

## Teledermatology - current perspectives

## SUPPLEMENTARY MATERIAL

Table S1 – Studies included in the review

	Study	Authors	Year
1	*Teledermatology: diagnostic reliability in 383 children	Paradela-De-La-Morena S ; Fernandez-Torres R ; Martinez-Gomez W ; Fonseca-Capdevila E	2015
2	A pilot trial of mobile, patient-performed teledermoscopy.PG - 1072-80LID - 10.1111/bjd.13550 [doi]	Manahan MN ; Soyer HP ; Loescher LJ ; Horsham C ; Vagenas D ; Whiteman DC ; Olsen CM ; Janda M	2015
3	A prospective study on the use of teledermatology in psychiatric patients with chronic skin diseases.PG - 170-4LID - 10.1111/ajd.12297 [doi]	Seghers AC ; Seng KH ; Chio MT ; Chia E ; Ng SK ; Tang MB	2015
4	Accuracy of a smartphone application using fractal image analysis of pigmented moles compared to clinical diagnosis and histological result.PG - 663-7LID - 10.1111/jdv.12648 [doi]	Maier T ; Kulichova D ; Schotten K ; Astrid R ; Ruzicka T ; Berking C ; Udrea A	2015
5	Concordance and time estimation of store-and-forward mobile teledermatology compared to classical face-to-face consultation.PG - 35-9LID - 10.2340/00015555-1876 [doi]	Nami N ; Massone C ; Rubegni P ; Cevenini G ; Fimiani M ; Hofmann-Wellenhof R	2015
6	Expert advice provided through telemedicine improves healing of chronic wounds: prospective cluster controlled study.PG - 895-900LID - 10.1038/jid.2014.441 [doi]	Zarchi K ; Haugaard VB ; Dufour DN ; Jemec GB	2015
7	Feasibility and Efficacy of Patient-Initiated Mobile Teledermoscopy for Short-term Monitoring of Clinically Atypical Nevi.PG - 489-96LID - 10.1001/jamadermatol.2014.3837 [doi]	Wu X ; Oliveria SA ; Yagerman S ; Chen L ; DeFazio J ; Braun R ; Marghoob AA	2015
8	Mobile teledermatology helping patients control high-need acne: a randomized controlled trial.PG - 919-24LID - 10.1111/jdv.12723 [doi]	Fruhauf J ; Krock S ; Quehenberger F ; Kopera D ; Fink-Puches R ; Komericki P ; Pucher S ; Arzberger E ; Hofmann-Wellenhof R	2015
9	Mobile teledermatology is a valid method to estimate prevalence of melanocytic naevi in children.PG - 303-6LID - 10.2340/00015555-1950 [doi]	Karlsson MA ; Lindelof B ; Wahlgren CF ; Wiklund K ; Rodvall Y	2015
10	Patient-centered, direct-access online care for management of atopic dermatitis: a randomized clinical trial.PG - 154-60LID - 10.1001/jamadermatol.2014.2299 [doi]	Armstrong AW ; Johnson MA ; Lin S ; Maverakis E ; Fazel N ; Liu FT	2015
11	Reliability of photographic analysis of wound epithelialization assessed in human skin graft donor sites and epidermolysis bullosa wounds.PG - 235LID - 10.1186/s13063-015-0742-x [doi]	Rennekampff HO ; Fimmers R ; Metelmann HR ; Schumann H ; Tenenhaus M	2015
12	Interobserver reliability of store-and-forward teledermatology in a clinical practice setting.PG - 605-13LID - 10.1016/j.ad.2013.12.007 [doi]LID - S0001-7310(14)00017-9 [pii]	Romero Aguilera G ; Cortina de la Calle P ; Vera Iglesias E ; Sanchez Caminero P ; Garcia Arpa M ; Garrido Martin JA	2014
13	Pressure ulcer multidisciplinary teams via telemedicine: a pragmatic cluster randomized stepped wedge trial in long term care.PG - 83LID - 10.1186/1472-6963-14-83 [doi]	Stern A ; Mitsakakis N ; Paulden M ; Alibhai S ; Wong J ; Tomlinson G ; Brooker AS ; Krahn M ; Zwarenstein M	2014
14	Teledermatology consultation using a smartphone multimedia messaging service for common skin diseases in the Korean army: a clinical evaluation of its diagnostic accuracy.PG - 70-4LID - 10.1177/1357633X14524151 [doi]	Shin H ; Kim DH ; Ryu HH ; Yoon SY ; Jo SJ	2014
15	The effectiveness and safety of short-contact dithranol therapy in paediatric psoriasis: a prospective comparison of regular day care and day care with telemedicine.PG - 454-7LID - 10.1111/bjd.12621 [doi]	Oostveen AM ; Beulens CA ; van de Kerkhof PC ; de Jong EM ; Seyger MM	2014

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16	The reliability of teledermatology to triage inpatient dermatology consultations.PG - 419-24LID - 10.1001/jamadermatol.2013.9517 [doi]	Barbieri JS ; Nelson CA ; James WD ; Margolis DJ ; Littman-Quinn R ; Kovarik CL ; Rosenbach M	2014
17	A novel, web-based, psychological intervention for people with psoriasis: the electronic Targeted Intervention for Psoriasis (eTIPs) study.PG - 329-36LID - 10.1111/bjd.12350 [doi]	Bundy C ; Pinder B ; Bucci S ; Reeves D ; Griffiths CE ; Tarrier N	2013
18	Clinical course outcomes for store and forward teledermatology versus conventional consultation: a randomized trial.PG - 197-204LID - 10.1177/1357633X13487116 [doi]	Whited JD ; Warshaw EM ; Kapur K ; Edison KE ; Thottapurathu L ; Raju S ; Cook B ; Engasser H ; Pullen S ; Moritz TE ; Datta SK ; Marty L ; Foman NA ; Suwattee P ; Ward DS ; Reda DJ	2013
19	Educational and motivational support service: a pilot study for mobile-phone-based interventions in patients with psoriasis.PG - 201-5LID - 10.1111/j.1365-2133.2012.11205.x [doi]	Balato N ; Megna M ; Di Costanzo L ; Balato A ; Ayala F	2013
20	Effect of store and forward teledermatology on quality of life: a randomized controlled trial.PG - 584-91LID - 10.1001/2013.jamadermatol.380 [doi]	Whited JD ; Warshaw EM ; Edison KE ; Kapur K ; Thottapurathu L ; Raju S ; Cook B ; Engasser H ; Pullen S ; Parks P ; Sindowski T ; Motyka D ; Brown R ; Moritz TE ; Datta SK ; Chren MM ; Marty L ; Reda DJ	2013
21	In vivo confocal microscopy in clinical practice: comparison of bedside diagnostic accuracy of a trained physician and distant diagnosis of an expert reader.PG - e295-300LID - 10.1016/j.jaad.2013.07.022 [doi]LID - S0190-9622(13)00776-7 [pii]	Rao BK ; Mateus R ; Wassef C ; Pellacani G	2013
22	Mobile teledermatology in Ghana: sending and answering consults via mobile platform.PG - e90-1LID - 10.1016/j.jaad.2012.08.008 [doi]LID - S0190-9622(12)00855-9 [pii]FAU - Osei-tutu, Achiamah	Osei-tutu A ; Shih T ; Rosen A ; Amanquah N ; Chowdhury M ; Nijhawan RI ; Siegel D ; Kovarik C	2013
23	[Correlation between face-to-face assessment and telemedicine for the diagnosis of skin disease in case conferences].PG - 138-43LID - 10.1016/j.ad.2011.05.011 [doi]	Rios-Yuil JM	2012
24	Application of mobile teledermatology for skin cancer screening.PG - 576-81LID - 10.1016/j.jaad.2011.11.957 [doi]LID - S0190-9622(11)02283-3 [pii]	Lamel SA ; Haldeman KM ; Ely H ; Kovarik CL ; Pak H ; Armstrong AW	2012
25	E-health in caring for patients with atopic dermatitis: a randomized controlled cost-effectiveness study of internet-guided monitoring and online self-management training.PG - 1060-8LID - 10.1111/j.1365-2133.2012.10829.x [doi]	van Os-Medendorp H ; Koffijberg H ; Eland-de Kok PC ; van der Zalm A ; de Bruin-Weller MS ; Pasmans SG ; Ros WJ ; Thio HB ; Knol MJ ; Bruijnzeel-Koomen CA	2012
26	Patient-centered online management of psoriasis: a randomized controlled equivalency trial.PG - 948-53LID - 10.1016/j.jaad.2011.05.047 [doi]	Chambers CJ ; Parsi KK ; Schupp C ; Armstrong AW	2012
27	[Store-and-forward teledermatology: assessment of validity in a series of 2000 observations].PG - 277-83LID - 10.1016/j.ad.2010.11.006 [doi]	Vano-Galvan S ; Hidalgo A ; Aguayo-Leiva I ; Gil-Mosquera M ; Rios-Buceta L ; Plana MN ; Zamora J ; Martorell-Calatayud A ; Jaen P	2011
28	A randomized trial to evaluate the efficacy of online follow-up visits in the management of acne.PG - 406-11LID - 10.1001/archdermatol.2010.29 [doi]	Watson AJ ; Bergman H ; Williams CM ; Kvedar JC	2010
29	Pilot study using teledermatology to manage high-need patients with psoriasis.PG - 200-1LID - 10.1001/archdermatol.2009.375 [doi]FAU - Fruhauf, Julia	Fruhauf J ; Schwantzer G ; Ambros-Rudolph CM ; Weger W ; Ahlgrimm-Siess V ; Salmhofer W ; Hofmann-Wellenhof R	2010

