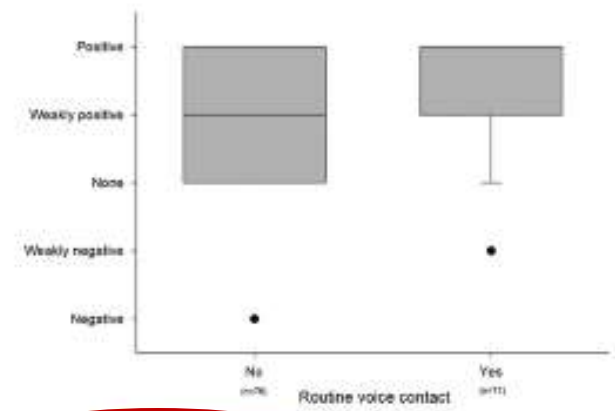


Figure 7 Routine voice contact. Box plot attributes as for Figure 5

The median effect in all five chronic diseases was weakly positive. In the individual diseases, the median effect was weakly positive for asthma, diabetes, heart failure and hypertension, and positive for COPD. The effect in different disease types is summarised in Figure 5. There were no significant differences between the different disease types (Kruskal Wallis $P = 0.96$).

The effect in trials using telemonitoring is shown in Figure 6; there was no significant difference in effect between interventions which employed telemonitoring and those which did not. The effect in trials using routine voice contact is shown in Figure 7; there was no significant difference in effect between interventions which employed routine voice contact and those which did not. The effect in trials using videoconferencing is shown in Figure 8; there was no significant difference in effect between interventions which employed videoconferencing and those which did not.

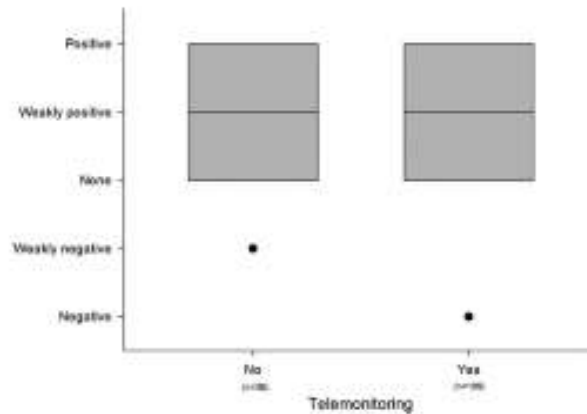


Figure 6 Telemonitoring. Box plot attributes as for Figure 5

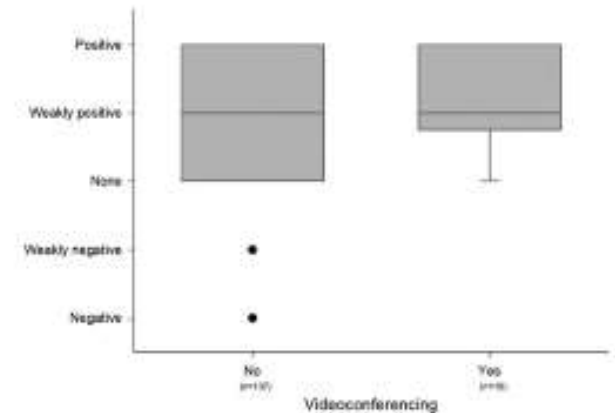


Figure 8 Videoconferencing. Box plot attributes as for Figure 5

REVIEW

► Twenty years of telemedicine in chronic disease management – an evidence synthesis

Richard Wootton

Manager Centre for Integrated Care and Innovations, Torbay, Devon

Table 8 Systematic reviews reporting pooled estimates of quantitative outcomes (“NS difference” indicates no difference between intervention and control groups at $P \geq 0.05$; “significant improvement” indicates that there were significantly better outcomes in the intervention group at $P < 0.05$)

Comment	Quality of life	Emergency department visits	Hospitalizations	Mortality	HbA _{1c}	Hypoglycaemia	Ketoacidosis	Qualitative conclusion
Asthma McLean 2010 ²¹	Significant improvement (but not a clinically important difference)	NS difference	Significant improvement					
COPD Bartoli 2009 ⁹	(review of the organizational process, rather than health care outcomes)							
Bolton 2010 ²²								Neutral
Jaana 2009 ¹⁸								Neutral
McLean 2011 ⁷	Significant improvement	Significant improvement	Significant improvement	NS difference				
Polsena 2010 ²³				NS difference				

Conclusioni:

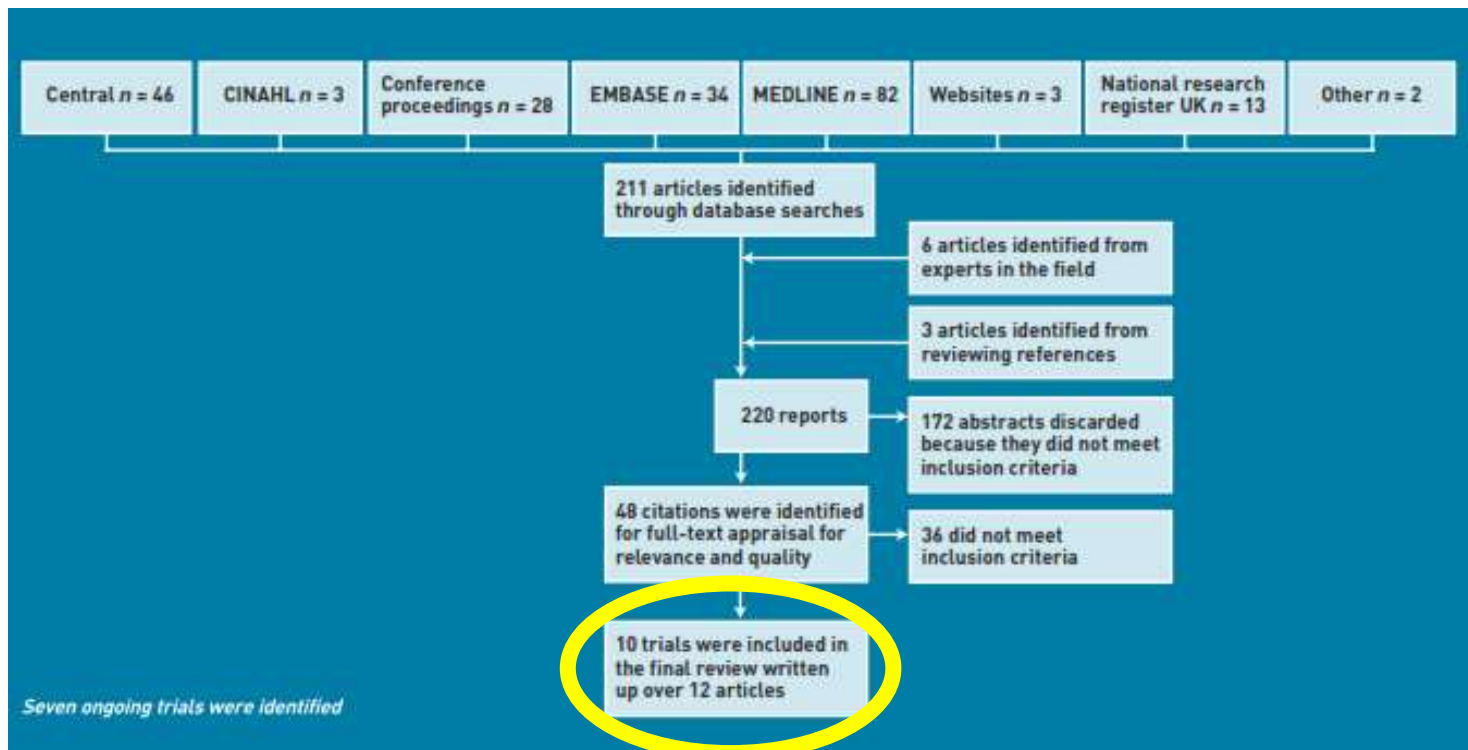
Le evidenze sulla telemedicina nella gestione delle malattie croniche sono nel complesso deboli e contraddittorie!

