Multimedia Appendix 3. Characteristics of included studies and quality assessment.

Author, Year, Country, Study design	Participants	Intervention using the digital clinical communication technology	Comparison	Quality assessment – Main limitation
Barlott et al. [46], 2015, Columbia, Interview study	8 parents of people with disabilities. Children aged 7-32	SMS messaging used for parents to receive information, ask questions and for social interaction	None	**Fair -** Unsure if relationship between researcher and participants was adequately considered
Becker et al. [28], 2012, USA, Non-randomised controlled study	63 parent/carers of healthy children. Child mean age 6.5 years. Phone call group (n= 33) Email group (n=30)	A parent advice line, staffed by an on call licensed psychologist and two doctoral students, offered two nights per week. Possibility for parents to call or email the service about common developmental problems (e.g. bed wetting, tantrums)	Parents who contacted the service by phone	**Fair –** Lost-to-follow-up > 20%
Bergmo et al. [10], Norway, RCT	Parents of 98 children with atopic dermatitis. Mean child age in intervention group = 4.6 and in control group = 5.3. Intervention (n=50) Control (n=48)	Remote dermatology consultations where parents could send photographs of their child's eczema with a written description of the condition, and the specialist could respond with treatment advice	A control group receiving usual care	**Good -** No blinded assessment of outcomes
Binford Hopf et al. [29], 2013, USA, Pre/post intervention uncontrolled	13 parents of 10 children with eating disorders aged 9-17	Parents' participation in 15 group web-chat sessions with fellow parents and a clinical psychologist	Same group compared before and after the intervention	**Fair** - Small sample size
Bradford et al. [36], 2014, Australia, Economic model	95 home video paediatric palliative care consultations	Home video consultations (home telehealth program) for which actual costs were calculated. This was compared to the estimated costs of the consultations had they been conducted face to face	Estimated costs of face to face consultations	**Good-** Costs not directly translatable to UK but may be similar
Bradford et al. [11], 2012, Australia, Non-randomised	14 parents of children (aged 0- 18) referred to a Paediatric Palliative Care	Telehealth consultation (symptom management, discussions of changes in the patient's and	Usual care (face to face care and the organisation of community	**Fair -** Unsure if study participants were representative of those eligible in

controlled study	Service (PPCS). Intervention (n=6) Control (n=6) Not allocated (n=2)	emotional support for caregivers) in addition to usual care	nursing care services by PPCS staff)	the general population
Braverman et al [37], 2011, Russia, Cross-sectional study	70 parents of children (aged 1 month – 17 years) with patients with kidney diseases	An educational website for parents of children with kidney diseases allowing parents to ask questions, upload documents (e.g. medical summaries) and provide information about the child's diagnosis	A Paediatric Nephrologist compared the information they received to the child's diagnosis	**Fair-** Sample size justification, power and effect sizes not reported
Britto et al. [47], 2013, USA, Interview study	24 parents of 25 children with long term conditions (cystic fibrosis, diabetes mellitus, juvenile idiopathic arthritis)	Condition specific patient portals providing access to medical record elements (e.g. test results) and allowing secure messaging with care providers	None	**Good-** Relationship between researcher and participants not adequately considered
Byczkowski et al. [38], 2014, USA, Cross-sectional Study	126 parents of children with long term conditions (cystic fibrosis, diabetes mellitus, juvenile idiopathic arthritis) who used the web based portal and 15 parents who obtained an account for the portal but used it less than 3 times	Condition specific patient portals providing access to medical record elements (e.g. test results) and allowing secure messaging with care providers	None	**Fair -** Sample size justification, power and effect sizes not reported
de Graaf et al. [39], 2013, Netherlands, Cross-sectional Study	128 carers (127 parents, 1 grandparent) of children with Infantile haemangioma	eHealth intervention including e-learning and e-consults (parents submitting a photograph of their child's skin lesion and information about its growth pattern – advice provided by a dermatologist on diagnosis and risk of complications and need to see a specialist)	None	**Fair -** Sample size justification, power and effect sizes not reported
Epstein et al. [30], 2015, USA, Pre/post intervention uncontrolled with interview study	26 parents of patients in the NICU	Parents receiving daily Skype or facetime updates from staff in the NICU once a day for five days, the content of updates being similar to those usually provided by phone (feedings events of the day, parents questions answered)	Same group compared before and after the intervention	**Good -** Unsure if study participants were representative of those eligible in the general population, Outcome measures of interest not taken multiple times before the intervention and multiple times after