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	Study	Authors	Year
30	Randomized controlled trial comparing store-and-forward teledermatology alone and in combination with web-camera videoconferencing.PG - 311-7LID - 10.1111/j.1365-2230.2009.03503.x [doi]	Romero G ; Sanchez P ; Garcia M ; Cortina P ; Vera E ; Garrido JA	2010
31	Successful triage of patients referred to a skin lesion clinic using teledermoscopy (IMAGE IT trial).PG - 803-11LID - 10.1111/j.1365-2133.2010.09673.x [doi]	Tan E ; Yung A ; Jameson M ; Oakley A ; Rademaker M	2010
32	[Diagnostic reliability of an asynchronous teledermatology consultation].PG - 552-7LID - 10.1016/j.aprim.2008.11.012 [doi]	Ferrer RT ; Bezares AP ; Manes AL ; Mas AV ; Gutierrez IT ; Llado CN ; Estaras GM	2009
33	A comparative study of teledermatoscopy and face-to-face examination of pigmented skin lesions.PG - 221-5LID - 10.1258/jtt.2009.081107 [doi]	Ishioka P ; Tenorio JM ; Lopes PR ; Yamada S ; Michalany NS ; Amaral MB ; Pisa IT ; Hirata SH ; Almeida FA	2009
34	Accuracy of teledermatology for nonpigmented neoplasms.PG - 579-88LID - 10.1016/j.jaad.2008.11.892 [doi]	Warshaw EM ; Lederle FA ; Grill JP ; Gravely AA ; Bangerter AK ; Fortier LA ; Bohjanen KA ; Chen K ; Lee PK ; Rabinovitz HS ; Johr RH ; Kaye VN ; Bowers S ; Wenner R ; Askari SK ; Kedrowski DA ; Nelson DB	2009
35	Accuracy of teledermatology for pigmented neoplasms.PG - 753-65LID - 10.1016/j.jaad.2009.04.032 [doi]	Warshaw EM ; Lederle FA ; Grill JP ; Gravely AA ; Bangerter AK ; Fortier LA ; Bohjanen KA ; Chen K ; Lee PK ; Rabinovitz HS ; Johr RH ; Kaye VN ; Bowers S ; Wenner R ; Askari SK ; Kedrowski DA ; Nelson DB	2009
36	Feasibility study of home care wound management using telemedicine.PG - 358-64LID - 10.1097/01.ASW.0000358638.38161.6b [doi]	Terry M ; Halstead LS ; O'Hare P ; Gaskill C ; Ho PS ; Obecny J ; James C ; Lauderdale ME	2009
37	Prevention of work-related skin diseases: teledermatology as an alternative approach in occupational screenings.PG - 224-30LID - 10.1111/j.1600-0536.2009.01606.x [doi]	Baumeister T ; Weistenhofer W ; Drexler H ; Kutting B	2009
38	Store-and-forward teledermatology versus in-person visits: a comparison in pediatric teledermatology clinic.PG - 956-61LID - 10.1016/j.jaad.2008.11.026 [doi]	Heffner VA ; Lyon VB ; Brousseau DC ; Holland KE ; Yen K	2009
39	Validation of home telehealth for pressure ulcer assessment: a study in patients with spinal cord injury.PG - 196-202LID - 10.1258/jtt.2009.081002 [doi]	Hill ML ; Cronkite RC ; Ota DT ; Yao EC ; Kiratli BJ	2009
40	Web-based consultations for parents of children with atopic dermatitis: results of a randomized controlled trial.PG - 316-20LID - 10.1111/j.1651-2227.2008.01033.x [doi]	Bergmo TS ; Wangberg SC ; Schopf TR ; Solvoll T	2009
41	Telediagnosis and face-to-face diagnosis reliability for melanocytic and non-melanocytic 'pink' lesions.PG - 229-34LID - 10.1111/j.1468-3083.2007.02400.x [doi]	Fabbrocini G ; Balato A ; Rescigno O ; Mariano M ; Scalvenzi M ; Brunetti B	2008
42	Feasibility of a two-step teledermatologic approach for the management of patients with multiple pigmented skin lesions.PG - 686-92	Di Stefani A ; Zalaudek I ; Argenziano G ; Chimenti S ; Soyer HP	2007
43	Store-and-forward teledermatology results in similar clinical outcomes to conventional clinic-based care.PG - 26-30	Pak H ; Triplett CA ; Lindquist JH ; Grambow SC ; Whited JD	2007
44	Using cellphones for teledermatology, a preliminary study.PG - 2	Chung P ; Yu T ; Scheinfeld N	2007

\* Included by hand search.

## Tele dermatology - current perspectives

Table S2 – Studies excluded in the selection process and reason for exclusion

	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
1	Can skin cancer prevention and early detection be improved via mobile phone text messaging? A randomised, attention control trial.PG - 50-6LID - 10.1016/j.yjpm.2014.12.009 [doi]LID - S0091-7435(14)00483-6 [pii]	Youl PH ; Soyer HP ; Baade PD ; Marshall AL ; Finch L ; Janda M	2015	Target only prevention
2	A telemedicine wound care model using 4G with smart phones or smart glasses: A pilot study.PG - e4198LID - 10.1097/MD.0000000000004198 [doi]	Ye J ; Zuo Y ; Xie T ; Wu M ; Ni P ; Kang Y ; Yu X ; Sun X ; Huang Y ; Lu S	2016	Does not evaluated effectiveness or clinical impact/benefit
3	Reliability of circulatory and neurologic examination by telemedicine in a pediatric intensive care unit.PG - 962-6.e1-5LID - 10.1016/j.jpeds.2014.07.002 [doi]LID - S0022-3476(14)00624-6 [pii]	Yager PH ; Clark ME ; Dapul HR ; Murphy S ; Zheng H ; Noviski N	2014	Not related to the theme
4	Determination of isotretinoin in human plasma by high performance liquid chromatography-electrospray ionization mass spectrometry.PG - 324-9LID - 10.1016/j.jpba.2011.05.012 [doi]	Wu L ; Wu J ; Zhou K ; Cheng F ; Chen Y	2011	Not related to the theme
5	Diagnostic inaccuracy of smartphone applications for melanoma detection.PG - 422-6LID - 10.1001/jamadermatol.2013.2382 [doi]	Wolf JA ; Moreau JF ; Akilov O ; Patton T ; English JC 3rd ; Ho J ; Ferris LK	2013	Outcome is not clinical
6	Feasibility of virtual wound care: a pilot study.PG - 275-6, 278	Wilkins EG ; Lowery JC ; Goldfarb S	2007	Outcome is not clinical
7	Cognitive and physiological responses in humans exposed to a TETRA base station signal in relation to perceived electromagnetic hypersensitivity.PG - 23-39LID - 10.1002/bem.20681 [doi]	Wallace D ; Eltiti S ; Ridgewell A ; Garner K ; Russo R ; Sepulveda F ; Walker S ; Quinlan T ; Dudley S ; Maung S ; Deeble R ; Fox E	2012	Outcome is not related to dermatology
8	A pilot study on the potential of remote support to enhance wound care for nursing-home patients.PG - 481-8	Vowden K ; Vowden P	2013	Data was not available, insufficient data or only descriptive study

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	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
9	The "phone and mail" system in a teledermatology service for chronic psychiatric patients.PG - 95-101	Vezzoni GM ; Guazzelli M ; Barachini P	2011	Full-text was not available
10	No clinical benefit of titanium nitride coating in cementless mobile-bearing total knee arthroplasty.PG - 1833-40LID - 10.1007/s00167-014-3359-9 [doi]	van Hove RP ; Brohet RM ; van Royen BJ ; Nolte PA	2015	Not related to the theme
11	Identification of a highly transmissible animal-independent Staphylococcus aureus ST398 clone with distinct genomic and cell adhesion properties.LID - 10.1128/mBio.00027-12 [doi]LID - e00027-12 [pii]	Uhlemann AC ; Porcella SF ; Trivedi S ; Sullivan SB ; Hafer C ; Kennedy AD ; Barbian KD ; McCarthy AJ ; Street C ; Hirschberg DL ; Lipkin WI ; Lindsay JA ; DeLeo FR ; Lowy FD	2012	Not related to the theme
12	Use of a brief educational video administered by a portable video device to improve skin cancer knowledge in the outpatient transplant population.PG - 1233-9LID - 10.1097/DSS.000000000000148 [doi]	Trinh N ; Novice K ; Lekakh O ; Means A ; Tung R	2014	Target only prevention
13	Feasibility and diagnostic accuracy of teledermatology in Swiss primary care: process analysis of a randomized controlled trial.PG - 326-31LID - 10.1111/jep.12323 [doi]	Tandjung R ; Badertscher N ; Kleiner N ; Wensing M ; Rosemann T ; Braun RP ; Senn O	2015	Data was not available, insufficient data or only descriptive study
14	Technique of mobile bony island for cochlear implantation in children.PG - 209-11LID - 10.1159/000229299 [doi]	Sun JJ ; Liu Y ; Lin YS ; Yuan W	2009	Not related to the theme
15	New Algorithm for Managing Childhood Illness Using Mobile Technology (ALMANACH): A Controlled Non-Inferiority Study on Clinical Outcome and Antibiotic Use in Tanzania.PG - e0132316LID - 10.1371/journal.pone.0132316 [doi]	Shao AF ; Rambaud-Althaus C ; Samaka J ; Faustine AF ; Perri-Moore S ; Swai N ; Kahama-Marro J ; Mitchell M ; Genton B ; D'Acremont V	2015	Not related to the theme
16	History of teledermatology: a technique of the future in dermatology.PG - 167-70	Senel E	2010	Review, meta-analysis or case reports/series
17	A novel HPLC-electrochemical detection approach for the determination of D-penicillamine in skin specimens.PG - 355-60LID - 10.1016/j.talanta.2012.10.076 [doi]LID - S0039-9140(12)00907-1 [pii]	Saracino MA ; Cannistraci C ; Bugamelli F ; Morganti E ; Neri I ; Balestri R ; Patrizi A ; Raggi MA	2013	Not related to the theme
18	In vitro study of the stress response of human skin cells to GSM-1800 mobile phone signals compared to UVB radiation and heat shock.PG - 572-80	Sanchez S ; Haro E ; Ruffie G ; Veyret B ; Lagroye I	2007	Not related to the theme
19	Optimization of a Digital Medicine System in Psychiatry	Rohatagi S ; Profit D ; Hatch A ; Zhao C ; Docherty JP ; Peters-Strickland TS	2016	Not related to the theme
20	Psychophysical workload in the operating room: primary surgeon versus assistant.PG - 1990-8LID - 10.1007/s00464-014-3899-6 [doi]	Rieger A ; Fenger S ; Neubert S ; Weippert M ; Kreuzfeld S ; Stoll R	2015	Not related to the theme