Research

Susannah McLean, Ulugbek Nurmatov, Joseph LY Liu, Claudia Pagliari, Josip Car and Aziz Sheikh

Telehealthcare for chronic obstructive pulmonary disease:

Cochrane Review and meta-analysis



10 STUDI RANDOMIZZATI per 1004 PZ

Research

Susannah McLean, Ulugbek Nurmatov, Joseph LY Liu, Claudia Pagliari, Josip Car and Aziz Sheikh

Telehealthcare for chronic obstructive pulmonary disease:

Cochrane Review and meta-analysis

Outcomes principali:

- ✓ Impatto sulla qualità di vita
- ✓ Impatto sulla mortalità
- ✓ Impatto sugli accessi al PS
- ✓ Impatto sulle ospedalizzazioni

Telehealthcare for chronic obstructive pulmonary disease:

Cochrane Review and meta-analysis

Table 1. Description of characteristics of included studies

Study, year	Number of participants, country, setting	Intervention studied	Main outcomes of interest
Bourbeau 2003 ²⁰	191 participants, Quebec, Canada, participants were recruited by hospital clinic and were recruited if they had been hospitalised at least once in the preceding year for an acute exacerbation of COPD	COPD self-management programme consisting of 1 hour/week teaching delivered to the patient at home for 7 weeks. Supervised by respiratory nurses. Followed by weekly telephone calls for 8 weeks. Then monthly telephone calls	Medication profile, spirometry, 6-minute walk test, dyspnoea measurements after exercise, quality of life as measured by the SGRQ, healthcare use (emergency department visits, hospitalisations, unscheduled and scheduled general practice, and specialist visits), costs and cost effectiveness
Casas 2006 ²¹ (Garcia-Aymerich 2007 ²²)	155 participants, Barcelona, Spain, Leuven, Belgium, patients were recruited from two tertiary hospitals immediately following discharge. All patients had been admitted for COPD exacerbation for more than 48 hours	Physical and social assessment and education were delivered with coordination by a case manager working between hospital and primary care. A web-based call centre facilitated coordination and weekly educational phone calls were made for the first month following discharge	Hospital re-admission, quality of life as measured by SGRQ, clinical features of current exacerbation, comorbid conditions, treatment, including concordance and observed skills for inhaling drugs and oxygen, healthcare use, and mortality
Chandler 1990 ²³	13 adult patients in Kentucky, US with COPD asthma , or both who were receiving theophylline from pulmonary medicine outpatients	The intervention group measured their theophylline level at home using a blood spot test, then phoned the clinic for advice on drug dosage	Lung function at each clinic visit, degree of dyspnoea at each clinic visit, night and day coughing, wheezing and breathlessness were measured on visual analogue scales; drug-related adverse events. Patients' health attitudes and beliefs were assessed using the Krantz Health Opinion Survey and the Multidimensional Health Locus of Control
de Toledo 2006 ²⁴	157 participants, in Spain all recruited during their tertiary hospital admission for an exacerbation of COPD	Videoteleconferencing with patients in their own homes supported by a web-based patient record which also supplied education to patients and professionals. Patients had 24-hour access to the multidisciplinary team via a call centre	Number of readmissions, number of visits to emergency department, mortality, acceptability to professionals, patterns of use, equipment, and communication costs
Finkelstein 2004, ²⁵ 2006 ²⁶	68 participants, in Minnesota, US an unspecified number of whom had COPD, congestive heart failure, or chronic wounds . The study took place between the central site and the home environment, where either the patient, or a carer, had to be physically and cognitively able to use the homecare equipment	Two intervention groups: 1) standard care plus videoconferencing; 2) standard care plus videoconferencing plus physiological monitoring, for example, spirometry for COPD	Termination from home care or loss of eligibility for home care, time to discharge to a higher level of care such as a nursing home or hospital, mortality, morbidity patient perception of telehealthcare (Telemedicine Perception Questionnaire), Patient Satisfaction Home Care Client Satisfaction Instrument, quality and clinical usefulness of virtual visits, patient use of services, cost for both subjects and service providers
Johnston 2000 ²⁷	Patients who had been referred for home health care because they suffered from a chronic condition in Sacramento, California, US via a health insurance organisation, 102 intervention patients, 110 control patients, 29 intervention patients had COPD , 19 control patients had COPD, the other patients had congestive heart failure, stroke, cancer, diabetes or needed wound care. All patients were projected to need two or more visits a week	Both groups received routine home health care with face-to-face visits and access to telephone contact. However, the intervention group also had a remote videoconferencing system with equipment for testing cardiopulmonary status. This could provide a virtual visit at any time of day or night	Use of services, costs for inpatient and outpatient services, visits to emergency departments, costs for pharmacy services, clinicians, emergency department visits, inpatient treatment, home healthcare costs and videoconferencing costs, patient compliance with medication regimen, patient knowledge about their illness, patient ability to move towards self care, patient satisfaction survey. Results for patients with COPD were not presented as separate from the other illnesses
Nguyen 2008 ²⁸	50 patients with moderate to severe COPD all of whom could use the internet in San Francisco and Seattle US were assigned to either internet-based dyspnoea management (intervention) or face-to-face dyspnoea management control. Patients were recruited from web and non-web sources, including chest clinic referrals	Internet based dyspnoea management focused on education, skills training and ongoing support and was delivered via a hand-held computer. The control intervention delivered the same content using face-to-face methods	Dyspnoea with activities of daily living and quality of life as measured with the Chronic Respiratory Questionnaire, exercise behaviour, and exercise performance, COPD exacerbations, self-efficacy and social support, and patient satisfaction

Telehealthcare for chronic obstructive pulmonary disease:

Cochrane Review and meta-analysis

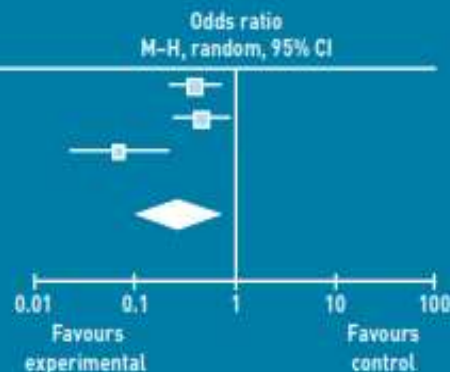
Table 1 continued. Description of characteristics of included studies

Study, year	Number of participants, country, setting	Intervention studied	Main outcomes of interest
Vitacca 2009 ¹¹	240 chronically ill respiratory patients, Lumezzane, Italy all of whom require home oxygen, some were on home mechanical ventilation, 101 had COPD, other reasons for respiratory failure included amyotrophic lateral sclerosis, restrictive chest disease, or other neuromuscular disease. Inclusion criteria: patient had had one hospitalisation for respiratory illness in the previous year. This study was conducted in the home setting	The intervention was a teleassistance programme based on continuous 24-hour on-call service. Patients had pulse oximetry and modem to transmit through the home telephone line. The teleassistance nurse was available by phone during working hours and out of hours the pulmonologist on duty was contacted	Reduction in hospitalisations, reduction in urgent GP calls, acute emergency department admissions, also costs after paying for set-up of equipment
Whiten 2007 ¹²	Patients with a diagnosis of COPD and/or congestive heart failure who were prescribed home-healthcare services by their insurer were recruited Michigan, US. Intervention group = 83 patients and control group = 78 patients. The study was conducted in the home setting	Intervention was a combination of traditional face-to-face home health care and virtual telemedicine visits	The Short Form 36, Outcome and Assessment Information Set and patient charts were used to collect outcome data. Qualitative work, in the form of telephone interviews, collected patient perceptions of home telecare services
Wang 2005 ¹³	80 patients with COPD were recruited from an acute care hospital setting, in Hong Kong. The intervention was post-discharge telephone follow-up	Intervention was post-discharge telephone follow-up provided by an experienced respiratory nurse. Two phone calls were made in the first 4 weeks after discharge from hospital	Self-efficacy (a person with high self efficacy feels more confident about engaging in activities and makes more effort to overcome challenges), as measured by the Chinese Self-Efficacy Scale, number of visits to emergency department, number of hospitalisations, and unscheduled visits by clinicians

