

Table 1

Characteristics of Studies Included in the Systematic Review Examining the Effects of Telehealth on Hospitalization Indicators

Study Authors	Country	Type of Study	Mean Participant Age in Years	Type of Disease	Purpose of Intervention	Type of Outcome
Wakefield et al. ^a	United States	RCT	69	HF	To support patients after discharge	H, LOS
Morguet et al. ^b	Germany	Obs	61	HF	To educate and monitor patients' body weight, blood pressure, and pulse rate daily	H, LOS
Scherr et al. ^c	Austria	RCT	66	HF	To measure patients' vital parameters (blood pressure, heart rate, body weight) and send them to the monitoring center	H, LOS
Dinesen et al. ^d	Denmark	RCT	68	COPD	To assess the patient's data, monitor the patient's disease, and provide advice to the patient	H
Bowles et al. ^e	United States	RCT	75	DB, HF	To support patient care; to monitor and instruct patients on self-care and disease management	H
Steventon et al. ^f	England	Obs	66	CHD, DB, HF, COPD	To ask patients about current health status and encourage patients to better manage their health conditions	H, LOS
Dang et al. ^g	United States	Obs	72	DB, HF, COPD	To monitor and exchange disease-related information between patients and caregivers	H, LOS
Steventon et al. ^h	England	RCT	70	DB, HF, COPD	To monitor and educate patients	H, LOS

Soran et al. ^l	United States	RCT	76	HF	To monitor and detect early signs and symptoms of heart failure	H, LOS
Ferrante et al. ^j	Argentina	RCT	65	HF	To improve patients' diet and treatment, promote exercise, and regularly monitor symptoms, weight, and edema	H
Jia et al. ^k	United States	Obs	68	DB	To answer questions about patients' symptoms and monitor daily information	H
Chen et al. ^l	Taiwan	Obs	63	HF	To educate and communicate (two-way) with patients on diet therapy, fluid restriction, and adverse drug effects	H, LOS
Weintraub et al. ^m	United States	RCT	69	HF	To assess variables important to patient care management	H, LOS
Steventon et al. ⁿ	England	RCT	75	SCN	To monitor functions, security and environments of patients	H, LOS
Giordano et al. ^o	Italy	RCT	57	HF	To telemonitor and tele-assist	H
Webb et al. ^p	United States	Obs	0.67	CoHD	To send echocardiography studies from the community hospital to the tertiary hospital to be interpreted	LOS
Dendale et al. ^q	Belgium	RCT	76	HF	To measure body weight, blood pressure, and heart rate and send them to the central computer	H
Domingo et al. ^r	Spain	Obs	66	HF	To record weight, heart rate, and blood pressure and send them to the healthcare staff supporting patients via a	H, LOS

					dedicated web application	
Schofield et al. ^s	United States	Obs	67	HF	To report and update patient symptoms and vital signs	H, LOS
Koehler et al. ^t	Germany	RCT	67	HF	To do daily self-assessment of blood pressure, body weight, and electrocardiography and send the results to the central server	H, LOS
Cleland et al. ^u	Holland Germany United Kingdom	RCT	67	HF	To assess patients' symptoms and medication; to measure weight, blood pressure, heart rate, and heart rhythm and communicate the information	LOS
Dansky et al. ^v	United States	RCT	77	HF	To take measurements of blood pressure, pulse, weight; to allow two-way, synchronous interaction between nurse and patient	H

Abbreviations: DB, diabetes; CHD, coronary heart disease; CoHD, congenital heart disease; COPD, chronic obstructive pulmonary disease; H, hospitalization; HF, heart failure; LOS, length of stay; Obs, observational; RCT, randomized controlled trial; SCN, social care needs.

Note: All studies in this table had usual care as the control.

^a Wakefield, B., M. Ward, et al. "Evaluation of Home Telehealth Following Hospitalization for Heart Failure: A Randomized Trial." *Telemedicine and e-Health* 14, no. 8 (2008): 753–61.

^b Morguet, A., P. Kühnelt, et al. "Impact of Telemedical Care and Monitoring on Morbidity in Mild to Moderate Chronic Heart Failure." *Cardiology* 111, no. 2 (2008): 134–39.

^c Scherr, D., P. Kastner, et al. "Effect of Home-based Telemonitoring Using Mobile Phone Technology on the Outcome of Heart Failure Patients after an Episode of Acute Decompensation: Randomized Controlled Trial." *Journal of Medical Internet Research* 11, no. 3 (2009): e34.

^d Dinesen, B., L. Haesum, et al. "Using Preventive Home Monitoring to Reduce Hospital Admission Rates and Reduce Costs: A Case Study of Telehealth among Chronic Obstructive Pulmonary Disease Patients." *Journal of Telemedicine and Telecare* 18, no. 4 (2012): 221–25.

^e Bowles, K., D. Holland, and D. A. Horowitz. "A Comparison of In-person Home Care, Home Care with Telephone Contact and Home Care with Telemonitoring for Disease Management." *Journal of Telemedicine and Telecare* 15, no. 7 (2009): 344–50.