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	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
21	A qualitative study of the key factors in implementing telemedical monitoring of diabetic foot ulcer patients.PG - 799-807LID - 10.1016/j.ijmedinf.2015.05.012 [doi]LID - S1386-5056(15)30001-0 [pii]	Rasmussen BS ; Jensen LK ; Froekjaer J ; Kidholm K ; Kensing F ; Yderstraede KB	2015	Does not evaluated effectiveness or clinical impact/benefit
22	[Treatment choices in the tumors of the inner angle of the eye].PG - 1142-8	Popa L ; Costin D	2011	Not related to the theme
23	Teledermatology protocol for screening of skin cancer.PG - 202-10LID - 10.1590/abd1806-4841.20153163 [doi]LID - S0365-05962015000200202 [pii]	Piccoli MF ; Amorim BD ; Wagner HM ; Nunes DH	2015	Data was not available, insufficient data or only descriptive study
24	Microsurgical extraforaminal decompression of lumbar root canal stenosis.PG - 16-30LID - 10.1007/s00064-012-0194-3 [doi]	Papavero L ; Kothe R	2013	Not related to the theme
25	Cost minimization analysis of a store-and-forward teledermatology consult system.PG - 160-5LID - 10.1089/tmj.2008.0083 [doi]	Pak HS ; Datta SK ; Triplett CA ; Lindquist JH ; Grambow SC ; Whited JD	2009	Outcome is not clinical
26	Topography of accumulation of stagnant lymph and tissue fluid in soft tissues of human lymphedematous lower limbs.PG - 239-45LID - 10.1089/lrb.2008.1023 [doi]	Olszewski WL ; Jain P ; Ambujam G ; Zaleska M ; Cakala M	2009	Not related to the theme
27	Soft tissue-anchored transcutaneous port attached to an intestinal tube for long-term gastroduodenal infusion of levodopa/carbidopa in Parkinson disease.PG - 500-5LID - 10.1016/j.jvir.2008.11.029 [doi]	Nyman R ; Lundgren D ; Nyholm D	2009	Not related to the theme
28	Methicillin-resistant Staphylococcus aureus in wound cultures recovered from a combat support hospital in Iraq.PG - S102-8LID - 10.1097/TA.0b013e3181e44b57 [doi]	Murray CK ; Griffith ME ; Mende K ; Guymon CH ; Ellis MW ; Beckius M ; Zera WC ; Yu X ; Co EM ; Aldous W ; Hospenthal DR	2010	Not related to the theme
29	Lateral lower face and neck contouring following burn injury.PG - 225-30	Motamed S ; Mousavizadeh SM ; Niazi F ; Khajouei Kermani H ; Saberi A ; Motamed H	2015	Not related to the theme
30	Comparative diagnostic accuracy in virtual dermatopathology.PG - 251-5LID - 10.1111/j.1600-0846.2010.00493.x [doi]	Mooney E ; Hood AF ; Lampros J ; Kempf W ; Jemec GB	2011	Outcome is not clinical
31	Evaluation of the impact of ZeroFly(R), an insecticide incorporated plastic sheeting on malaria incidence in two temporary labour shelters in India.PG - 138-43	Mittal PK ; Sreehari U ; Razdan RK ; Dash AP	2011	Not related to the theme
32	Dermabond efficacy in total joint arthroplasty wounds.PG - 476-8	Miller AG ; Swank ML	2010	Telemedicine is not the intervention/exposure
33	Age-related changes in male forearm skin-to-fat tissue dielectric constant at 300 MHz.PG - 198-204LID - 10.1111/cpf.12286 [doi]	Mayrovitz HN ; Grammenos A ; Corbitt K ; Bartos S	2017	Not related to the theme

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	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
34	Prospective observational comparative study assessing the role of store and forward teledermatology triage in skin cancer.PG - 736-9LID - 10.1111/j.1365-2230.2008.02850.x [doi]	May C ; Giles L ; Gupta G	2008	Does not evaluated effectiveness or clinical impact/benefit
35	Measurement and comparison of skin dose using OneDose MOSFET and Mobile MOSFET for patients with acute lymphoblastic leukemia.PG - MT51-5	Mattar EH ; Hammad LF ; Al-Mohammed HI	2011	Not related to the theme
36	Home-use icterometry in neonatal hyperbilirubinaemia: Cluster-randomised controlled trial in Vietnam.PG - 674-9LID - 10.1111/jpc.12611 [doi]	Luu MN ; Le LT ; Tran BH ; Duong TK ; Nguyen HT ; Le VT ; Partridge JC	2014	Not related to the theme
37	Is the effect of mobile phone radiofrequency waves on human skin perfusion non-thermal?PG - 629-36LID - 10.1111/micc.12062 [doi]	Loos N ; Thuroczy G ; Ghosn R ; Brenet-Dufour V ; Liabeuf S ; Selmaoui B ; Libert JP ; Bach V ; Diouf M ; de Seze R	2013	Not related to the theme
38	TNF alpha-induced leukocyte-endothelial cell interactions show marked interindividual differences independent of the clinical response to adalimumab.PG - 133-4LID - 10.1111/exd.12283 [doi]	Lockmann A ; Schon MP	2014	Not related to the theme
39	Characterization of microemulsion liquid chromatography systems by solvation parameter model and comparison with other physicochemical and biological processes.PG - 129-38	Liu J ; Sun J ; Wang Y ; Liu X ; Sun Y ; Xu H ; He Z	2007	Not related to the theme
40	Thermal effects of mobile phone RF fields on children: a provocation study.PG - 399-403LID - 10.1016/j.pbiomolbio.2011.09.004 [doi]	Lindholm H ; Alanko T ; Rintamaki H ; Kannala S ; Toivonen T ; Sistonen H ; Tiikkaja M ; Halonen J ; Makinen T ; Hietanen M	2011	Not related to the theme
41	Better, sooner, more convenient: a successful teledermoscopy service.PG - 22-5LID - 10.1111/j.1440-0960.2011.00836.x [doi]	Lim D ; Oakley AM ; Rademaker M	2012	Outcome is not clinical
42	Stanford's Outcomes Research in Kids (STORK): a prospective study of healthy pregnant women and their babies in Northern California.PG - e010810LID - 10.1136/bmjopen-2015-010810 [doi]	Ley C ; Sanchez Mde L ; Mathur A ; Yang S ; Sundaram V ; Parsonnet J	2016	Not related to the theme
43	The SNaP Wound Care System: a case series using a novel ultraportable negative pressure wound therapy device for the treatment of diabetic lower extremity wounds.PG - 825-30	Lerman B ; Oldenbrook L ; Ryu J ; Fong KD ; Schubart PJ	2010	Review, meta-analysis or case reports/series
44	Negative pressure wound therapy: an adjuvant to surgical reconstruction of large or difficult skin and soft tissue defects.PG - 406-11LID - 10.1111/j.1742-481X.2011.00813.x [doi]	Lee DL ; Ryu AY ; Rhee SC	2011	Telemedicine is not the intervention/exposure