COPD = chronic obstructive pulmonary disease; SGRQ = St Georges Respiratory Questionnaire

Study or subgroup	Experimental		Control		Weight	Odds ratio M-H, random (95% CI)
	Events	Total	Events	Total		
Bourbeau, 2003	39	96	60	95	37.7%	0.40 (0.22 to 0.71)
de Toledo, 2006	24	67	49	90	36.3%	0.47 (0.24 to 0.89)
Vitacca, 2009	23	57	40	44	26.0%	0.07 (0.02 to 0.21)
Total		220		229	100%	0.27 (0.11 to 0.66)
Total events	86		149			

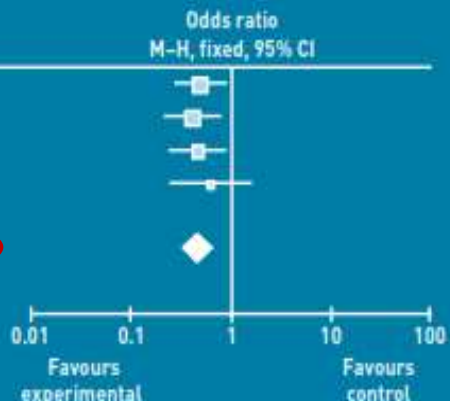
Heterogeneity: $I^2 = 0.49$; $\chi^2 = 8.80$, $df = 2$ ($P = 0.01$); $I^2 = 77\%$
 Test for overall effect: $Z = 2.84$ ($P = 0.005$)



Numbers of patients with one or more visits each to the emergency dept over 12 month period of study. Random effects analysis. M-H = Mantel Haenszel odds ratio.

Study or subgroup	Interventions		Control		Weight	Odds ratio M-H, fixed, (95% CI)
	Events	Total	Events	Total		
Bourbeau, 2003	31	96	48	95	32.9%	0.47 (0.26 to 0.84)
Casas, 2006	29	65	60	90	28.0%	0.40 (0.21 to 0.78)
de Toledo, 2006	31	67	59	90	27.2%	0.45 (0.24 to 0.86)
Vitacca, 2009	40	57	35	44	11.9%	0.61 (0.24 to 1.53)
Total		285		319	100%	0.46 (0.33 to 0.65)
Total events	131		202			

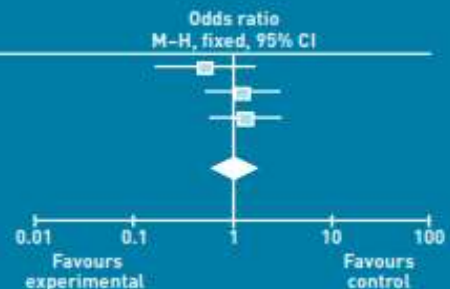
Heterogeneity: $\chi^2 = 0.50$, $df = 3$ ($P = 0.92$); $I^2 = 0\%$
 Test for overall effect: $Z = 4.49$ ($P < 0.001$)



Number of patients with one or more hospitalisations over 12 months. Fixed effects analysis. M-H = Mantel Haenszel odds ratio.

Study or subgroup	Intervention		Control		Weight	Odds ratio M-H, fixed (95% CI)
	Events	Total	Events	Total		
Bourbeau, 2003	5	96	9	95	30.3%	0.53 (0.17 to 1.63)
Casas, 2006	12	65	14	90	33.9%	1.23 (0.53 to 2.87)
de Toledo, 2006	14	67	15	90	35.8%	1.32 (0.59 to 2.97)
Total		228		275	100%	1.05 (0.63 to 1.75)
Total events	31		38			

Heterogeneity: $\chi^2 = 1.88$, $df = 2$ ($P = 0.39$); $I^2 = 0\%$
 Test for overall effect: $Z = 0.18$ ($P = 0.86$)



Deaths over 12 months in the control group and telehealthcare group of the studies. Fixed effects analysis. M-H = Mantel Haenszel odds ratio.

Research

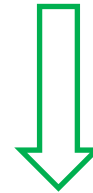
Susannah McLean, Ulugbek Nurmatov, Joseph LY Liu, Claudia Pagliari, Josip Car and Aziz Sheikh

Telehealthcare for chronic obstructive pulmonary disease:

Cochrane Review and meta-analysis

Risultati sugli Outcomes principali:

- ✓ Impatto sugli accessi al PS a 12 mesi
- ✓ Impatto sulle ospedalizzazioni a 12 mesi
- ✓ Impatto sulla qualità di vita a 12 mesi
- ✓ Impatto sulla mortalità a 12 mesi



Reliability of Telemedicine in the Diagnosis and Treatment of Sleep Apnea Syndrome

Maria Jesús Coma-del-Corral, MD, PhD,¹
 Maria Luz Alonso-Álvarez, MD, PhD,^{2,3} Marta Allende, RN,²
 José Cordero, MD, PhD,² Estrella Ordax, MD,²
 Fernando Masa, MD, PhD,³
 and Joaquín Terán-Santos, MD, PhD^{2,3}

Attendibilità di una titolazione con APAP e Poligrafo tramite teleconsulto su 40 pz con sospetto OSAS

- **Una videocamera** connessa mediante un IP-adress con W-LAN
- **Un software** all'interno del pc presente nel punto remoto che consenta di comunicare in tempo reale i dati del poligrafo tramite una porta seriale condivisa con il pc dell'unità centrale.

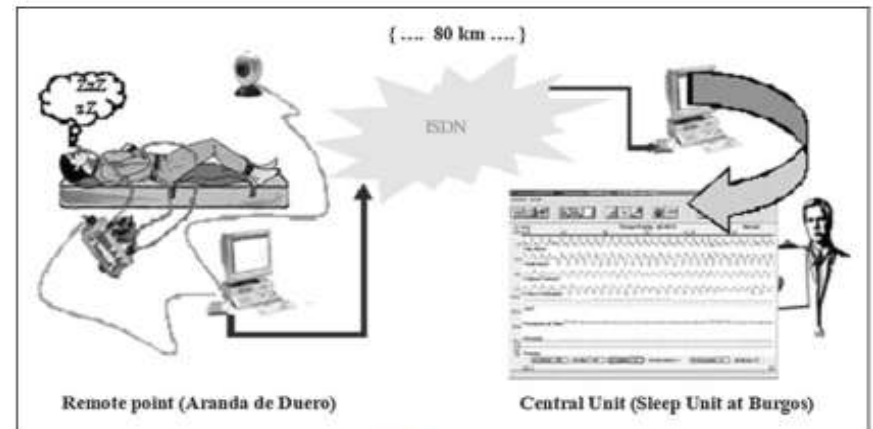


Fig. 1. Diagram of the telematic procedure. ISDN, integrated services digital network.

Table 1. Correlation Coefficients Obtained with the Data Transmitted in Real Time and the Data Stored in the Polygraph

	STORED	TRANSMITTED IN REAL TIME	CORRELATION COEFFICIENT (95% CI)
Total apneas/hypopneas	286 ± 167	286 ± 166	0.94 (0.88-0.96)
Apnea-Hypopnea Index	32.9 ± 21	36.5 ± 21	0.97 (0.95-0.98)
Time SO ₂ < 90%	19.9 ± 28	19.7 ± 28	0.98 (0.97-0.99)
Mean oxygen SO ₂ (%)	91.7 ± 3	99.7 ± 3	0.97 (0.94-0.98)

CI, confidence interval; SO₂, oxygen saturation.

