



# Interaktiv telemedicin vid långvariga sjukdomstillstånd

Snabböversikt 2018:15

## Sammanfattning

Användningen av telekommunikation ökar i sjukvården. Denna översikt sammanfattar den vetenskapliga litteraturen om användningen vid kroniska/långvariga sjukdomstillstånd. En litteratursökning fann totalt 91 systematiska översikter. Generellt hade behandlingarna positiv effekt jämfört med inaktiv kontrollgrupp, och vanligen jämförbar effekt med andra behandlingsmetoder.

## Introduktion

Med ökad tillgång till Internet och telekommunikation, inte minst smartmobiler, ökar intresset för att även använda detta i vården. Detta brukar kallas telemedicin eller eHealth (electronic health) / mHealth (mobile health), på svenska ehälsa. Det är angeläget att implementeringen inom ehälsa är evidensbaserad, så att nya tekniska landvinningar kan utnyttjas på bästa sätt, både vad gäller nytta, risk, etik och kostnadseffektivitet.

Man kan gruppera telemedicin i tre kategorier:

1. Fjärrmonitorering: kliniska data överförs från patienten till sjukvården mer eller mindre automatiskt. Patienten får feedback antingen automatiskt eller via personlig kontakt.
2. Lagra och skicka: kliniska data överförs för analys vid senare tillfälle. Exempel är teleradiologi där röntgenbilder skickas för senare granskning.
3. Interaktiv telemedicin: patient och vårdpersonal kommunicerar, antingen i realtid eller via exempelvis textmeddelanden eller appar. Kliniska data kan även överföras via monitoreringsutrustning eller digitalkamera.

Denna översikt begränsas till kategori 3 där patient och vårdpersonal kommunicerar i mer eller mindre realtid, interaktiv telemedicin. Även Internetbaserade utbildnings- och behandlingsprogram inkluderas.

Syftet med denna översikt var att sammanställa vetenskaplig litteratur som utvärderar effekt, acceptabilitet och kostnadseffektivitet av telemedicin som alternativ eller

tillägg till sedvanlig vård. Urvalskriterier var patienter med kroniska sjukdomar där regelbunden kontakt med sjukvården är etablerad.

## Material och metoder

### PICO

- P – patienter med kronisk sjukdom och regelbunden vårdkontakt i ett västvärldsscenario
- I – telemedicin (utöver ren telefoni) i direkt kontakt används som del i vårdutbudet
- C – telemedicin används inte som del i vårdutbudet
- O – utfall av kronisk sjukdom, hälsoinsatser/egenvård, kostnadseffektivitet, patientutvärdering

### Inklusionskriterier

Systematisk översikt  
Publicerad senaste fem åren  
Språk: engelska

### Exklusionskriterier

Ren telefonkommunikation ingår som stor del av vårdutbudet i studierna  
Kontext (sjukvårdssystem, samhälle) inte överförbar till svenska förhållanden

### Litteratursökning

Sökningar gjordes 2018-02-06 i databaserna PubMed och Cochrane Library.  
Begränsningar gjordes till engelska språket, publicerad senaste fem åren, systematisk översikt.

### Kvalitetsgranskning

De ingående studierna har inte kvalitetsgranskats.

## Resultat

Litteratursökningen genererade totalt 290 träffar varav 10 från Cochrane Library. Alla artikelsammanfattningar lästes. Av dessa bedömdes att 91 artiklar var relevanta. Dessa lästes i fulltext och ingår i svaret. Övriga artiklar exkluderades på grund av att de inte var relevanta.

De ingående systematiska översikterna refereras i Tabell 1-5 grupperade efter följande ämnesområden: *Generella översikter, Diabetes – fetma, Psykiatri och mental hälsa, Kroniska luftvägssjukdomar* och *Övriga tillstånd*. De använda effektmåten är

högst varierande och anges i tabellerna. En ungefärlig bedömning av interventionens effekt i respektive översikt har markerats med pilar, så kallad Effect Direction Plot. Vanligen är effekten given i relation till inaktiv kontrollgrupp. Särskilt läsvärda översikter är markerade med **fetstilat** författarnamn.