				the intervention
Grover et al. [19], 2011, UK, RCT	64 carers of people with Anorexia Nervosa aged 12- 44. Intervention (n=34) Control (n=30)	Carers participating in a web- based therapy sessions followed by email or phone support from a clinician	Usual care (support from the organisation Beat)	**Poor-** Estimate of the treatment effect was not precise
Gulmans et al. [31], 2012, Netherlands, Pre/post intervention uncontrolled	30 parents of children with cerebral palsy aged between 4 and 8 years	A web based system for parent- professional communication and inter- professional communication, where parents could ask questions and review their communication from professionals	Same group compared before and after the intervention	**Fair -** Unsure if study participants were representative of those who would be eligible in the general population
Gund et al. [20], 2013, Sweden, RCT	34 families of preterm babies. Median infant gestational age = 33 weeks + 5 days. Web application (n=12) Video - conferencing (n=9) Control (n=13)	A web application allowing families to communicate with healthcare professionals via a web messaging service- families had video conferences with nurses instead of phone calls (standard home health care)	Another group with standard hone health care and a control group receiving standard home health care after discharge	**Fair -** No measure of the intervention effect
Hanberger et al. [21], 2013, Sweden, RCT	474 families of children with type 1 diabetes. Mean child age in the intervention group =13.2. Mean child age in the control group =13.3. Intervention (n=244) Control (n=230)	A web- based portal which provided diabetes related information and allowed communication with diabetes peers and healthcare professionals. All parents in intervention group had access to the portal as did children over the age of 13	A control group who had no access to the web- based portal for the first year of the study	**Good -** Unsure if results can be applied in another context/local population
Haney et al. [32], 2012, USA, Pre/post intervention uncontrolled	19 parents and carers of children various medical conditions (severe birth asphyxia, TBI, severe cerebral palsy, trisomy 18, …). Mean child age 9.17	Emails for parents/ caregivers to communicate with nurses who sent parent/carer givers a topic at the start of the week related to caring for child at home. Parents could sent questions, comments and concerns	Same group compared before and after the intervention	**Fair -** Unsure if study participants were representative of those who would be eligible in the general population
Hanlon-Dearman et al. [40], 2014, Canada, Cross-sectional Study	16 families of children diagnosed with foetal alcohol spectrum disorder	Telehealth where families participated in diagnostic assessment and/or individual or group follow up	None	**Good-** Unsure if relationship between researcher and participants was adequately

				considered
Hopper et al. [41], 2011, Australia, Observational study (Survey of carers and consultation content)	10 carers of children referred to a genetics service (children aged between 8 and 14)	Video recorded consultations with a genetic counsellor with a live-feed of the session delivered to the clinical geneticist. DVDs of the session and still photos were also sent to the geneticist	Face to face consultations conducted with the same patients, carers, genetics counsellor and clinical geneticist	**Poor -** Results are provided with very few details
Lee et al. [42], 2010, USA, Cross-sectional Study	42 parents of infants who underwent wide-field retinal imaging for retinopathy of prematurity	Data from wide-field retinal imaging for retinopathy of prematurity being sent to a remote expert via telemedicine	None	**Fair -** Sample size justification, power and effect size not reported
Looman et al. [22], 2015, USA, RCT	163 families of children with medical complexity receiving care form a special needs clinic (paediatric health care home). Children aged between 2 and 15 years at randomisation. Intervention (n=54) Intervention + video conferencing (n=54) Control (n= 55)	Access to an advanced practice registered nurse (APRN) care co-ordinator by telephone and video conferencing in the other telephone in one group	A group with an access to APRN by telephone only and a control group who could contact the clinics general telephone number for care coordination	**Good -** No statement related to the randomisation procedure
Mulgrew et al. [43], 2011, USA, Cross-sectional Study	Parents of children who had received consultations for childhood obesity. Patients were aged between 4 and 11 years. Telemedicine (n=10) Face to face (n=15)	Participants attending a rural/remote clinic received telemedicine consultations with a paediatrician specialising in weight management and a dietician. A rural healthcare provider was present with the patient and family during the consultation	Parent receiving face to face consultations	**Fair -** Sample size justification, power and effect size provided
Nordfeldt et al. [44], 2010, Sweden, Cross-sectional Study	19 parents of children with diabetes and 5 children with diabetes aged between 11 and 18	Launch of a portal for patients and parents of patients with type 1 diabetes that provided diabetes information, blogs and message boards	None	**Good -** none