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Table 2. Cost of Polysomnography in the Sleep Unit

	SLEEP UNIT	ANNUAL COST	COST PER STUDY
Staff (285 studies × 3 polygraphs/year = 855 polysomnographs)	1 doctor	42,887 €	50.16 €
	2 nurses: 2 × 24,420 €/year	48,840 €	57.12 €
Polysomnographs	3 × 30,000 €/5 years	18,000 €	21.05 €
Consumables (including repairs) [†]		17,484.75 €	20.45 €
Total		127,212 €	148.78 €[‡]

[‡]127.73 € excluding amortization of polysomnographs.

Table 3. Remote Study Costs

		COST PER STUDY
Sleep Unit costs (central)		
Staff (3 × 285 studies/polygraph) [†]	42,887 €	50.16 €
	2 ADN's × 24,420 €/year	57.12 €
Computer with software	2,587.96 €/5 years	0.53 €
Router with 4 ISDN ports	2,300 €/5 years	0.60 €
Charge for 3 ISDN lines	341.82 €/10 years	0.04 €
Annual maintenance	944.04 €/855 studies	1.10 €
Total Sleep Unit (central)		109.55
Remote point costs		
Staff (285 studies × polygraph) [†]	175 nurse: 4,884 €/year	17.14 €
Polygraph	6,000 €/5 years	4.21 €
Consumables and polygraph maintenance [†]		24.18 €
Computer with software and licenses	2,587.96 €/5 years	1.81 €
Router for 4 ISDN inputs	2,300 € (5 years)	1.59 €
IP camera	1,000 € (5 years)	0.70 €
IP videoconference equipment	4,617.96 € (10 years)	1.62 €
Total remote point		53.25 €
Communications cost ("usual" rates basic telephone network)		
Charge for 3 ISDN lines	341.82 €/2,850 studies	0.12 €
Annual maintenance	1,171.80 €/285 studies	4.11 €
Polygraph transmission (long distance)	8 h × 2 ISDN channels at reduced rate	36.45 €
Teleconsultations (long distance)	1 h × 3 ISDN lines	23.50 €
Total communications		64.18 €
Total costs		227.08 €[‡]

[†]The staff costs are for the year 2010, corresponding to gross pay, including employer's contribution to a public health service center.

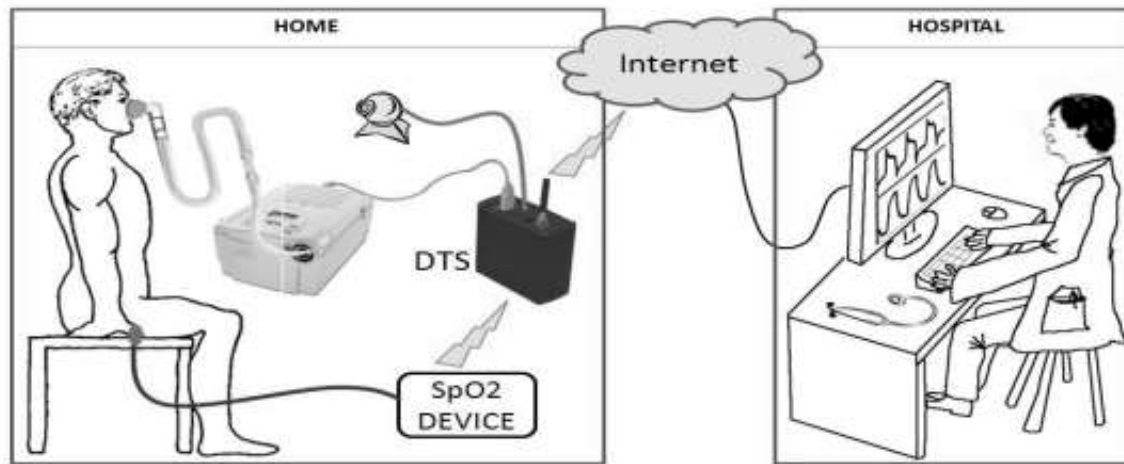
[‡]222.87 € excluding polygraph amortization.

ADN, Advanced Diploma Nurse; IP, Internet protocol; ISDN, integrated services digital network.

Aderenza al trattamento con CPAP:
 Teleconsultazione 75% vs Tradizionale 85%
 dopo 6 mesi di follow-up

An Improved Telemedicine System for Remote Titration and Optimization of Home Mechanical Ventilation.

Leonardo Govoni, Ramon Farré, Antonio Pedotti, Josep M. Montserrat and Raffaele L. Dellacà



❑ Realizzare un sistema in grado di monitorare il pattern respiratorio di paz. M.P.C. in ventilazione meccanica .

❑ I dati vengono trasferiti mediante un low-cost data transfert server (**DTS**)

❑ **2 pazienti . Test :30 min**

An Improved Telemedicine System for Remote Titration and Optimization of Home Mechanical Ventilation.

Leonardo Govoni, Ramon Farré, Antonio Pedotti, Josep M. Montserrat and Raffaele L. Dellacà

Manuscript received August 20, 2010.

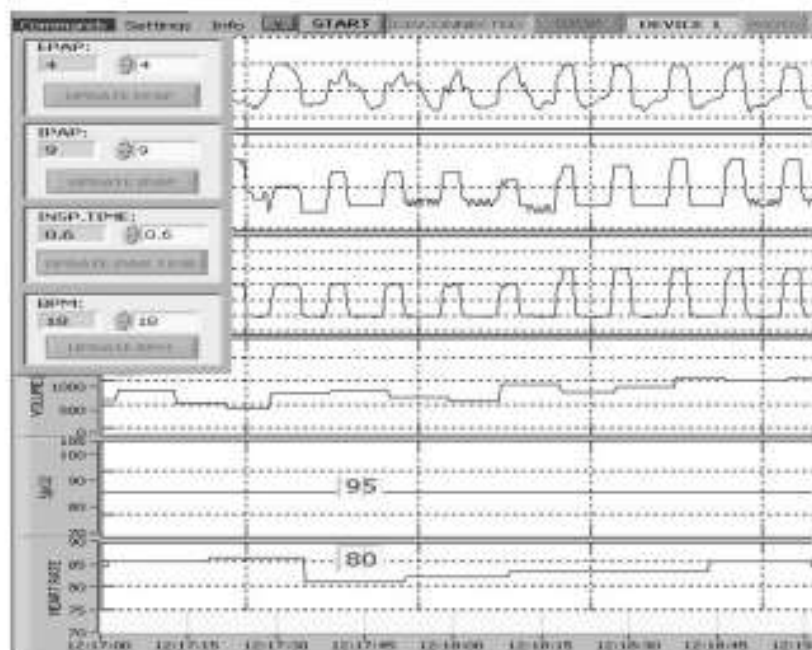


Fig. 3. Zoom on a screenshot of the software installed on the physician computer that allows to see the traces and to control the ventilator through the menu showed. It is possible to see in the upper right corner the button (PHOTO) used to send the request for a screenshot.

Fig. 1. Architecture scheme of the whole system. On the left is shown the patient at home, that can be seated or laying. The DTS is connected to his ventilator and to a webcam, and the SpO₂ device samples data from the patient. On the right is shown a physician at the hospital who is watching at the real-time data on his computer. The DTS and the computer are both connected to Internet.