## Systematiska översikter

Teckenförklaring: ▲ : huvudsakligen positiv effekt av interventionen; ► : varken positiv eller negativ effekt; ▼ : negativ effekt av interventionen

RCT = randomiserad kontrollerad studie

**Table 1. Generella översikter. 13 översikter som var och en behandlar flera olika sjukdomstillstånd.**













Author, country	Year	Number of included studies	Intervention	Main findings	Effect summary
<b>Marcolino, Brazil [1]</b>	2018	23 systematic reviews on 371 studies	mHealth interventions on chronic and noncommunicable diseases	Positive results for chronic disease management, improving chronic pulmonary disease and heart failure symptoms, reducing deaths and hospitalization and improving quality of life, and improving glycemic control in diabetes patients and BP in hypertensive patients. SMS reminders improved attendance rates and improved adherence to tuberculosis and HIV therapy in some scenarios	▲
Rathbone, UK [2]	2017	27	Mobile apps and SMS for self-guided care in smoking cessation, physical activity, medication adherence, weight management, depression, anxiety, stress, schizophrenia	Improvement in physical health and significant reductions of anxiety, stress, and depression	▲
Slater, Australia [3]	2017	12 qualitative studies	Users experiences of mHealth technologies for chronic disease in young people	End users perceived benefits in the use of mHealth technology, although with challenges in design which should be a collaborative process	▲
Whitehead, Australia [4]	2016	9	Assess the effectiveness of mobile phone and tablet apps in self-management of key symptoms of long-term conditions	Diabetes, chronic lung disease and cardiovascular disease reviewed. 6/9 studies showed significant improvements	▲
Yasmin, Germany [5]	2016	14	Impact of mobile phone texts and/or voice messages in high-, middle and low-income countries	Improvement on adherence with taking medicine, following diet and physical activity advice, as well as improvement in clinical parameters like HbA1c, blood glucose, blood cholesterol and control of blood pressure and asthma	▲
<b>Flodgren, Norway [6]</b>	2015	93 RCT	Effectiveness, acceptability and costs of interactive telemedicine as an alternative to, or in addition to, usual care	Telemedicine leads to similar health outcomes as face-to-face contact in heart failure, improves the control of blood glucose diabetes. Cost and acceptability by patients and healthcare professionals is not clear due to limited data	►

Hamine, USA [7]	2015	107	Impact of mHealth on treatment adherence and patient outcomes in diabetes, cardiovascular and chronic lung disease	SMS most common with usability, feasibility, and acceptability or patient preferences generally high. Significant improvements were observed in half of the randomized trials	
Jones, USA [8]	2014	11 systematic reviews	Using mobile phones and SMS to deliver self-management interventions for chronic conditions	Text messaging improved adherence to appointments and antiretroviral therapy, short-term smoking quit rates, and selected clinical and behavioral outcomes	
Beatty, Australia [9]	2013	24	Internet self-help interventions for distress and disease outcomes in adults with physical health complaints	Interventions were efficacious in improving disease symptoms and control, with the exception of diabetes. Some evidence for efficacy in reducing health-related distress for irritable bowel syndrome, tinnitus, and in one heterogeneous chronic illness population	
Edirippulige, Australia [10]	2013	22	Telemedicine use in long-term care facilities	There is evidence for feasibility and stakeholder satisfaction in using telemedicine in a number of clinical specialities, but with low quality of evidence	
Kuijpers, Netherlands [11]	2013	19	Interactive Web-based interventions for patient empowerment and physical activity in chronic diseases	Some positive effects on patient empowerment but mainly mixed results	
McDermott, UK [12]	2013	11 RCT	Using computers to deliver patient self-management programs to patients with chronic illness	Interventions were effective when compared to no intervention, but not superior to standard programs	
Paul, Australia [13]	2013	36	Web-based approaches for improving psychosocial outcomes in patients with common chronic conditions	A consistent significant effect in favour of the web-based intervention was identified in 20 studies, particularly those using cognitive behavioural therapy for depression	