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45	Reconstruction of large mandibulofacial defects with the composed double skin paddle fibula free flap: a review of 32 procedures.PG - 1336-43LID - 10.1002/lary.24452 [doi]	Leclere FM ; Bosc R ; Temam S ; Leymarie N ; Mirghani H ; Sarfati B ; Kolb F	2014	Not related to the theme
46	A proton NMR study on the hydration of normal versus psoriatic stratum corneum: linking distinguishable reservoirs to anatomical structures.PG - 1181-90LID - 10.1002/nbm.1547 [doi]	Laule C ; Tahir S ; Chia CL ; Vavasour IM ; Kitson N ; MacKay AL	2010	Not related to the theme
47	Combining near RF-EMF proxy for epidemiological research: a reference case.PG - 366-74LID - 10.1002/bem.21782 [doi]	Lauer O ; Frei P ; Gosselin MC ; Joseph W ; Roosli M ; Frohlich J	2013	Not related to the theme
48	A short review of diagnosis and compression therapy of chronic venous insufficiency.PG - 17-21	Kecelj Leskovec N ; Pavlovic MD ; Lunder T	2008	Not related to the theme
49	Use of smartphone attached mobile thermography assessing subclinical inflammation: a pilot study.PG - 177-80, 182LID - 10.12968/jowc.2016.25.4.177 [doi]	Kanazawa T ; Nakagami G ; Goto T ; Noguchi H ; Oe M ; Miyagaki T ; Hayashi A ; Sasaki S ; Sanada H	2016	Not related to the theme
50	Teledermatology: clinical case profiles and practical issues.PG - 32-5	Kaliyadan F ; Venkitakrishnan S	2009	Review, meta-analysis or case reports/series
51	Evaluation of skin cancer in Northern California Kaiser Permanente's store-and-forward teledermatology referral program.PG - 780-5LID - 10.1089/tmj.2012.0260 [doi]	Kahn E ; Sossong S ; Goh A ; Carpenter D ; Goldstein S	2013	Does not evaluated effectiveness or clinical impact/benefit
52	Phase change material for thermotherapy of Buruli ulcer: a prospective observational single centre proof-of-principle trial.PG - e380LID - 10.1371/journal.pntd.0000380 [doi]	Junghanss T ; Um Boock A ; Vogel M ; Schuette D ; Weinlaeder H ; Pluschke G	2009	Not related to the theme
53	Clinical examination and validation of primary diagnosis in anatomic pathology using whole slide digital images.PG - 372-8LID - 10.1043/2009-0678-OA.1 [doi]	Jukic DM ; Drogowski LM ; Martina J ; Parwani AV	2011	Outcome is not related to dermatology
54	A Comparative Study Between Smartphone-Based Microscopy and Conventional Light Microscopy in 1021 Dermatopathology Specimens.PG - 86-90LID - 10.5858/arpa.2014-0593-OA.s1 [doi]	Jahan-Tigh RR ; Chinn GM ; Rapini RP	2016	Outcome is not clinical
55	Detection of Site-Specific Blood Flow Variation in Humans during Running by a Wearable Laser Doppler Flowmeter.PG - 25507-19LID - 10.3390/s151025507 [doi]	Iwasaki W ; Nogami H ; Takeuchi S ; Furue M ; Higurashi E ; Sawada R	2015	Not related to the theme
56	The emerging ST8 methicillin-resistant Staphylococcus aureus clone in the community in Japan: associated infections, genetic diversity, and comparative genomics.PG - 15-27	Iwao Y ; Ishii R ; Tomita Y ; Shibuya Y ; Takano T ; Hung WC ; Higuchi W ; Isobe H ; Nishiyama A ; Yano M ; Matsumoto T ; Ogata K ; Okubo T ; Khokhlova O ; Ho PL ; Yamamoto T	2015	Not related to the theme



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Table S2 – Studies excluded in the selection process and reason for exclusion

	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
57	A new, fast LDI for assessment of burns: a multi-centre clinical evaluation.PG - 1274-82LID - 10.1016/j.burns.2014.04.024 [doi]LID - S0305-4179(14)00165-X [pii]	Hoeksema H ; Baker RD ; Holland AJ ; Perry T ; Jeffery SL ; Verbelen J ; Monstrey S	2014	Not related to the theme
58	A comparison of tele-education versus conventional lectures in wound care knowledge and skill acquisition.PG - 79-81LID - 10.1258/jtt.2011.110811 [doi]	Haney M ; Silvestri S ; Van Dillen C ; Ralls G ; Cohen E ; Papa L	2012	Outcome is not clinical
59	JPEG vs. JPEG2000: benchmarking with dermatological images.PG - 67-73LID - 10.1111/srt.12085 [doi]	Guarneri F ; Vaccaro M ; Guarneri C ; Cannavo SP	2014	Outcome is not clinical
60	Digital image compression in dermatology: format comparison.PG - 666-70LID - 10.1089/tmj.2007.0119 [doi]	Guarneri F ; Vaccaro M ; Guarneri C	2008	Telemedicine is not the intervention/exposure
61	The new distal soleus adiposal pull-through composite flap for reconstruction of defects overlying the Achilles tendon: the anatomy and clinical experience.PG - 441-6LID - 10.1016/j.surg.2007.10.018 [doi]	Gruber S ; Michlits W ; Papp C	2008	Not related to the theme
62	Effects of GSM 900 MHz on middle cerebral artery blood flow assessed by transcranial Doppler sonography.PG - 543-50LID - 10.1667/RR3007.1 [doi]	Ghosn R ; Thuroczy G ; Loos N ; Brenet-Dufour V ; Liabeuf S ; de Seze R ; Selmaoui B	2012	Not related to the theme
63	Qualitative and quantitative evaluation of EHR-integrated mobile patient questionnaires regarding usability and cost-efficiency.PG - 303-13LID - 10.1016/j.ijmedinf.2011.12.008 [doi]	Fritz F ; Balhorn S ; Riek M ; Breil B ; Dugas M	2012	Outcome is not related to dermatology
64	Does teledermatology reduces secondary care referrals and is it acceptable to patients and doctors?: a service evaluation.PG - 710-6LID - 10.1111/jep.12373 [doi]	Ford JA ; Pereira A	2015	Outcome is not clinical
65	User preferences for text message-delivered skin cancer prevention and early detection.PG - 227-34LID - 10.1177/1357633X15571652 [doi]	Finch L ; Youl P ; Marshall AL ; Soyer HP ; Baade P ; Janda M	2015	Target only prevention
66	Effect of teledermatology on the prognosis of patients with cutaneous melanoma.PG - 1025-8LID - 10.1001/archdermatol.2012.778 [doi]	Ferrandiz L ; Ruiz-de-Casas A ; Martin-Gutierrez FJ ; Peral-Rubio F ; Mendez-Abad C ; Rios-Martin JJ ; Moreno-Ramirez D	2012	Outcome is not clinical
67	Towards improved healthcare performance: examining technological possibilities and patient satisfaction with wireless body area networks.PG - 767-75LID - 10.1007/s10916-009-9291-8 [doi]	Fensli R ; Dale JG ; O'Reilly P ; O'Donoghue J ; Sammon D ; Gundersen T	2010	Outcome is not related to dermatology
68	Acne smart club: an educational program for patients with acne.PG - 136-40LID - 10.1159/000362809 [doi]	Fabbrocini G ; Izzo R ; Donnarumma M ; Marasca C ; Monfrecola G	2014	Full-text was not available

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Table S2 – Studies excluded in the selection process and reason for exclusion

	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
69	The complete genome sequence of <i>Yersinia pseudotuberculosis</i> IP31758, the causative agent of Far East scarlet-like fever.PG - e142	Eppinger M ; Rosovitz MJ ; Fricke WF ; Rasko DA ; Kokorina G ; Fayolle C ; Lindler LE ; Carniel E ; Ravel J	2007	Not related to the theme
70	Teledermatologic consultation and reduction in referrals to dermatologists: a cluster randomized controlled trial.PG - 558-64LID - 10.1001/archdermatol.2009.44 [doi]	Eminovic N ; de Keizer NF ; Wyatt JC ; ter Riet G ; Peek N ; van Weert HC ; Bruijnzeel-Koomen CA ; Bindels PJ	2009	Outcome is not clinical
71	Aesthetic applications of calcium hydroxylapatite volumizing filler: an evidence-based review and discussion of current concepts: (part 1 of 2).PG - 1345-54	Emer J ; Sundaram H	2013	Review, meta-analysis or case reports/series
72	Does short-term exposure to mobile phone base station signals increase symptoms in individuals who report sensitivity to electromagnetic fields? A double-blind randomized provocation study.PG - 1603-8	Eltiti S ; Wallace D ; Ridgewell A ; Zougkou K ; Russo R ; Sepulveda F ; Mirshekar-Syahkal D ; Rasor P ; Deeble R ; Fox E	2007	Not related to the theme
73	Outcomes after repair of rectovaginal fistulas using bioprosthetics.PG - 1084-8LID - 10.1007/s10350-008-9339-8 [doi]	Ellis CN	2008	Not related to the theme
74	Emergency department diagnosis and management of skin diseases with real-time teledermatologic expertise.PG - 743-7LID - 10.1001/jamadermatol.2013.7792 [doi]	Duong TA ; Cordoliani F ; Julliard C ; Bourrat E ; Regnier S ; de Pontual L ; Leroy C ; Gallula S ; Aparicio C ; Legendre N ; Bagot M ; Guibal F	2014	Inadequate control group
75	Pilot trial of telemedicine as a decision aid for patients with chronic wounds.PG - 245-9LID - 10.1089/tmj.2007.0038 [doi]	Dobke MK ; Bhavsar D ; Gosman A ; De Neve J ; De Neve B	2008	Outcome is not clinical
76	Estimating Skin Cancer Risk: Evaluating Mobile Computer-Adaptive Testing.PG - e22LID - 10.2196/jmir.4736 [doi]	Djaja N ; Janda M ; Olsen CM ; Whiteman DC ; Chien TW	2016	Outcome is not clinical
77	Orbicularis oculi myocutaneous advancement flap for upper eyelid reconstruction.PG - 443-50LID - 10.1097/01.prs.0000297649.71049.ae [doi]	Demir Z ; Yuce S ; Karamursel S ; Celebioglu S	2008	Not related to the theme
78	Computer-assisted teaching of skin flap surgery: validation of a mobile platform software for medical students.PG - e65833LID - 10.1371/journal.pone.0065833 [doi]	de Sena DP ; Fabricio DD ; Lopes MH ; da Silva VD	2013	Outcome is not clinical
79	Advancing Survivors' Knowledge (ASK) about skin cancer study: study protocol for a randomized controlled trial.PG - 109LID - 10.1186/s13063-015-0637-x [doi]	Daniel CL ; Armstrong GT ; Keske RR ; Davine JA ; McDonald AJ ; Sprunck-Harrild KM ; Coleman C ; Haneuse SJ ; Mertens AC ; Emmons KM ; Marghoob AA ; Elkin EB ; Dusza SW ; Robison LL ; Geller AC	2015	Data was not available, insufficient data or only descriptive study