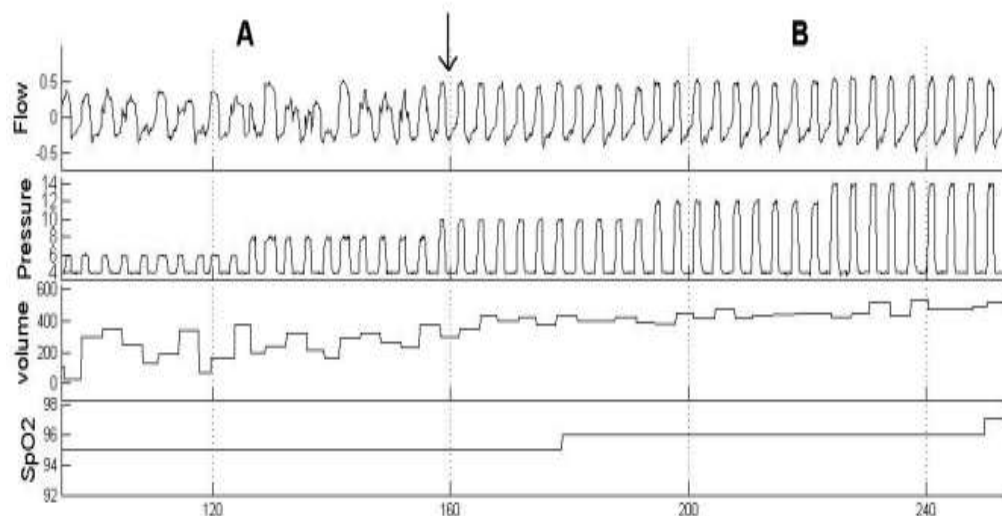


Fig. 2. In this graph the traces of Flow, Pressure, Volume and SpO₂ acquired during a functioning test are shown. It is possible to appreciate in the first phase (see flow and volume curves), indicated by the letter "A", an irregular breathing pattern, suggesting that the settings of the ventilator in this phase are not the right ones for this patient. In this phase SpO₂ is 95%. After some changing in pressure settings, it is possible to see in phase "B" that the breathing pattern is regularized and the value of SpO₂ is increased to 97%.

Telemedicina e Ventilazione Meccanica domiciliare

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7. Taylor, Eliasson A, Andrada T, Kristo D, Howard R (2006) The role of telemedicine in CPAP compliance for patients With obstructive sleep apnea syndrome. *Sleep Breath* 10(3): 132-138.
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Telemedicine system for the care of patients with neuromuscular disease and chronic respiratory failure

Carlos Zamarrón¹, Emilio Morete¹, Francisco González^{2,3}

Sono stati osservati a domicilio, mediante videoconferenza e telemonitoraggio, **3 pazienti** per **5 anni** affetti da patologia neuromuscolare severa complicata da insufficienza respiratoria in trattamento cronico con ventilazione meccanica:

- ✓ pz n°1 uomo di 68 aa affetto da distrofia scapolo-omerale in VM invasiva
- ✓ pz n°2 donna di 66 aa affetta da SLA in VM invasiva
- ✓ pz n° 3 uomo di 39 aa affetto da Distrofia di Duchenne in VM non invasiva per ipoventilazione notturna

Telemedicine system for the care of patients with neuromuscular disease and chronic respiratory failure

Carlos Zamarrón¹, Emilio Morete¹, Francisco González^{2,3}

User-Friendly System

Telemedicine system for the care of patients with neuromuscular disease and chronic respiratory failure

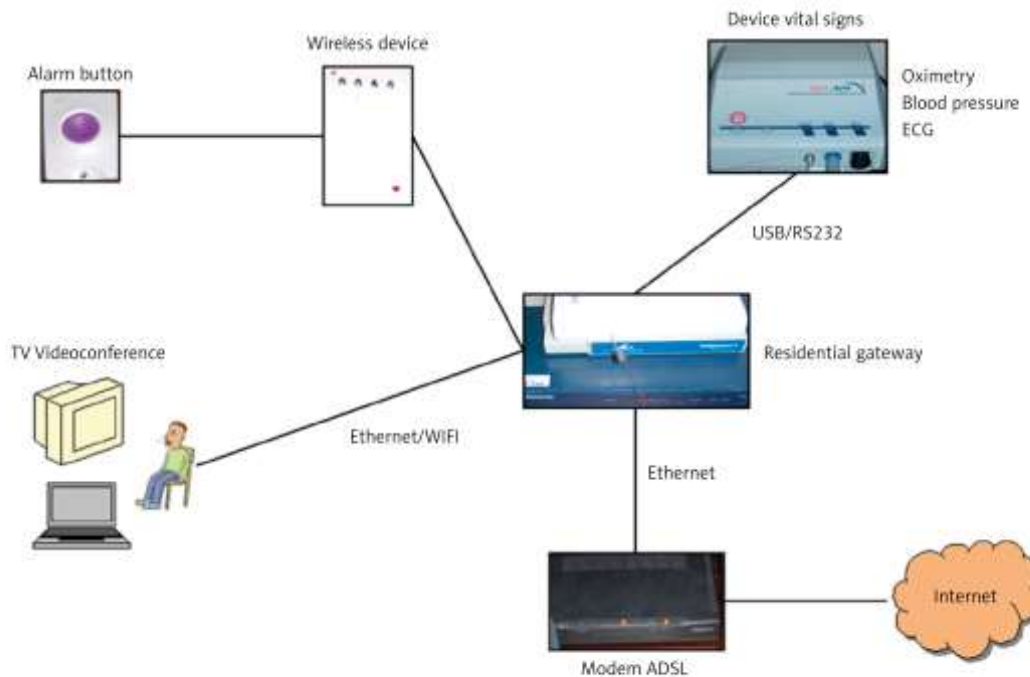


Figure 1. Telemonitoring system configuration in the patient's home

IN CONDIZIONI STABILI

OGNI 14 GIORNI :

- 5 MIN. MONITORAGGIO SAO2
- 3 RILEVAZIONI P.A.
- 1 CONSULTAZIONE IN VIDEOCONFERENZA
- 1 ECG (SE NECESSARIO)

IN FASE ACUTA

OGNI GIORNO

- TUTTE LE PROCEDURE ESEGUITE IN STABILITA' E FINO A STABILIZZAZIONE RAGGIUNTA
- SATURIMETRIA NOTTURNA IN VM
- POSSIBILITÀ DI VARIARE PARAMETRI DI VM CON L'AIUTO DEI CAREGIVERS

Telemedicine system for the care of patients with neuromuscular disease and chronic respiratory failure

Carlos Zamarrón¹, Emilio Morete¹, Francisco González^{2,3}

CLIENT SATISFACTION QUESTIONNAIRE(CSQ-8) in media ha mostrato un accettabile livello di soddisfazione da parte dei pazienti del programma di telemedicina.