**Table 2. Diabetes –fetma. 32 översikter behandlar diabetes och/eller fetma. Behandlingsresultaten var mestadels positiva.**














Author, country	Year	Number of included studies	Intervention	Main findings	Effect summary
Bonoto, Brazil [14]	2017	13	Mobile apps to assist diabetes patients in treatment	Improvement of control of HbA1c. Apps seem to strengthen the perception of self-care by contributing better information and health education	
Faruque, Canada [15]	2017	111 RCT	Different methods of telemedicine for the management of diabetes compared with usual care	Significant but modest reductions in HbA1C	
Fu, USA [16]	2017	20	Usability and clinical effectiveness of apps developed for adults with type 2 diabetes	Limited evidence of diabetes apps improving glycemic control, despite meager satisfaction ratings and major usability problems	
Greenwood, USA [17]	2017	25 reviews	Technology-enabled diabetes self-management solutions	Significant improvement in HbA1c	

Heitkemper, USA [18]	2017	13	eHealth diabetes self-management education on glycemic control in a medically underserved population	Small but significant improvement in HbA1c at 6 months, with diminishing effect at 12 months	
Joiner, USA [19]	2017	22	Lifestyle interventions in type 2 diabetes delivered via eHealth, measured as weight loss	Average weight loss 4% across all interventions, similar to interventions with face-to-face behavioral support	
<b>Kitsiou, USA [20]</b>	2017	15 systematic reviews	mHealth interventions for patients with diabetes	mHealth interventions improve glycemic control by as much as 0.8%	
Lee, Malaysia [21]	2017	107 RCT	Telemedicine strategies on control in type 2 diabetes patients	Telemedicine reduced haemoglobin A1c (HbA1c) by 0.43%. Teleconsultation was the most effective strategy	
Wang, USA [22]	2017	24	Text messaging, smartphones, portable monitoring devices in diabetes and obesity	64% positive on weight loss, 50% positive on diabetes	
Arambepola, UK [23]	2016	15	Change of lifestyle behavior delivered via automated SMS in patients with type 2 diabetes	Clinically important and statistically significant effect on glycemic control, but not on weight loss	
Christensen, Denmark [24]	2016	4 RCT	Game-based interventions on HbA1c, diabetes-related knowledge, and physical outcomes in rehabilitation of diabetes patients	No effect on HbA1c. Superior to controls in improving health-related quality of life, muscle strength, and balance. No difference in diabetes-related knowledge	
Cui, China [25]	2016	13	mHealth apps on HbA1c, blood glucose, blood pressure, serum lipids, and body weight in type 2 diabetes	Reduction in HbA1c, no change in blood pressure, serum lipids or body weight	
David, Saudi Arabia [26]	2016	21	mHealth applications for diabetes management	Most studies (76%) reported positive outcomes after use of the mobile health applications	
Hadjiconstantinou, UK [27]	2016	16 RCT	Web-based interventions that aim to improve well-being in people with type 2 diabetes	No significant improvements in depression or distress were found	
Hou, UK [28]	2016	14	Mobile phone apps in glycemic control (HbA1c) in the self-management of diabetes	All type 2 diabetes (but not type 1) studies reported a reduction in HbA1c, younger patients more likely to benefit	
Lau, Singapore [29]	2016	10	Internet-based self-monitoring interventions in improving maternal and neonatal outcomes among perinatal diabetic women	Significantly decreased maternal HbA1c levels and the cesarean delivery rate compared to usual care	
Porter, Australia [30]	2016	9	Mobile electronic devices to record food or nutrient intake on diabetes control and nutrition outcomes	There was significantly greater improvement in HbA1c in the intervention group compared to the control group in four of the nine studies	
Deacon, Australia [31]	2015	13	Mobile technology (SMS, apps and other) for youth with type 1 diabetes	Only three studies showed a significant decrease in HbA1c, other outcome measures were mixed	
Garabedian, USA [32]	2015	20	mHealth interventions for diabetes	The majority showed improvement on primary endpoints, such as HbA1c. mHealth technologies that interacted with both patients and providers were more likely to be effective	
Theng, Singapore [33]	2015	10	Games, gamification, and virtual environments for diabetes self-management	Videogames appeared to be helpful tools for education in some interventions	