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Table S2 – Studies excluded in the selection process and reason for exclusion

	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
80	A literally blinded trial of palpation in dermatologic diagnosis.PG - 949-51	Cox NH	2007	Telemedicine is not the intervention/exposure
81	The Effectiveness of Mobile Discharge Instruction Videos (MDIVs) in communicating discharge instructions to patients with lacerations or sprains.PG - 239-47LID - 10.1097/SMJ.0b013e318197f319 [doi]	Choi S ; Ahn J ; Lee D ; Jung Y	2009	Full-text was not available
82	LC-MS/MS determination and urinary excretion study of seven alkaloids in healthy Chinese volunteers after oral administration of Shuanghua Baihe tablets.PG - 89-95LID - 10.1016/j.jpba.2015.10.014 [doi]LID - S0731-7085(15)30187-4 [pii]	Cheng M ; Liu R ; Wu Y ; Gu P ; Zheng L ; Liu Y ; Ma P ; Ding L	2016	Not related to the theme
83	Patient-centered wound teleconsultation for cutaneous wounds: a feasibility study.PG - 220-4LID - 10.1097/SAP.000000000000031 [doi]	Chen CH ; Young TH ; Huang CH ; Chang HH ; Chen CL ; Chien HF ; Chen JS ; Lai HS ; Cheng NC	2014	Does not evaluated effectiveness or clinical impact/benefit
84	Eliminating tuberculosis one neighborhood at a time.PG - 1292-300LID - 10.2105/AJPH.2012.300781 [doi]	Cegielski JP ; Griffith DE ; McGaha PK ; Wolfgang M ; Robinson CB ; Clark PA ; Hassell WL ; Robison VA ; Walker KP Jr ; Wallace C	2013	Not related to the theme
85	Real-time mobile detection of drug use with wearable biosensors: a pilot study.PG - 73-9LID - 10.1007/s13181-014-0439-7 [doi]	Carreiro S ; Smelson D ; Ranney M ; Horvath KJ ; Picard RW ; Boudreaux ED ; Hayes R ; Boyer EW	2015	Not related to the theme
86	Mobile teledermatology for a prompter and more efficient dermatological care in rural Mongolia.PG - 265-7LID - 10.1111/bjd.13607 [doi]FAU - Byamba, K	Byamba K ; Syed-Abdul S ; Garcia-Romero M ; Huang CW ; Nergyi S ; Nyamdorj A ; Nguyen PA ; Iqbal U ; Paik K ; Celi L ; Nikore V ; Somai M ; Jian WS ; Li YC	2015	Outcome is not clinical
87	Cost-benefit analysis of outcomes from the use of fibrin sealant for fixation of skin grafts in small-size burns compared to staples as historical controls: a retrospective review.PG - 173-5LID - 10.1097/SAP.0000000000000397 [doi]	Butts CC ; Sahawneh J ; Duffy A ; Curtis R ; Mishra N ; Frotan MA ; Hodge J ; Luterman A ; Gulati S	2015	Telemedicine is not the intervention/exposure
88	Evaluation of immediate and 12-week effects of a smartphone sun-safety mobile application: a randomized clinical trial.PG - 505-12LID - 10.1001/jamadermatol.2014.3894 [doi]	Buller DB ; Berwick M ; Lantz K ; Buller MK ; Shane J ; Kane I ; Liu X	2015	Does not evaluated effectiveness or clinical impact/benefit
89	Smartphone mobile application delivering personalized, real-time sun protection advice: a randomized clinical trial.PG - 497-504LID - 10.1001/jamadermatol.2014.3889 [doi]	Buller DB ; Berwick M ; Lantz K ; Buller MK ; Shane J ; Kane I ; Liu X	2015	Does not evaluated effectiveness or clinical impact/benefit
90	Teledermatology with an integrated nurse-led clinic on the Faroe Islands--7 years' experience.PG - 987-90LID - 10.1111/j.1468-3083.2010.03884.x [doi]	Bryld LE ; Heidenheim M ; Dam TN ; Dufour N ; Vang E ; Agner T ; Jemec GB	2011	Does not evaluated effectiveness or clinical impact/benefit

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Table S2 – Studies excluded in the selection process and reason for exclusion

	<b>Study</b>	<b>Authors</b>	<b>Year</b>	<b>Reason for exclusion</b>
91	Smartphone teledermoscopy referrals: a novel process for improved triage of skin cancer patients.PG - 186-90LID - 10.2340/00015555-1906 [doi]	Borve A ; Dahlen Gyllencreutz J ; Terstappen K ; Johansson Backman E ; Aldenbratt A ; Danielsson M ; Gillstedt M ; Sandberg C ; Paoli J	2015	Outcome is not clinical
92	Dermal PK/PD of a lipophilic topical drug in psoriatic patients by continuous intradermal membrane-free sampling.PG - 635-41LID - 10.1016/j.ejpb.2012.04.009 [doi]	Bodenlenz M ; Hofferer C ; Magnes C ; Schaller-Ammann R ; Schaupp L ; Feichtner F ; Ratzer M ; Pickl K ; Sinner F ; Wutte A ; Korsatko S ; Kohler G ; Legat FJ ; Benfeldt EM ; Wright AM ; Neddermann D ; Jung T ; Pieber TR	2012	Telemedicine is not the intervention/exposure
93	Implementation of Store-and-Forward Teledermatology and Its Associated Effect on Patient Access in a Veterans Affairs Dermatology Clinic.PG - 556-7LID - 10.1001/jamadermatol.2014.5272 [doi]FAU - Bezalel, Spencer	Bezalel S ; Fabri P ; Park HS	2015	Outcome is not clinical
94	Text-message reminders to improve sunscreen use: a randomized, controlled trial using electronic monitoring.PG - 1230-6LID - 10.1001/archdermatol.2009.269 [doi]	Armstrong AW ; Watson AJ ; Makredes M ; Frangos JE ; Kimball AB ; Kvedar JC	2009	Target only prevention
95	Evaluation and comparison of store-and-forward teledermatology applications.PG - 424-38LID - 10.1089/tmj.2009.0133 [doi]	Armstrong AW ; Sanders C ; Farbstein AD ; Wu GZ ; Lin SW ; Liu FT ; Nesbitt TS	2010	Does not evaluated effectiveness or clinical impact/benefit
96	Economic evaluation of interactive teledermatology compared with conventional care.PG - 91-9	Armstrong AW ; Dorer DJ ; Lugn NE ; Kvedar JC	2007	Outcome is not clinical
97	Comparative analysis of showering protocols for mass-casualty decontamination.PG - 435-9	Amlot R ; Larnar J ; Matar H ; Jones DR ; Carter H ; Turner EA ; Price SC ; Chilcott RP	2010	Telemedicine is not the intervention/exposure
98	Comparative study on skin dose measurement using MOSFET and TLD for pediatric patients with acute lymphatic leukemia.PG - CR325-9	Al-Mohammed HI ; Mahyoub FH ; Mofteh BA	2010	Not related to the theme
99	Unipolar versus bipolar radiofrequency treatment of rhytides and laxity using a mobile painless delivery method.PG - 446-53LID - 10.1002/lsm.20667 [doi]	Alexiades-Armenakas M ; Dover JS ; Arndt KA	2008	Telemedicine is not the intervention/exposure
100	Assessment of the mobile delivery of infrared light (1100-1800 nm) for the treatment of facial and neck skin laxity.PG - 221-6	Alexiades-Armenakas M	2009	Telemedicine is not the intervention/exposure
101	2013 SYR Accepted Poster Abstracts.PG - 32-53		2013	Not related to the theme