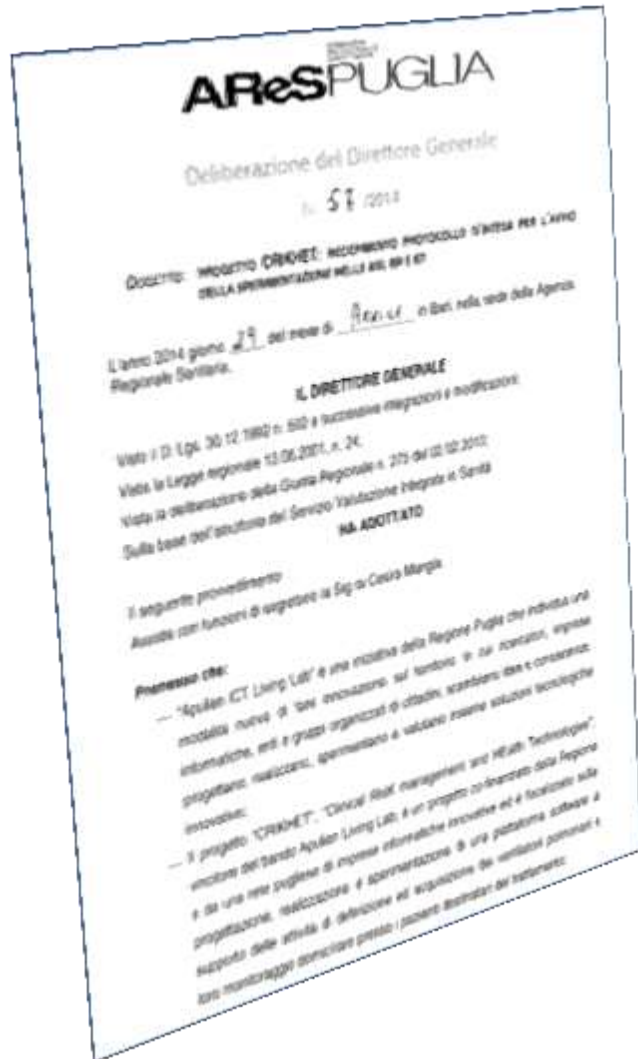
Le visite specialistiche di controllo a domicilio:

- ✓ **Pz n°1:** da 15 a 2
- ✓ **Pz n°2:** da 6 a 0
- ✓ **Pz n°3:** da 19 a 7

Gli accessi al PS:

- ✓ **Pz n°1:** da 3 a 0
- ✓ **Pz n°2:** da 5 a 0
- ✓ **Pz n°3:** da 10 a 3

Progetto "CRIKHET" Puglia



Progetto co-finanziato dalla **Regione Puglia** e da una **rete pugliese di imprese** formata da 4 aziende specializzate nello sviluppo di soluzioni informatiche innovative per la Pubblica Amministrazione e la Sanità, focalizzato sulla **PROGETTAZIONE, REALIZZAZIONE e SPERIMENTAZIONE** di una piattaforma software a supporto delle attività di definizione e acquisizione dei ventilatori polmonari e loro monitoraggio domiciliare presso i pazienti destinatari del trattamento

Progetto “CRIKHET” Puglia

ATTORI PRINCIPALI

Utenza Finale

- Ospedale Moscati (TA), AReS Puglia- ASL BAT e BR

Utenza Finale (di natura privata)

- Confindustria Puglia - Consulta Regionale Sanità Privata

Imprese Proponenti organizzate nella rete di imprese CRIKHET

- Openwork (capofila)
- Insoft2000
- Links MT
- Sincon

Laboratori di Ricerca

- DHITECH Scarl
- Politecnico di Bari



Rete di Imprese ICT Proponenti

Openwork (capofila)
Insoft2000
Links MT
Sincon

Laboratori di Ricerca coinvolti

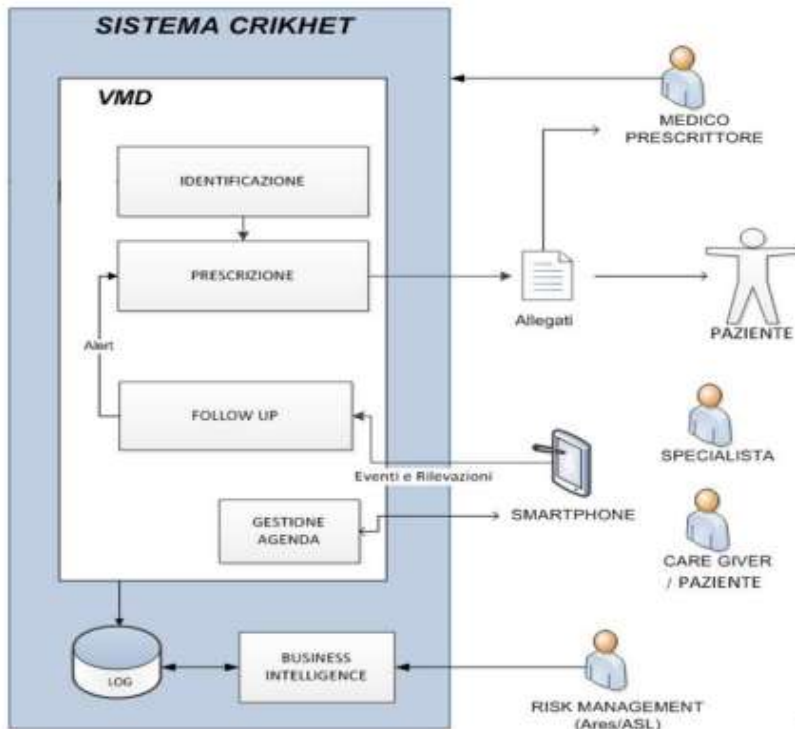
DHITECH Scarl
Politecnico di Bari



Progetto "CRIKHET" Puglia:

OUTCOME PRINCIPALE

crikhet
clinical e-governance



Ventilazione Meccanica Domiciliare

□ Informatizzazione

- *del processo gestionale di presa in carico del paziente,*
- *della prescrizione del dispositivo per la VMD*

□ Monitoraggio a distanza della VMD

TELEMEDICINA nella Pneumologia-UTIR S.Paolo Bari



**Progetto pilota d'integrazione Ospedale-
Territorio attraverso l'utilizzo di sistemi di
Telemedicina.**

**Miglioramento dell'appropriatezza prescrittiva
dell'ossigenoterapia domiciliare attraverso la
diffusione dell'uso dei concentratori di O2**

UOC Malattie Apparato Respiratorio UTIR

- Ospedale San Paolo, Bari -

Dirttore: Dr. Vito Picca

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2013

TELEMEDICINA nella Pneumologia-UTIR

S.Paolo Bari

11. Tipologia di Pazienti

Nello specifico, i sistemi di telemedicina si sono dimostrati assai rilevanti per efficacia e sicurezza in alcune tipologie di pazienti respiratori:

- a. **pazienti con insufficienza respiratoria ipercapnica (o globale) moderata-grave trattati con ventilazione meccanica invasiva (tramite tracheotomia) e non invasiva (tramite maschera nasale/facciale) con o senza O2 terapia aggiunta (BPCO severa, altre patologie polmonari diverse dalla BPCO che interessano il parenchima polmonare, i vasi, la parete toracica e che evolvono verso l'insufficienza respiratoria cronica ipercapnica, Sindrome obesità-ipoventilazione o Sindrome di Pickwick, polipatologie croniche sistemiche complicate e condizionanti grave disabilità, Scompenso cardiaco cronico, Altre rilevanti limitazioni funzionali e/o disabilità);**
- b. **pazienti con insufficienza respiratoria parziale ipossiémica moderata-grave trattati con O2 terapia (BPCO severa, Patologie polmonari croniche ipossiémizzanti diverse dalla BPCO, Scompenso cardiaco cronico, Polipatologie croniche sistemiche complicate da ipossiémia).**
- c. Allo stesso modo è possibile monitorare i pazienti affetti da sindrome delle apnee ostruttive morfeiche (OSAS).

TELEMEDICINA nella Pneumologia-UTIR

S.Paolo Bari



Progetto pilota d'integrazione Ospedale-Territorio attraverso l'utilizzo di sistemi di Telemedicina.