Allen, USA [34]	2014	39	Technology-assisted interventions for weight loss or weight maintenance among overweight and obese adults	Particularly those that incorporate text messaging or e-mail, may be effective for producing weight loss	
Cotter, USA [35]	2014	9	Internet based interventions to promote lifestyle modification among adults with type 2 diabetes	Viable option for facilitating diabetes self-management	
Greenwood, USA [36]	2014	15	Key elements of structured self-monitoring of blood glucose identified as essential for improving HbA1c	Interventions using more of the elements patient/provider education, structured profile, goals, data used to modify treatment, interactive communication and shared decision making are associated with an improvement in HbA1c	
Harrison, UK [37]	2014	26	Patient satisfaction and perceptions regarding devices such as SMS reminder systems, online educational programs, and clinician-patient electronic communication	High satisfaction with almost all devices, correlated strongly with ease of use and improved diabetes management.	
Pal, UK [38]	2014	16 RCT	Computer based diabetes self-management interventions on health status, cardiovascular risk factors, and quality of life of adults with type 2 diabetes	Small but significant effect on HbA1c, larger in mobile phone-based interventions. No improvement in depression, quality of life, blood pressure, serum lipids or weight	
Peterson, USA [39]	2014	14	mHealth tools effect on glycemic control	11 of 14 articles reported success with their intervention	
Saffari, Iran [40]	2014	10 RCT	Education through mobile textmessaging on glycemic control	HbA1c was reduced significantly in experimental groups compared to control groups, but with publication bias	
Zhai, China [41]	2014	47	Clinical effectiveness and cost effectiveness of telemedicine approaches on glycemic control in type 2 diabetes	Small, but significant, decrease in HbA1c following intervention, compared to conventional treatment, although with evidence of publication bias	
Connelly, UK [42]	2013	15	Technology to promote physical activity in people with type 2 diabetes	Increase in physical activity, only 9/15 significant. The use of a personal coach, logbooks and reinforcement strategies such as phone calls and email counselling were found to be effective components	
El-Gayar, USA [43]	2013	104	IT for improving self-management for adults with diabetes	74% of studies showed some form of added benefit and 13% showed no-significant value	
Pal, UK [44]	2013	16 RCT	Health status and health-related quality of life of computer-based diabetes self-management interventions for adults with type 2 diabetes mellitus	Small benefits on glycaemic control, larger in the mobile phone subgroup. No evidence to show benefits in other biological outcomes or any cognitive, behavioural or emotional outcomes	
van Vugt, Netherlands [45]	2013	13 RCT	Behavioral change techniques in online self-management programs for type 2 diabetes	Linked to positive outcomes for health behavior change, psychological well-being, or clinical parameters	