## Tele dermatology - current perspectives

Table S3 - Summary table of the studies that assessed clinical outcomes

Author, year	Country	Study design	Setting	Participants	Comparison group	Intervention group	Comparison	Intervention	Follow-up time* (months)	Outcomes	Main results
Armstrong et al., 2015	US	RCT	Medically underserved clinics, general outpatient clinics, and general community	Patients ≥ 4 years-old with AD, who had access to the internet and able to have their skin imaged by themselves or by family members. Patients who did not speak English or Spanish, requiring systemic treatments and patients requiring regular laboratory monitoring were excluded	n=78, female=53.8%, mean age=28.0±9.9 years	n=78, female=57.7%, mean age=27.4±10.1 years	Usual FTF care (6 visits at 2-month intervals)	Store-and-forward teleconsultation between patients and dermatologist using a secure online health care-delivery platform.	12	AD disease severity as assessed by POEM questionnaire responded on each visit and by the IGA scale	The mean (SD) difference in the change in POEM scores between the 2 groups was 0.24 (6.59) (90% CI, -1.70 to 1.23). Because the 90% CI of -1.70 to 1.23 is contained entirely within the equivalence margin of -2.5 to 2.5, the direct-access online model is equivalent to the in-person model for follow-up care of AD. In particular, in the direct-access online group, patients' IGA scores improved from a baseline median of 3 (IQR, 2-3) to a median IGA score of 2 (IQR, 1-2) at 12 months. The percentage of patients achieving IGA scores of 0 or 1 was 38.4% (95% CI, 27.7%-49.3%) in the direct-access online group. In the in-person group, patients' IGA scores also improved from a baseline median of 3 (IQR, 2-3) to a median IGA score of 2 (IQR, 1-2) at 12 months. The percentage of patients achieving IGA scores of 0 or 1 was 43.6% (95% CI, 32.6%-54.6%) in the in-person group.
Balato et al., 2013	Italy	RCT	Secondary care	Patients with psoriasis with age 18-65 years; current systemic and topical treatment; PASI between 5 and 15; the ownership of a cellular phone capable of receiving TM and the ability to use it.	n=20, male n=50%, mean age=38.4±9.5 years	n=20, male n=60%, mean age=39.3±10.2 years	Usual FTF care	Daily text messages providing reminders and educational tools.	3	Skin severity using PASI, BSA and PGA; patient-perceived disease severity with the SAPASI, quality of life using the DLQI, evaluation of the patient-physician relationship (through a 0-10 scale questionnaire) and treatment adherence.	Intervention group reported a significantly better improvement of disease severity as well as quality of life, showing lower values of PASI, SAPASI, BSA, PGA and DLQI with respect to the control group (p < 0.05). Adherence to therapy statistically improved (p < 0.001) in intervention group whereas it remained stable in the control group.
Bergmo et al., 2009	Norway	RCT	Secondary care	Children with medium to severe AD.	n=36, female=58%, children mean age = 5.3 (95% CI 4.3-6.3) years, parents mean age = 35.8 (95% CI 34.0-37.6) years	n= 37, female=52%, children mean age = 4.6 (95% CI 3.7-5.5) years, parents mean age = 32.9 (95% CI 31.3-34.5) years	Usual FTF care without access to the specialist, but encouraged to seek treatment through traditional means such as GP visits and hospital care.	Store-and-forward teleconsultation between patients/their parents and a dermatology resident through a secure web-based communication system.	12	Self-management behaviour; health outcome which was severity of the eczema was measured using objective or physician rated SCORAD; health resource use; and family costs.	Self-management behaviour: The mean number of skin care treatments per week performed by the parents decreased from baseline to 1-year follow-up, for both groups (from mean = 3.1 to 2.2, p < 0.001). Health outcome: There was no significant improvement in physician rated SCORAD from pre- to post-intervention. Resource use: Both groups had fewer overall health care visits after the 1-year intervention compared to baseline measurements (mean visits 7.1 vs. 2.9, p = 0.000), except for hospital admissions (p = 0.052). Family costs (p = 0.82) and loss of employment (p = 0.89) were not reduced after intervention.
Bundy et al., 2013	UK	RCT	General community	Patients with physician-diagnosed mild-to-moderate chronic plaque psoriasis. Patients were excluded if they suffered a current psychiatric illness, were receiving psychological treatment or were not fluent in English.	n=65, female=56.1%, mean age = 44.3±12.8 years	n=61, female=50%, mean age = 45.8±12.6 years	No additional treatment (wait-list)	Patients had access to the electronic Targeted Intervention for Psoriasis (eTIPs) programme containing six modules of cognitive behavioural therapy (CBT) plus education tailored to psoriasis using a multimedia delivery format to illustrate core concepts	6	The primary outcomes were anxiety and depression (HADS). Secondary outcomes were psoriasis severity using the SAPASI, quality of life with the DLQI, illness beliefs (Illness Perception Questionnaire - revised) and alcohol consumption (only anxiety, depression, psoriasis severity and quality of life are reported in the text).	Anxiety: Under complete cases analysis intervention (n = 33 intervention; 45 control) patients showed a significant reduction in mean anxiety score relative to control patients (-1.25 points, 95% CI -2.40 to -0.11), but the difference ceased to be significant when it was used multiple imputation of missing values (0.77 points, 95% CI 2.25-0.71; p = 0.30). Depression: There was no statistically significant difference between groups in either the complete cases (p = 0.088) or multiple imputation analysis (p = 0.34). Psoriasis severity: The post-intervention difference between groups in mean psoriasis severity score was not significantly different under either the complete cases (p = 0.67) or the multiple imputation analysis (p = 0.92). Quality of life: Quality-of-life scores for intervention patients showed a significant (p < 0.05) reduction (denoting improvement) compared with control patients, under both complete cases (1.93 points; 95% CI 3.72-0.13; P = 0.036) and multiple imputation analysis (2.46 points, 95% CI 4.21-0.71; p = 0.007).

## Tele dermatology - current perspectives

Table S3 - Summary table of the studies that assessed clinical outcomes

Author, year	Country	Study design	Setting	Participants	Comparison group	Intervention group	Comparison	Intervention	Follow-up time* (months)	Outcomes	Main results
Chambers et al., 2012	USA	RCT	Secondary care	Patients ≥ 18 years-old with a diagnosis of psoriasis, who were able to speak and read English, had access to a computer with Internet connection and a digital camera, and were able to have their skin imaged by themselves or someone else.	n=32, male=66%, mean age=43 years	n=32, male=50%, mean age=51 years	Usual FTF care	Store-and-forward teleconsultation between patients and dermatologist.	6	The extent and severity of psoriasis as measured by PASI between the first and final study visits. Secondary outcome measures included: (1) IGA score and (2) DLQI score	The changes in PASI scores between the two intervention groups were within the prespecified equivalency margin (mean difference in PASI score change 0.1, 95% CI -2.2-2.3). The analysis of the IGA score found that the groups were not significantly different in their categorical distribution during any of the visits (baseline: p = 0.74, follow-up 1: p = 0.80, follow-up 2: p = 0.16, outcome visit: p = 0.70). Between-group comparisons showed that no significant differences existed in the degree of improvement between online versus in-person care (mean difference in DLQI score change 1.1, 95% CI -4.1-2.0).
Fruhauf et al., 2014	Austria	RCT	Secondary care	Patients ≥12 years-old, diagnosed by a dermatologist as having acne with indication for isotretinoin therapy (failure to respond to topical therapies and systemic antibiotics)	n=35	n=34	Usual FTF care	Store-and-forward teleconsultation between patients and dermatologists via mobile tele dermatology network, plus appointment reminders.	6	Treatment efficacy, safety, patient compliance and patient satisfaction with remote care, GEA, TLC and PBI	Teleconsultation (GEA-score difference = 2.25; TLC difference = 89.08) and control groups (GEA-score difference = 2.0; TLC difference = 91.21) achieved excellent and almost equivalent therapeutic outcomes. At the end of the study, 50% patients of the teleconsultation and 65% patients of the outpatient consultation stated that they have experienced a therapeutic benefit (PBI > 1) from therapy; the median PBI amounted to 1.28 (SD 1.13) in the teleconsultation group and to 1.68 (SD 1.13) in the outpatient consultation group (p = 0.38).
Oostveen et al., 2014	Netherlands	Prospective cohort	Secondary care	Children (< 18 years-old) with plaque psoriasis receiving short-contact dithranol therapy. Children on systemic antipsoriatic treatment/phototherapy or other topical therapy, with excessive sun exposure, interrupted treatment, or multiple treatment episodes were excluded.	n=17, female=65%, mean age=11.4 ± 3.4 (range 5-17)	n=17, male=82%, mean age=10.2 ± 4.0 (range 3-17)	Usual FTF care	Usual care with one visit per week being replaced by online teleconsultation between patients and dermatologist through the Skype for Windows desktop software.	9	Effectiveness assessed by means of PASI, safety assessed by frequency of adverse events, and quality of life scored using a validated Dutch version of the CDLQI	The PASI, CDLQI and demographic characteristics did not differ significantly between the two groups, except for a preponderance of boys (82%) in the telemedicine group. Effectiveness between the groups did not significantly differ (67.2% for regular day care vs. 71.3% for telemedicine, p = 0.62). Overall, a significant mean change in CDLQI score of 5.1 was found (4.1 for regular day care vs. 6.1 for telemedicine, p = 0.25).
Pak et al., 2007	USA	RCT	Primary care	Patients ≥ 18 years-old who were being referred from the Department of Defence primary care clinics that had access to dermatology services affiliated with the Brooke Army Medical Center or the Darnall Army Community Hospital in Texas. Patients were excluded if they had multiple skin complaints, desired a full body screening examination, or had an emergency skin condition	n=347, female=66%, mean age=46.8 years	n=351, female=71%, mean age=46.3 years	Usual FTF care	Store-and-forward teleconsultation between patients and dermatologist using a server for subsequent review (TeleDerm Solutions Inc., Midland, TX, USA).	4	Clinical course rated on a three-point scale (improved, no change, or worse)	Clinical course: There was no difference between the groups in the proportion of subjects with each clinical course rating (p=0.57). When the rating scale was collapsed, the proportion of subjects rated as 'improved' or 'no change' was 98% for usual care and this was 96% for tele dermatology with no difference between groups ('improved' or 'no change' versus 'worse'; p=0.61). There was no difference between proportion of subjects rated as 'improved' (65% for usual care vs. 64% for tele dermatology; 'improved' versus 'no change' or 'worse'; p=0.71). Rating scale reliability: The agreement achieved only a fair level, with the simple agreement was 62%, and the kappa score was 0.25.
Seghers et al., 2015	Singapore	Prospective cohort (TD performed 1 week before conventional care)	In-hospital patients	Institutionalised psychiatric patients with stable dermatological condition confined to easily accessible body areas. Patients with unresolved dermatological or medical issues, frequent (> 4-6 times per year) or recent (< 1 month) disease flares, high probability for the need of further skin tests, and patients on follow up for systemic drugs or requiring procedural therapy were excluded	n=13 pairs, mean age=64.6 (range 44-80) years, 100% men with schizophrenia		Usual FTF care	Online tele dermatology consultation between patient and dermatologist using videoconferencing equipment	18	Inter-physician clinical assessment and diagnosis, inter-physician treatment or management plan, adverse events or outcomes, and total costs and turnaround time of each consultation	The level of complete and partial agreement between tele dermatology consult and FTF consultation was 100% for history-taking and physical examination and 96% for the investigations, diagnosis, management plan and the treatment prescribed. There was a 90% reduction in patient turnaround time using tele dermatology (23 minutes in tele dermatology consultation vs 240 minutes in FTF consultation). It was estimated that the total cost of a tele dermatology session was 56% lower, compared to a conventional consultation because of the reduction in manpower and transportation. No adverse events were reported.