Miglioramento dell'appropriatezza prescrittiva dell'ossigenoterapia domiciliare attraverso la diffusione dell'uso dei concentratori di O₂

*UOC Malattie Apparato Respiratorio UTIR
- Ospedale San Paolo, Bari -
Direttore: Dr. Vito Picca*

Obiettivi principali:

- ✓ continuità di cura in regime di deospedalizzazione protetta
 - riduzione del numero di ri-ospedalizzazioni
 - ridurre i ricoveri impropri e dei costo correlati
 - Miglioramento dell'appropriatezza prescrittiva dell'ossigenoterapia domiciliare

Progetto di **TE**lemonitoraggio e **TeLE**consulto
nella gestione di pazienti con
Scompenso **C**ardiac**O** e
Malattie **P**olmonar**I CrO**niche

PROGETTO TELESCOPICO

2014

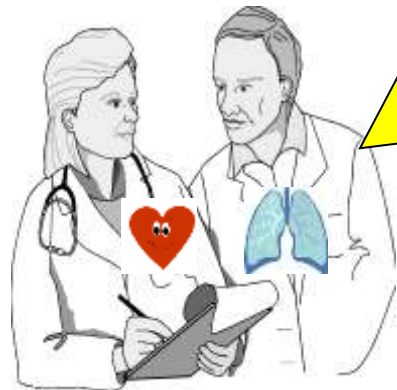
Progetto di **TE**lemonitoraggio e **TE**leconsulto
nella gestione di pazienti con
Scompenso **Cardiac**O e
Malattie **Polmonar**i **Cr**Oniche

PROGETTO TELESCOPICO

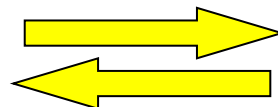
**Ottimizzazione della
gestione domiciliare
del paziente affetto
da patologie croni-
che**

mediante

**LA TELEMEDICINA
SPECIALISTICA**



**GLI
SPECIALISTI**



MMG



Obiettivi del progetto

Primari

- ✓ Ridurre le fasi di instabilità dei pazienti con Scompenso Cardiaco (SC) e con Malattie Polmonari croniche (MPC)
- ✓ Ridurre le re-ospedalizzazioni
- ✓ Ottimizzare la terapia: indicazioni e compliance

Secondari



- ✓ Favorire modelli di gestione integrata tra Ospedale e Territorio
- ✓ Formare figure infermieristiche specializzate
- ✓ Valutare il gradimento del MMG e dei pazienti per tale tipo di gestione (Telemedicina Specialistica)
- ✓ Valutare il rapporto costo/efficacia della TM

Disegno del Progetto

Il Progetto prevede

- ❑ La partecipazione di 5 U.O. di Cardiologia e Pneumologia della ASL BA e di 6 studi associati di MMG
- ❑ L'arruolamento di pazienti affetti da SC e MPC (BPCO)
- ❑ Il Follow-up attraverso telemonitoraggio e teleconsulto

Cardiologie-Pneumologie e MMG coinvolti

Cardiologia/Pneumologia Osp.San Paolo Bari Caldarola-Picca		Creanza – Amendoni – Baldassarre De Nicolò – Lisco – Macchione – Marraccoli Montereale – Savino – Stucci	Bari
		Matera F - Sorresso P - Modugno G Carbonara G - Castellano V - Cotugno A	Bitonto
Cardiologia/Pneumologia Osp. Bari Sud D'Agostino-Giorgio		Mioli – Lampugnani - Mariani	Bari
Cardiologia/Pneumologia Osp. Monopoli-Putignano Lopriore-Lombardi		Barletta – Campanella – Centrone – Lo Re	Monopoli
Cardiologia/Pneumologia Osp. Corato-Terlizzi Paolillo-Cerini		Caldarola-Di Terlizzi- Guastamacchia-Fracchiolla	Corato-Ruvo
Cardiologia/Pneumologia Osp. Altamura-Gravina Nuzzolese-Amendolara		Sciacovelli – Paccione - Vitti	Toritto

H@H hospital at home



Sensori e Gas medicali

Saturazione di ossigeno - SpO2

Range di Misura 30%; 100% (Accuratezza $\pm 1,5\%$)

Elettrocardiogramma - ECG

Configurazioni disponibili III o V Derivazioni + CHEST

Temperatura - T1 e T2

Range di Misura 20,0°; 44,0°C (Accuratezza $\pm 0,1^\circ\text{C}$)

Pressione - NIBP

Range di Misura per Adulto SYS: 25; 280 mmHg / DIA: 10 - 220 mmHg

Battiti cardiaci - HR

Range di Misura 30; 250 bpm

Ossigeno

Range Flusso 0; 5 l/min

Concentrazione di ossigeno $\geq 90\%$

Pressione di uscita + 0,3 bar

Vuoto Endocavitario

Pressione in ingresso - 0,8 bar

H@H hospital at home



Cronoprogramma

Valutazioni	Visita basale MMG	Visita basale Specialisti	Dopo 3 mesi MMG	Dopo 6 mesi MMG	Dopo 9 mesi MMG	Visita finale MMG	Visita finale Specialisti
Valutazione clinico anamnestica	X	X	X	X	X	X	X
Esame obiettivo	X	X	X	X	X	X	X
Misurazione PA-PC-BMI	X		X	X	X	X	
ECG	X		X	X	X	X	
Ecocardiogramma		X					X
SaO2	X		X	X	X	X	
EGA		X					X
Monitoraggio terapia	X	X	X	X	X	X	X
Esami di laboratorio	X		X	X	X	X	
Prove FR II Liv – Test Camm		X					X
Questionario rapporto MMG-Specialista	X	X				X	X
Questionario su alla qualità della vita_ Minnesota (Cardiologico), Cat-Test o Saint George (Pneumologico)		X					X

Accesso del medico al server

ASL BA
PROGETTO TELESCOPICO

H@H hospital at home

PIN

Italiano ▼

Login

A CURA DEL MMG

ANAGRAFE

Cognome _____ Nome _____

Sesso M F **Data di nascita**

Tel. _____

Medico Curante _____ Telefono _____

FATTORI DI RISCHIO

Etilismo

Fumo no si ex (> 12 mesi)

Familiarità per:

Morte Improvvisa certa? no si

Cardiopatia ischemica certa? no si

Cardiomiopatia dilatativa certa? no si

Cardiopatia ipertrofica certa? no si

Altro _____ certa? no si

A CURA DELLO SPECIALISTA

PATOLOGIE ASSOCIATE

Cardiopatia ischemica

IMA pregresso no si data ultimo

Angina

By-Pass data ultimo

PTCA data ultima

Aneurismectomia

Sincope

Aritmie ventricolari maggiori

Storia di FA, se barrata, tipo di FA: permanente persistente
 parossistica

Insufficienza renale cronica no si Dialisi no si

Iperensione, se barrata, ipertensione trattata?: no si

Patologie Vascolari

TIA Vasculopatia periferica no si Ictus, data

Altro _____

Cartella clinica del paziente telemonitorato

- Cerca...
- 656 1123
 - ROSSIELLO ANNA DOMENICA
 - bonasia arcangelo
 - amendolara giuseppe
 - LUCERA GIUSEPPE
 - riccardi giovannangelo
 - lorio vito
 - MARINELLI FRANCESCO
 - PALLADINO FRANCESCO ANTONIO
 - De santis Leonardo
 - Pasculli Michele

656 1123

- ANAGRAFICA
- VISITE CARDIOLOGICHE
- VISITE PNEUMOLOGICHE
- ES. STRUMENTALI
- REGISTRAZIONI ECG
- DEVICE LOGOUT

COGNOME 656	NOME 1123	RESIDENZA - ()	
DATA DI NASCITA 15/04/2015	LUOGO DI NASCITA 111	CODICE FISCALE 1111	POSTAZIONE N/D
ETA' 0 anni	SESSO Maschio	CATEGORIA Pediatico	BMI 90.09
ALTEZZA 111 cm	PESO 111 kg	BSA 1.85 m ²	ALLERGIE
GRUPPO Bitonto			

- Stampa cartella clinica
- Modifica dati paziente

Monitoraggio *real-life* del pz

HOH hospital at home IL PAZIENTE MARCO ROSSI EVIDENZIA UN ALLARME ATTIVO DOVUTO AL VALORE FUORI SOGLIA DI FR Data, Antonio Lamerina

MIULLI Acquevia delle fonti (BA)