**Table 3. Psykiatri och mental hälsa. 25 översikter med vanligen positiva behandlingsresultat.**

Author, country	Year	Number of included studies	Intervention	Main findings	Effect summary
Ahern, Ireland [46]	2018	29	Online cognitive behavioral therapy (oCBT) as an accessible treatment solution for depression, including economic evaluations	Therapist-supported oCBT was equivalent to face-to-face CBT at improving depressive symptoms and superior to treatment-as-usual, waitlist control, and attention control. oCBT tended to show greater costs with greater benefits in the short term, relative to comparator treatments	▲
Hoermann, Australia [47]	2017	24	Feasibility and effectiveness of online one-on-one mental health interventions that use text-based synchronous chat	Significant and sustained improvements in mental health outcomes following synchronous text-based intervention, and post treatment improvement equivalent but not superior to treatment as usual	▲
Hollis, UK [48]	2017	21 reviews	Investigation of the effectiveness of digital health interventions for mental health problems in children and young people	Some support for the clinical benefit, particularly computerised cognitive behavioural therapy for depression and anxiety	▲
Josephine, Germany [49]	2017	19 RCT	Internet- and mobile-based interventions targeting adults with diagnosed depression	Significant reduction of depression symptoms at the end of treatment and at follow-up assessments when compared to waitlist conditions	▲
Mogoase, Romania [50]	2017	37 RCT	Internet-based cognitive behavioral therapy for depression	A qualitative review showed that the method is relatively efficacious, at least in the short term, but clearly underinvestigated	▲
Sztejn, USA [51]	2017	14 RCT	Internet delivered cognitive behavioural therapy	Immediate and sustained reduction in depressive symptoms	▲
Ebert, Germany [52]	2016	18	Deterioration in Internet-based guided self-help for adult depression	Reduced risk for a symptom deterioration compared to controls	▲
Fish, UK [53]	2016	10	Mindfulness interventions delivered through technological platforms without facilitator involvement	Some studies reported effects on stress, depression and anxiety, although with methodological flaws	▶
Lee, UK [54]	2016	4	Web-based interventions for prevention and treatment of mood disorders in the perinatal period	All studies reported an improvement in maternal mood following intervention	▲
Olthuis, Canada [55]	2016	19 RCT	Distance-delivered, guided treatment (via telephone, Internet, mail, videoconferencing) for posttraumatic stress disorder	Significant improvement compared to waiting list, but not compared to face-to-face interventions	▲
Seyffert, USA [56]	2016	15	Internet-delivered cognitive behavioral therapy for insomnia	Sleep efficiency improved and insomnia severity index was reduced. No significant differences between internet-delivered and in-person therapy	▲
Spijkerman, Netherlands [57]	2016	15 RCT	Online mindfulness-based interventions	Small to moderate effects on mental health, but lower than in face-to-face studies	▲













Bolton, Australia [58]	2015	11	Telepsychology for the management of Posttraumatic Stress Disorder (PTSD)	Significant medium to large short-term improvements in depression, generalised anxiety and posttraumatic stress, although equivalence to face-to-face psychotherapy could not be determined	
Charova, Australia [59]	2015	11	Managing and treating depression in the context of chronic physical illness	Significant short-term improvements in depression severity, quality of life, problem-solving skills, functional ability, anxiety and pain-related cognitions	
Ebert, Germany [60]	2015	13 RCT	Computer- and internet-based cognitive behavioral treatments for anxiety and depression in children and adolescents	Superiority over controls for interventions targeting anxiety, depression as well as for transdiagnostic interventions	
Fisher, USA [61]	2015	8 RCT	Psychological therapies delivered remotely for management of chronic pain in children and adolescents	Benefit in reducing the intensity or severity of pain after treatment across conditions, although with considerable uncertainty around these estimates	
Ye, China [62]	2015	9	Cognitive behavioral therapy for insomnia on anxiety and depression	Positive effects on both anxiety and depression	
Davies, UK [63]	2014	17	Web-based and computer-delivered interventions to improve depression, anxiety, psychological distress, and stress in university students	Improvement of anxiety, depression and stress compared with inactive controls, no difference to active controls	
Eccleston, UK [64]	2014	15	Psychological therapies delivered via the Internet for adults with chronic pain	Headache: reduced pain but not in depression or anxiety. Other conditions: improved pain and disability, small effect for depression and anxiety.	
Loucas, UK [65]	2014	20	Cognitive behavioural interventions in eating disorders	Uncertain value	
Saddichha, Australia [66]	2014	43	Internet-based interventions for depression and anxiety	Effective in reducing symptomatology for both depression and anxiety, further enhanced by the guidance of a therapist	
van Ballegooijen, Netherlands [67]	2014	24	Adherence to guided Internet-based cognitive behavioural therapy compared with face-to-face treatment	Significantly higher completion rate, both 80% and 100%, in face-to-face than in Internet treatment	
van Beugen, Netherlands [68]	2014	23 RCT	Internet-based cognitive behavioral therapy for chronic somatic conditions	Improvement with small effect sizes for generic psychological outcomes, occasionally larger effects for disease-specific physical outcomes. More consistent effects on depression with longer treatment duration	
Ye, Canada [69]	2014	7	Internet-based anxiety and depression interventions in children, youth and young adults	Reduction of anxiety symptom severity and increased remission rate but no difference in depression symptom severity. No statistical difference in anxiety or depression symptoms between internet-based intervention and face-to-face intervention or usual care	
Mayo-Wilson, UK [70]	2013	101 RCT	Media-delivered behavioural and cognitive behavioural therapies for anxiety disorders in adults	Medium effects compared with no intervention, small effects favoured face-to-face therapy. Intervention was associated with greater response than with no treatment and was not significantly inferior to face-to-face therapy. Some benefit for depression, mental-health related disability, quality of life and dropout	