## Teledermatology - current perspectives

Table S3 - Summary table of the studies that assessed clinical outcomes

Author, year	Country	Study design	Setting	Participants	Comparison group	Intervention group	Comparison	Intervention	Follow-up time* (months)	Outcomes	Main results
Stern et al., 2014	Canada	Cluster-randomized trial	Primary care	Patients with Stage II or greater PU	n=67, female sex=43 (64.2%), mean age=81 years	n=94, female sex=65 (69.1%), mean age=83 years	Usual FTF care	Hybrid model teleconsultation, via email, telephone, or video link between a health practitioner (personal support workers, nursing assistants, registered nurses) and the nurse specialist.	1-11	The primary outcome was rate of reduction in PU surface area (cm <sup>2</sup> /day). Secondary outcomes were: time to complete healing (days), percentage of wounds healed, PU incidence, PU prevalence, wound pain (Visual Analogue Scale-Pain), hospitalization, emergency department visits, utility (measured by the standardized instrument EQ5D), and cost-effectiveness	Measurements of 201 PUs from 119 residents were used in the analyses of the primary outcome. There was no difference in the rate of healing with and without the intervention, with the average rate of healing being 1.0058 times slower in the intervention period (95% CI 0.985-1.027, p=0.60). All secondary outcomes showed no statistical significant difference with intervention. There was some evidence of cost reduction (estimated reduction of direct care costs = \$649 per resident), although this estimation was subject to substantial uncertainty
Terry et al., 2009	US	RCT	Home care	Subjects with PU or nonhealing surgical wounds, except for partially or fully granulating surgical wounds, stage I PUs, burns, and diabetic wounds, individuals with life expectancy <6 months or age < 18 years	Group B: n=28, female=20 (71%), mean age=58.2±17.7 years.	Group A: n=40, female=26 (65%), mean age=58.4±17.1 years. Group C: n=35, female=25 (71%), mean age=57.5±15.9 years	Usual FTF care	Store-and-forward teleconsultation between a nurse and wound care specialists. Group A: all consultations were performed this way. Group C: teleconsultation was performed when requested by the research nurse.	16	The primary outcome variable was time to heal. Secondary outcome variables included number of nursing visits, LOS, change in size, wound status, and costs.	The study subjects in group A had, on average, a longer LOS, although this was not statistically significantly different from groups B and C. However, the number of nurses visits per study subject was significantly different, with group A having 27 visits compared with 13 for group B and 18 for group C (p = 0.043). Visit intensity was also statistically significant, with group A having more visits than groups B and C (p = 0.021). The total costs per subject (nurses visits, wound care specialist phone consults, wound care specialist home consults, and supplies) were significantly greater for group A subjects than subjects in the other 2 groups.
van Os-Medendorp et al., 2012	Netherlands	RCT	Secondary care	Children with moderate AD aged 0-4 years and adults with moderate AD aged ≥18 years. Emergency patients and patients using oral immunosuppressive drugs or undergoing ultraviolet (UV) B/UVA phototherapy were excluded	Adults group: n=53, female sex=26 (49%), mean age=32.1±10.8 years, length of period with AD = 20.8±13.8 years; Children (parents of children group): n=45, female sex=26 (58%), mean age=2.7±1.6 years, length of period with AD = 2.1±1.5 years	Adults group: n=56, female sex=39 (70%), mean age=30.9±12.7 years, length of period with AD = 21.8±14.3 years; Children (parents of children group): n=45, female sex=14 (31%), mean age=2.9±1.7 years, length of period with AD = 2.1±1.5 years	Usual FTF care	Patients had access to the password-protected eczema portal including store-and-forward teleconsultations with the dermatology nurse, who could consult the dermatologist if necessary	12	Quality of life, severity of atopic dermatitis, itching and direct and indirect costs	There were no significant differences between both groups over time for quality of life (p = 0.45) and intensity of itching (p = 1.00). The severity of atopic dermatitis differed significantly over time between the two groups (p = 0.04). However, the differences between the groups at each time point (baseline, 3 months, and 12 months) were not significantly different. The difference in direct costs between intervention and control groups was €24 (95% CI -360-383), whereas this difference was €-618 (95% CI -2502-1143) for indirect costs.
Watson et al., 2010	US	RCT	Secondary care	Subjects with ≥12 years-old with mild to moderate acne, who had access to a computer and Internet connection. Subjects with severe acne or those taking isotretinoin were excluded	n=77, female sex=59 (77%), mean age=28.0±8.82	n=77, female sex=59 (80%), mean age=27.5±8.13	Usual care	Store-and-forward teleconsultation between patients and a dermatologist	5 visits (the exact time was not clear)	Clinical outcomes: change in TILC between the first and last visit. Secondary outcomes: changes in acne severity, subject and dermatologist satisfaction with care, and length of time to complete visits	There was no significant difference between groups in TILC (p=0.49). There were no significant differences between control and intervention groups in subject satisfaction with overall care (98% vs 91%, p=0.054) or belief that acne had improved (88% vs 91%, p=0.64). Dermatologists took comparable lengths of time to complete e-visits and office visits (4 minutes, 42 seconds and 4 minutes, 8 seconds, respectively, p=0.57).

## Teledermatology - current perspectives

Table S3 - Summary table of the studies that assessed clinical outcomes

Author, year	Country	Study design	Setting	Participants	Comparison group	Intervention group	Comparison	Intervention	Follow-up time* (months)	Outcomes	Main results
Whited et al., 2013a	US	RCT	Secondary care	Patients from dermatology services for Veterans. They were excluded if they had >1 skin condition, did not have a visible or photographable skin condition, requested a full body examination, were unable to read or speak English, failed a single question literacy assessment, had an emergency skin condition, had a pending dermatology clinic appointment within the next 9 months, had previously enrolled in the study, or had an impending move from the area in the next 9 months	n=196, male sex=98%, mean age=63±14	n=195, male sex=97%, mean age=62±15	Usual FTF care	Store-and-forward teleconsultation. Information was sent by the study personnel to the dermatologist and the diagnosis/management plan was forwarded to the primary care physician	9	Clinical course ratings (5 categories: resolved, improved, unchanges - not clinically relevant, unchange - clinically relevant, and worse)	No significant difference in rating in the two groups (p = 0.65) for baseline to first visit assessment, and the most frequent rating category in both groups was "unchanged-clinically relevant" (51% for conventional care and 57% for tele dermatology). For baseline to 9 month assessment, there was no significant difference in rating for the baseline to 9 month image set comparisons in the two groups (p = 0.88) and the most frequent rating category in both groups was "improved" (46% for conventional care and 47% for tele dermatology). In analysis of clinical course, among tele dermatology patients who did and did not present to the dermatology clinic there was a significant difference between the two subgroups (p = 0.023). A larger proportion of tele dermatology patients with clinic visits were rated as improved compared to those without a clinic visit (29% vs 14%, respectively). Similarly, a smaller proportion of patients with clinic visits were rated as worse compared to those without a clinic visit (3% vs 17%).
Whited et al., 2013b										Quality of life; health status; global satisfaction assessment and diagnostic categorization	No evidence suggested a difference in the change in quality of life, and nor difference or health status for any scale between study groups at any time point with one exception (data was not shown). For the bodily pain assessed at 3 months scale, a significantly lower score (worse health state) was reported for the tele dermatology group. Few patients were unsatisfied with their care in either randomization group, although 3 patients in the tele dermatology group expressed strong disagreement to the satisfaction query compared with no patients expressing that sentiment in usual care.
Zarchi et al., 2015	Denmark	Non-randomized Cluster Controlled Study	Home care	Patients >18 years-old with chronic (>6 w) hard-to-heal wounds. Patients with pressure ulcers, surgical wounds, and cancer wounds were excluded	n =40, female sex=20 (50%), mean age=74.2±10.6	n =50, female sex=29 (58%), mean age=78.4±14.4	Usual FTF care	Store-and-forward teleconsultation between home-care nurse and specialists using a secure web-based secure program.	12	Time to complete wound healing or death from any cause	*Adjusted HR for wound healing with telemedicine vs. usual care 2.19; 95% CI 1.15–4.17; p= 0.017); and for all-cause mortality 0.24; 95% CI 0.0012–

AD: atopic dermatitis; BSA: body surface area; CDLQI: Children's Dermatology Life Quality Index; CI: confidence interval; DLQI: Dermatology Life Quality Index; FTF: face-to-face; GEA: global acne severity scale; GP: general practitioner; HADS: Hospital Anxiety Depression Scale; HR: hazard ratio; IGA: investigator global assessment; IQR: interquartile range; LOS: length of stay; PASI: psoriasis area severity index; PBI: patient benefit index; PGA: physicians global assessment; POEM: patient-oriented eczema measure; PU: pressure ulcer; RCT, randomized controlled trial; SAPASI: self-administered psoriasis area severity index; SCORAD: severity scoring of atopic dermatitis; TILC: total inflammatory lesion count; TLC: total lesion counting.