^f Steventon, A., S. Tunkel, et al. "Effect of Telephone Health Coaching (Birmingham OwnHealth) on Hospital Use and Associated Costs: Cohort Study with Matched Controls." *British Medical Journal* 347 (2013): f4585.

- ^g Dang, S., F. Ma, et al. "Differential Resource Utilization Benefits with Internet-based Care Coordination in Elderly Veterans with Chronic Diseases Associated with High Resource Utilization." *Telemedicine and e-Health* 12, no. 1 (2006): 14–23.
- ^h Steventon, A., M. Bardsley, et al. "Effect of Telehealth on Use of Secondary Care and Mortality: Findings from the Whole System Demonstrator Cluster Randomised Trial." *British Medical Journal* 344 (2012): e3874.
- ⁱ Soran, O., I. Pina, et al. "A Randomized Clinical Trial of the Clinical Effects of Enhanced Heart Failure Monitoring Using a Computer-based Telephonic Monitoring System in Older Minorities and Women." *Journal of Cardiac Failure* 14, no. 9 (2008): 711–17.
- ^j Ferrante, D., S. Varini, et al. "Long-Term Results after a Telephone Intervention in Chronic Heart Failure: DIAL (Randomized Trial of Phone Intervention in Chronic Heart Failure) Follow-up." *Journal of the American College of Cardiology* 56, no. 5 (2010): 372–78.
- ^k Jia, H., H. Feng, et al. "A Longitudinal Study of Health Service Utilization for Diabetes Patients in a Care Coordination Home-Telehealth Programme." *Journal of Telemedicine and Telecare* 17, no. 3 (2011): 123–26.
- ^l Chen, Y., Y. Ho, et al. "Assessment of the Clinical Outcomes and Cost-effectiveness of the Management of Systolic Heart Failure in Chinese Patients Using a Home-based Intervention." *Journal of International Medical Research* 38, no. 1 (2010): 242–52.
- ^m Weintraub, A., D. Gregory, et al. "A Multicenter Randomized Controlled Evaluation of Automated Home Monitoring and Telephonic Disease Management in Patients Recently Hospitalized for Congestive Heart Failure: The SPAN-CHF II Trial." *Journal of Cardiac Failure* 16, no. 4 (2010): 285–92.
- ⁿ Steventon, A., M. Bardsley, et al. "Effect of Telecare on Use of Health and Social Care Services: Findings from the Whole Systems Demonstrator Cluster Randomised Trial." *Age and Ageing* 42, no. 4 (2013): 501–8.
- ^o Giordano, A., S. Scalvini, et al. "Multicenter Randomised Trial on Home-based Telemanagement to Prevent Hospital Readmission of Patients with Chronic Heart Failure." *International Journal of Cardiology* 131, no. 2 (2009): 192–99.
- ^p Webb, C., C. Waugh, et al. "Impact of Telemedicine on Hospital Transport, Length of Stay, and Medical Outcomes in Infants with Suspected Heart Disease: A Multicenter Study." *Journal of the American Society of Echocardiography* 26 no. 9 (2013): 1090–98.
- ^q Dendale, P., G. De Keulenaer, et al. "Effect of a Telemonitoring-facilitated Collaboration between General Practitioner and Heart Failure Clinic on Mortality and Rehospitalization Rates in Severe Heart Failure: The TEMA-HF 1 (TElemonitoring in the MAnagement of Heart Failure) Study." *European Journal of Heart Failure* 14, no. 3 (2012): 333–40.
- ^r Domingo, M., J. Lupon, et al. "Noninvasive Remote Telemonitoring for Ambulatory Patients with Heart Failure: Effect on Number of Hospitalizations, Days in Hospital, and Quality of Life. CARME (CAtalan Remote Management Evaluation) Study." *Revista Espanola de Cardiologia* 64, no. 4 (2011): 277–85.
- ^s Schofield, R., S. Kline, et al. "Early Outcomes of a Care Coordination-enhanced Telehome Care Program for Elderly Veterans with Chronic Heart Failure." *Telemedicine and e-Health* 11, no. 1 (2005): 20–27.
- ^t Koehler, F., S. Winkler, et al. "Impact of Remote Telemedical Management on Mortality and Hospitalizations in Ambulatory Patients with Chronic Heart Failure: The Telemedical Interventional Monitoring in Heart Failure Study." *Circulation* 123, no. 17 (2011): 1873–80.
- ^u Cleland, J., A. Louis, et al. "Noninvasive Home Telemonitoring for Patients with Heart Failure at High Risk of Recurrent Admission and Death: The Trans-European Network–Home-Care Management System (TEN-HMS) Study." *Journal of the American College of Cardiology* 45, no. 10 (2005): 1654–64.
- ^v Dansky, K., J. Vasey, and K. Bowles. "Impact of Telehealth on Clinical Outcomes in Patients with Heart Failure." *Clinical Nursing Research* 17, no. 3 (2008): 182–99.