**Table 4. Kroniska luftvägssjukdomar. 8 översikter med växlande resultat.**

Author, country	Year	Number of included studies	Intervention	Main findings	Effect summary
Hui, UK [71]	2017	12 RCT	Which information and communication technology features implemented in mobile apps to support asthma self-management are associated with adoption, adherence to usage, and clinical effectiveness	Improved asthma control in meta-analysis of a subset. Mobile apps and other selfmonitoring features are an effective option for supporting selfmanagement	
McCabe, Ireland [72]	2017	3 RCT	Digital interventions supporting self-management in COPD patients	Improved self-management and quality of life with smart technology compared with face-to-face or written support, although short-term and high risk of bias	
Kew, UK [73]	2016	6 RCT	Conducting asthma check-ups remotely versus usual face-to-face consultations	No important differences between face-to-face and remote asthma check-ups in terms of exacerbations, asthma control or quality of life. Insufficient information to rule out differences in efficacy, or to say whether remote asthma check-ups are a safe alternative to being seen face-to-face	
Kew, UK [74]	2016	18 RCT	Home telemonitoring with remote feedback from a healthcare professional	No difference in exacerbations except hospitalizations in adults (reduced). Slightly better quality of life.	
Zhao, China [75]	2015	11 RCT	Telemedicine for relieving asthma symptoms	No significant difference in asthma symptom score change between telemedicine and control groups	
Morrison, UK [76]	2014	29 systematic reviews	Digital self-management support for adults and children with asthma	Knowledge and activity limitation showed improvement in the intervention group as well as self care (5/6), quality of life (4/7), and medication use (2/3). Effects on symptoms (6/12) and school absences (2/4) were equivocal, with no evidence of overall benefits on lung function (2/6), or health service use (2/15).	
Tran, USA [77]	2014	6 RCT	Reminder systems (SMS, automated phone calls and audiovisual reminder devices) on asthma medication adherence	Greater levels of asthma medication adherence compared to the control group. No documented change in asthma-related quality of life or clinical asthma outcomes	
Marcano Belisario, UK [78]	2013	2 RCT	Smartphone and tablet apps to facilitate the self management of individuals with asthma	One study showed that the use of a smartphone app can result in better asthma-related quality of life and lung function, and reduced visits to the emergency department	

*Table 5. Övriga tillstånd. 13 översikter som behandlar andra sjukdomstillstånd.*