CERCA	MEVIS	CHIAMATA
Carla Bianchi	9	
MARCO ROSSI	7	→
Marla Bruno	5	
Angela Tizio	4	+3
Mario Caio	3	
Aristide Sempronio	3	
Massimo Decimo	2	+2
Claudio Meridie	1	
Valerio Catena	0	+1
Francesca Bianchi	0	
Alessandro Tizioecalo	0	
Alessandro Tizioecalo	0	
Alessandro Tizioecalo	0	
Alessandro Tizioecalo	0	
Alessandro Tizioecalo	0	
Alessandro Tizioecalo	0	

MONITOR **AVVIO MISURA** **TREND** **CARTELLA M-1** **VENTILATORE** **INFUSIONE**

NOMINATIVO **SESSO** **ETÀ** **DIAGNOSI DI ENTRATA** **GR SANG**

MARCO ROSSI maschile 55 anni Paziente affetto da polmonite AB RH +

DATA DI NASCITA **POSTAZIONE** **CONTATTI**

28/01/1957 via dei ciclamini 10 - 73100 Altamura (BA) MARELLA - 334 56 72 331

CHIAMATA



SELEZIONE CANALE: 19:22:57 D1 / mV 19:23:09

D1	D2
D3	aVR
aVL	aVF
V1	FR
SpO ₂	CO ₂



SELEZIONE CANALE: 19:22:57 SpO₂ / % 19:23:09

D1	D2
D3	aVR
aVL	aVF
V1	FR
SpO ₂	CO ₂



SELEZIONE CANALE: 19:22:57 CO₂ / mmHg 19:23:09

D1	D2
D3	aVR
aVL	aVF
V1	FR
SpO ₂	CO ₂



Ultimo aggiornamento effettuato il 27/03/2012 alle ore 19:23:09

VELOCITÀ PLOTTAGGIO: 12.5 mm/s 25 mm/s 50 mm/s

HR:
102
bpm

SpO₂ PR
91 **102**
% bpm

FR:
19
apm

etCO₂ aWRR
30 **12**
mmHg rpm

NIBP
187/133
(151)
mmHg

TEMP 1 TEMP 2
38,7 --
°C °C

O₂ VAC
VENT INFUSIONE

1
2
3
4

Monitoraggio *real-life* del pz



...	CERCA	MEWS	MONITOR	AVVIO MISURA	TREND	CART CLINICA	VENTILATORE	POMPE INFUS	CHIAMA				
Alessandro Tizioeicao	145	CHIAMA	NOMINATIVO	DATA NSC	SESSO	EMOGR	CODICE FISCALE	DOMICILIO	CHIAMA				
Alessandro Tizioeicao	145	CHIAMA	ALESSANDRO TIZIOECAIO	27 NOV 1967	MASCHIO	AB RH +	CCFERG78J34L752K	via dei ciclamini 10 73100 Altamura (BA)					
Alessandro Tizioeicao	145	CHIAMA	ETÀ	TRACHEO	DIAGNOSI DI ENTRATA	INGRESSO	CONTATTARE						
Alessandro Tizioeicao	145	CHIAMA	48 ANNI	SI	Paziente affetto da macrobiosinucleogia preordinata in seguito all'assunzione di bostratti inorganici e perdita dei sensi.	23 MAGGIO 2011	MARIELLA 334 56 72 331						
Alessandro Tizioeicao	145	CHIAMA	HR	PR	SpO ₂	NIBP	MAP	FR	TEMP 1	TEMP 2	O ₂	VAC	AVPU
Alessandro Tizioeicao	145	CHIAMA	010	0,01	0,01	001	001	12 %	01	010	ON	OFF	
Alessandro Tizioeicao	145	CHIAMA	3		2	2	2	1	2	2			3
Alessandro Tizioeicao	145	CHIAMA	HR (bpm)	250 200 150 100 50									
Alessandro Tizioeicao	145	CHIAMA	TEMP (°C)	250 200 150 100 50	Ch1 Ch2								
Alessandro Tizioeicao	145	CHIAMA	NIBP (mmHg)	250 200 150 100 50	SYS DYA MAP								
Alessandro Tizioeicao	145	CHIAMA	SPO ₂ (%)	250 200 150 100 50									
Alessandro Tizioeicao	145	CHIAMA	FR (?)	250 200 150 100 50									
Alessandro Tizioeicao	145	CHIAMA	96 ore	18/06/2011	15:09	07:09	23:09	15:09	07:09	23:09	22/06/2011		

Monitoraggio *real-life* del pz

HOH hospital at home IL PAZIENTE MARCO ROSSI EVIDENZIA UN ALLARME ATTIVO DOVUTO AL VALORE FUORI SOGLIA DI FR Dott. Antonio Lamanna

11:54 gio 23 marzo

...	CERCA	MEWS	CHIAMATA
Carla Bianchi		9	
MARCO ROSSI		7	→
Maria Bruno		5	
Angela Tizio		4	+3
Mario Calò		3	
Aristide Sempronio		3	
Massimo Decimo		2	+2
Claudio Meridio		1	
Valerio Catana		0	+1
Francesco Bianchi		0	
Alessandro Tizioealo		0	
Alessandro Tizioealo		0	
Alessandro Tizioealo		0	
Alessandro Tizioealo		0	
Alessandro Tizioealo		0	
Alessandro Tizioealo		0	
Alessandro Tizioealo		0	

SINTESI **MONITOR** **AVVIO MISURA** **TREND** **CARTELLA M-1**

NOMINATIVO	SESSO	ETÀ	DIAGNOSI DI ENTRATA	GR SANG	
MARCO ROSSI	maschio	55 anni	Paziente affetto da polmonite	AB RH +	+30
DATA DI NASCITA	POSTAZIONE	CONTATTI			
28/01/1957	via dei ciclamini 10 - 73100 Altamura (BA)	MARIELLA - 334 56 72 331			

HR	PR	SpO ₂	NIBP	FR	TEMP 1	TEMP 2	MAP	AVPU	MEWS	O ₂
102	102	91	187/133	27	38	--	151	P	7	VAC
bpm	bpm	%	mmHg	apm	°C	°C	mmHg	18/03/2012 17:03		
1	1	1	1	2	0			2		

PROBLEMI ATTIVI	DATA INIZIO
Diabete	25/02/2012
Artrosi reumatica	14/01/2012
Polmonite	26/12/2011
Asma	23/12/2011
Bronchite asmatica cronica	15/11/2011
Artrosi reumatica	15/11/2011
Polmonite	16/09/2011
Asma	11/07/2011

VIDEO

CHIAMA

CONTROLLI SPECIALISTICI	DATA	REFERTO
Rx Torace	25/02/2012	Presenza di TET con estremità al terzo medio del nastro tracheale
TAC Cranica	14/01/2012	Ant que earchit estotas mostium eturio quiae sition que soloremquas
Rx Torace	26/12/2011	Disomogeneo opacamento in sede basale dx. Calcifica l'arco aortico

OSPEDALE GENERALE REGIONALE "F. MIULLI" ACQUAVIVA DELLE FONTI (BA)

1
2
3
4

Dati aggiornati al 31 Marzo 2015

Viene di seguito riportato il n° dei pazienti arruolati, ad oggi, da ciascun Gruppo di MMG

Gruppo MMG	Totale pazienti
Baria Via Quarto	27
Bari San Paolo - Piazza Europa	20
Bitonto	34
Monopoli	9
Ruvo di Puglia	29
Toritto	3

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«L'adozione della TELEMEDICINA inevitabilmente determina la riconfigurazione delle pratiche esistenti sul piano (*culturale e su quello*) delle relazioni sociali, organizzativo/tecnologiche.

Questi cambiamenti devono essere compresi e affrontati»



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**GRAZIE PER
L'ATTENZIONE!!!**



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