Petranovich et al. [23], 2015, USA, RCT	132 families of adolescents with traumatic brain injury At baseline mean patient age was 14.7 in the CAPS group and 14.99 in the IRC group CAPS (n=65) IRC (n=67)	A counsellor-assisted problem solving intervention (CAPS) where families completed online modules and participated in skype sessions with the therapist	An internet resource comparison program (IRC)	**Fair –** Lost-to-follow-up > 20%
Scharer et al. [24], 2009, USA, RCT	11 mothers (and maternal caregivers) of children with serious mental illness. Mean child age 9.82. Web based support (n=7) Telephone support (n=4)	Web-based social support with a chat room once a week for one hour (Chats involving one mother and the nurse were analysed) that was facilitated by a psychiatric nurse In one group, patients received telephone social support	Telephone social support on a one to one basis from a psychiatric nurse every 2 weeks	**Good -** Unsure if ethical issues been taken in to consideration
Van Os-Medendorp et al. [25], 2012, Netherlands, RCT	90 parents of children with atopic dermatitis. Mean child age in: intervention group = 2.9 control group = 2.7 Intervention (n=45) Control (n=45)	An eczema web-portal which allowed e-consultations with a dermatology nurse and provided internet-guided monitoring and self-management training	Same group compared before and after the intervention	**Good -** Limited time horizon (1 year)
Vismara et al. [33], 2013, USA, Pre/post intervention uncontrolled	Parents of 8 children with Autism spectrum disorder. Mean child age – 27.5 months	Video conferencing with a therapist and a website allowing parents to access text and video based learning modules and message boards	Same group compared before and after the intervention	**Fair -** Very small sample size (quasi-experimental study)
Vismara et al. [34], 2012, USA, Pre/post intervention uncontrolled	Parents of 9 children with Autism spectrum disorder. Mean child age – 28.89 months	Video conferencing with a therapist and a parent intervention curriculum delivered by telehealth	Same group compared before and after the intervention	**Fair -** Very small sample size (quasi-experimental study)
Wade et al. [26], 2014, USA, RCT	132 families of adolescents with traumatic brain injury. At the time of injury mean patient age was 14.7 in the IRC group and 14.40 in the CAPS group CAPS (n=65). IRC (n=67)	A counsellor-assisted problem solving intervention (CAPS) where families participated in online modules and skype sessions with the therapist	An internet resource comparison program (IRC) – a home page with links to online resources	**Fair-** Sample size justification, and power not reported
Wade et al. [35], 2009, USA, Pre/post intervention uncontrolled	Families of 9 children aged between 3 and 8 with traumatic brain injury	Video- conferencing and a website containing links to resources and self-guided session materials	Same group compared before and after the intervention	**Fair-** Unsure if study participants were representative of those eligible in the general population

Wade et al. [27], 2012, USA, RCT	41 families of adolescents aged 11 -18 with traumatic brain injury. TOPS (n=20) IRC (n=21)	The Teen Online Problem Solving (TOPS) intervention that included self-guided online modules and video conferencing with a therapist	An internet resource comparison program (IRC) – a home page with links to online resources	**Fair -** No information related to the method of randomisation
Wade et al. [45], 2009, USA, Cross – sectional study	9 families of children with traumatic brain injury. Mean child age 15.04 years	The Teen Online Problem Solving (TOPS) intervention included self-guided online modules and video conferencing with a therapist	None	**Fair-** Unsure if study participants were representative of those eligible in the general population