Author, country	Year	Number of included studies	Intervention	Main findings	Effect summary
Cho, USA [79]	2017	10	Technology-mediated interventions on quality of life for persons living with HIV/AIDS	The evidence to support the improvement of quality of life using technology-mediated interventions is insufficient	
Gandhi, Canada [80]	2017	27	mHealth technology for the secondary prevention of cardiovascular disease	Increased adherence to medical therapy, ability to reach blood pressure targets, exercise goals, and showed less anxiety and increased awareness of diet and exercise. No difference in smoking cessation, ability to meet cholesterol targets, and hospital readmission	
Iribarren, USA [81]	2017	39	Economic evaluations of mHealth interventions	In 74%, mHealth intervention was cost-effective, economically beneficial, or cost saving	
Larson, USA [82]	2017	9	Telehealth-based interventions providing emotional and symptom support in improving quality of life among cancer patients	Telehealth interventions are as effective as in-person usual care	
Cajita, USA [83]	2016	10	mHealth-based interventions on heart failure	The impact of the mHealth interventions were inconsistent at best	
Park, USA [84]	2016	28	Mobile phone interventions to promote self-management of existing cardiovascular disease	Using mobile phone features (text messaging, mobile apps, telemonitoring) was effective in improving behavioral and clinical outcomes in 22/28 studies	
Agostini, Italy [85]	2015	12	Compare the effectiveness of telerehabilitation with standard rehabilitation for recovery of motor function	Inconclusive findings for neurological patients, while both for cardiac and knee arthroplasty patients the results were in favour of telerehabilitation	
Anglada-Martinez, Spain [86]	2015	20	Improve adherence to medication using mHealth	65% of the studies had positive outcomes; large variety of the study designs and the results found	
Kim, Korea [87]	2015	37	Web-based interventions designed to help cancer survivors manage their symptoms and the side effects of cancer treatments	Small to moderate effects compared to standard care	
Mbuagbaw, Canada [88]	2015	9 systematic reviews on 37 source studies	Text messaging in HIV and other chronic diseases	Improved adherence to therapy, improved attendance at appointments and behaviour change outcomes. Inconclusive for self-management of illness and communicating results of medical investigations	
Widmer, USA [89]	2015	51	Digital health interventions on cardiovascular disease outcomes	Significant reduction of cardiovascular disease, weight and BMI but not blood pressure. Framingham 10 year risk percentages were also significantly improved	
Bossen, Netherlands [90]	2014	7	Web-based physical activity interventions in adults with chronic disease	Mixed significant positive and non-significant findings	

Hailey, Australia [91]	2013	19	Tele-neurorehabilitation applications	In 13 of the 19 studies the application was successful in providing at least equivalent outcomes to conventional approaches	
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## Diskussion

Denna översikt över systematiska översikter visar en rikhaltig flora av publikationer om effekten av telemedicin vid olika kroniska tillstånd. I de flesta studier gjordes jämförelse med inaktiv kontrollgrupp, och då påvisades ofta en positiv effekt. Vid jämförelse med aktiv kontroll var det vanligaste resultatet att någon skillnad inte kunde påvisas. Påfallande många systematiska översikter finns inom diabetes och olika psykiatriska / psykologiska tillstånd. Däremot är det tunnsått med litteraturstöd inom cancer (behandlas i en del generella översikter) och stroke som inte finns som huvudtema i någon översikt.

Översikterna behandlade många olika typer av interventioner vilket försvårar entydiga slutsatser. Ingående studier var generellt heterogena med ofta tämligen hög risk för bias vilket försvagar evidensstyrkan, dessutom rapporterades publikationsbias i många studier. Denna översikt får därför betraktas som en översikt över tillgänglig litteratur och därmed omfattningen av det aktuella kunskapsläget samt ge en indikation på hur man kan gå vidare för en evidensbaserad hälsa.

En kartläggning av det vetenskapliga underlaget för utformningen av interaktiv telemedicin vid olika kroniska sjukdomar tänkt att användas som ett direkt beslutsunderlag behöver dock utformas på ett annat sätt. Det kräver mer djupgående diagnosspecifika frågeställningar utifrån kännedom om patientgruppens behov och bör därför utformas av de verksamma i det patientnära arbetet.

## Projektgrupp

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# Litteratursökning

PubMed 2018-02-06

Söktermer		Antal träffar
<b>Patienter med kronisk sjukdom</b>		
1.	<p>((((("Depressive Disorder"[Mesh] OR "Depression"[Mesh]) OR "Asthma"[Mesh]) OR "Diabetes Mellitus"[Mesh]) OR "Skin Diseases"[Mesh]) OR "Heart Diseases"[Mesh]) OR (depression[Title/Abstract] OR asthma[Title/Abstract] OR diabetes[Title/Abstract] OR skin diseases[Title/Abstract] OR dermatologic diseases[Title/Abstract] OR heart failure[Title/Abstract] OR myocardial infarction[Title/Abstract] OR angina[Title/Abstract])) OR (("Chronic Disease"[Mesh] OR "Long-Term Care"[Mesh] OR "Tertiary Prevention"[Mesh] OR "Secondary Prevention"[Mesh]) OR ((chronic disease[Title/Abstract] OR chronic diseases[Title/Abstract]))) OR (((chronic illness[Title/Abstract] OR "tertiary prevention"[Title/Abstract] OR "secondary prevention"[Title/Abstract])) OR "long-term illness"[Title/Abstract]))</p>	<a href="#">3215183</a>
<b>Kontakt med sjukvården</b>		
2.	<p>(office visit[Title/Abstract] OR physician appointment[Title/Abstract] OR physician-patient relations[MeSH Terms] OR "Practice Patterns, Physicians"[Mesh] OR Physicians Practice Patterns[Title/Abstract] OR office visits[MeSH Terms] OR office visits[Title/Abstract] OR "face to face" OR online medical consultation[Title/Abstract] OR remote consultation[Title/Abstract] OR remote consultation[MeSH Terms] OR telemedicine[Title/Abstract] OR telemedicine[MeSH Terms] OR tele diagnosis[Title/Abstract] OR tele counselling[Title/Abstract] OR telenursing[Title/Abstract] OR tele health[Title/Abstract] OR outpatient[Title/Abstract] OR tele management[Title/Abstract] OR e-care[Title/Abstract] OR ecare[Title/Abstract] OR e-counselling[Title/Abstract] OR selfcare[Title/Abstract] OR self-care[Title/Abstract] OR telenursing[MeSH Terms] OR outpatient[MeSH Terms] OR self care[MeSH Terms])</p>	<a href="#">330316</a>
<b>Digitala kontaktsätt</b>		
3.	<p>("Computers, Handheld"[Mesh] OR "Handheld Computer"[Title/Abstract] OR "Tablet Computer"[Title/Abstract] OR "mobile phone*"[Title/Abstract] OR "mobile app*"[Title/Abstract] OR ipad[Title/Abstract] OR</p>	<a href="#">366706</a>

		<p>iphone[Title/Abstract] OR i-phone[Title/Abstract] OR android[Title/Abstract] OR ios[Title/Abstract] OR computer[Title/Abstract] OR skype[Title/Abstract] OR internet[Title/Abstract] OR online[Title/Abstract] OR smartphone[Title/Abstract] OR cell phone[Title/Abstract] OR mobile applications[Title/Abstract] OR digital health[Title/Abstract] OR videoconferencing[Title/Abstract] OR m-health[Title/Abstract] OR e-health[Title/Abstract] OR mobile health[Title/Abstract] OR virtualized healthcare[Title/Abstract] OR "Internet"[Mesh] OR "Patient Portals"[Mesh] OR "Smartphone"[Mesh] OR "Cell Phones"[Mesh:noexp] OR "Mobile Applications"[Mesh] OR "Videoconferencing"[Mesh] OR Automated telephone communication systems[Title/Abstract] OR ATCS[Title/Abstract] OR teleconsultation[Title/Abstract] OR personal digital assistant[Title/Abstract] OR PDA[Title/Abstract] OR videoconsultation[Title/Abstract] OR videoconsulting[Title/Abstract] OR cellular phone[Title/Abstract] OR "e visit"[Title/Abstract] OR evisit[Title/Abstract] OR "electronic visit"[Title/Abstract] OR e-consult[Title/Abstract] OR e-doctor[Title/Abstract] OR e-clinic[Title/Abstract] OR "virtual appointment"[Title/Abstract] OR online visit[Title/Abstract] OR "virtual communication"[Title/Abstract])</p>	
	4.	<b>1. AND 2. AND 3</b>	<b><u>4756</u></b>
	5.	<b>Limits: english, 5 years</b>	<b><u>2325</u></b>
	6.	<b>Studytype: systematic reviews</b>	<b><u>280</u></b>