\* Rounded to the next integer.



## Teledermatology - current perspectives

Table S4 - Summary table of the diagnostic accuracy studies

Author, year	Country	Study design	Participants	Comparison	Intervention	Outcomes	Main results
Baumeistere et al., 2009	Germany	Randomized cross-sectional study	Male metal workers exposed to cutting fluids, n=100, median age = 42.5 (range 22-57) years	FTF consultation (preventive skin examinations)	Store-and-forward diagnosis by analysing digital images of dorsal and palmar aspects of both hands of each participant	Diagnostic accuracy. Participants got sorted into subjective categories, which corresponded to socre points.	There was no significant difference between FTF and tele-examination in the detection of primary changes (erythema, vesicles and papules). The teledermatological examination showed to be sufficiently sensitive in detecting early signs of hand eczema. The median values of sum totals and the median values for secondary changes (scaling, erosions, fissures and lichenification) were higher in the tele-examination, showing a tendency in tele-examination to assess the skin condition more critically when compared to FTF examination.
Ishioka et al., 2009	Brazil	Cross-sectional study	Patients with pigmented skin lesions, n=64, female sex = 39 (61%), age ranged 5-86 years	FTF consultation and histopathology examination.	Store-and-forward diagnosis by teledermatoscopy	Diagnostic accuracy, diagnostic concordance	Teledermatoscopy had high sensitivity (86.7%, 95% CI 70.3-94.7) and specificity (72.7%, 95% CI 55.8-84.9), while FTF diagnosis sensitivity and specificity were 96.7% (95% CI 83.3-99.4%) and 66.7% (95% CI 49.6-80.2%), respectively, but with no significant differences between them. The agreement between FTF and biopsy was kappa 0.73 (95% CI 0.61-0.85) and comparing telemedicine with biopsy results was kappa 0.66 (95% CI 0.53-0.79).
Maier et al., 2014	Germany	Prospective study	Patients seen routinely for skin cancer screening, n=195 melanocytic skin lesions	FTF consultation	Store-and-forward diagnosis using the SkinVision smartphone application, which analysed the photos and diagnosed the lesion according to an risk assessment algorithm	Diagnostic accuracy	The sensitivity of the diagnosis melanoma by fractal image analysis using smartphone images was 73% (95% CI 0.52-0.88), the specificity was 83% (95% CI 0.75-0.89) and the accuracy 81% (95% CI 0.74-0.87) compared to the histological results. The sensitivity and specificity of FTF diagnosis by one dermatologist compared to histological results were 88% (95% CI 0.69-0.98) and 97% (95% CI 0.92-0.99). The results regarding the other dermatologist were similar.
Manahan et al., 2014	Australia	Randomized study	Patients at high risk of melanoma (fair skin type, previous skin excisions, personal or family history), n = 49, female sex = 25 (51%), age 50-64 (range 50-54 = 19 (39%)), 24 (49%) had a history of at least one skin cancer in the past.	FTF consultation	SSE plus mobile teledermoscopy, divided in 2 groups: technical information (n=24) only and technical information + detailed SSE instructions (n=25).	Diagnostic accuracy, diagnostic concordance	At the participant level analysis, SSE plus mobile teledermoscopy had a sensitivity of 81.8% (95% CI 64.5-93.0) and a specificity of 56.3% (95% CI 29.9-80.2). At the lesion level analysis SSE plus mobile teledermoscopy had a sensitivity of 41.9% (95% CI 27.6-56.2) and specificity of 89.6% (95% CI 83.9-95.2). The overall diagnostic concordance between the tele- and clinical diagnosis was 89.8%. There was no statistical significance difference between the group with technical information only and technical information + detailed SSE instructions.
Rao et al., 2013	US	Cross-sectional study	Patients with lesions selected for removal for either cosmetic or medical reasons, n=334 lesions	An on-site trained dermatologist reader (1 year of experience reading RCM), Reader 1, evaluated the lesion based on dermatoscopic and confocal scanning microscope images. After imaging, the lesion was biopsied and sent to histopathology.	An expert dermatologist reader (9 years of experience reading RCM), Reader 2, evaluated the images of the lesions in distance	Diagnostic accuracy	The sensitivity for Reader 1 was 93.1% and the specificity was 64.1%. As for reader 2, sensitivity was 97.4% and specificity of 80.5%.
Shin et al., 2014	South Korea	Prospective study	Male army patients, n=100, mean age = 20.6 (range 18-26) years-old	FTF consultation	Store-and-forward diagnosis by teledermatologists analysing photographs of skin lesions took by a paramedic	Diagnostic accuracy, diagnostic concordance	The mean agreement between the diagnoses made during FTF and teledermatology consultations was 70.7% (SD 1.5). The mean kappa coefficient was 0.73 (SD 0.06) for the three most common diagnostic categories (eczema, viral wart, and fungal infection), indicating substantial agreement (kappa 0.70, 0.69 and 0.80 for teledermatologists 1, 2 and 3, respectively). The mean values for sensitivity were 78% (SD 0), 88% (SD 21) and 61% (SD 11) and the mean values for specificity were 93.1% (SD 5.2), 99.6% (SD 0.7) and 98.1% (SD 1.7), for eczema, viral warts and fungal infections, respectively. These kappa coefficients were significant (p < 0.05).
Tan et al., 2010	New Zealand	Prospective study	Patients with suspected skin lesions referred to a specialized skin lesion clinic, n=200 patients and 491 lesions, female sex= 126 (63%), age ranged 11-94 years	FTF consultation with 2 dermatologists	Store-and-forward diagnosis by teledermatoscopy, analysed by 2 dermatologists	Diagnostic accuracy, diagnostic concordance	Concordance between FTF diagnosis and teledermoscopy was 74% for the two dermatologists who performed both examinations for each patient. Compared to histopathology (when available), only one malignant lesion had been missed (a BCC diagnosed as solar keratosis) by teledermoscopy. Teledermoscopy approximated 100% sensitivity and 90% specificity for detecting melanoma and nonmelanoma skin cancers. Kappa values for intraobserver concordance between FTF and teledermoscopic consultation were 0.95 (95% CI 0.91-0.98) and 0.95 (95% CI 0.91-0.99), indicating perfect agreement. Kappa values for interobserver agreement were > 0.90 in all categories.
Warshaw et al., 2009a	US	Prospective study	Patients with nonpigmented lesions, n=728, male sex=712 (98%), mean age = 71 (range 21-94) years	FTF consultation by a dermatologist	Store-and-forward diagnosis by teledermatoscopy	Diagnostic accuracy	The aggregated diagnostic accuracy of teledermatology was statistically worse than usual care using macro images only (59.5% vs 76.1%, respectively, difference=-16.62, SE 2.84, 95% CI -20.22 to -13.02) and using polarized light dermatology (64.7% vs 76.0%, respectively, difference=-11.31, SE 1.77, 95% CI -14.77 to -7.85). Besides, the teledermatology intervention showed inferior accuracy when compared to FTF consultation for primary diagnosis and management plan in both group of diagnosis (malignant and benign) and in both scenarios (macro images alone and with polarized light dermatoscopic images).

## Teledermatology - current perspectives

**Table S4 - Summary table of the diagnostic accuracy studies**

Author, year	Country	Study design	Participants	Comparison	Intervention	Outcomes	Main results
Warshaw et al., 2009b	US	Prospective study	Patients with pigmented lesions, n=542, male sex=519 (96%), mean age = 66 (range 23-94) years	FTF consultation by a dermatologist	Store-and-forward diagnosis by teledermatology	Diagnostic accuracy	The aggregated diagnostic accuracy of teledermatology was statistically not equivalent than usual care using macro images only (64.0% vs 80.3%, respectively, difference=-16.24, SE 2.10, 95% CI -20.36 to -12.12), using macro images plus polarized light dermoscopic images (64.9% vs 80.4%, respectively, difference=-15.53, SE 2.02, 95% CI -19.48 to -11.58) and using macro images plus contact immersion dermatoscopy (67.0% vs 80.8%, respectively, difference=-13.8, SE 2.01, 95% CI -17.71 to -9.82). The teledermatology accuracy was worse for primary diagnosis and equivalent or better for management plan in macro images alone, macro images with polarized light dermoscopic images and macro images plus contact immersion dermatoscopy evaluation scenarios.

BCC: basal cell carcinoma; FTF: face-to-face; RCM: reflectance confocal microscopy; SD: standard deviation; SE: standard error; SSE: self-skin examination

## Teledermatology - current perspectives

Table S5 - Summary table of the diagnostic reliability studies

Author, year	Country	Study design	Participants	Comparison	Intervention	Outcomes	Main results
Barbieri et al., 2014	US	Prospective study	n=50, female=32 (64%), age (mean±SD)=55.2±16.2 years	Usual FTF inpatients evaluation when dermatologic consultation is request, using a standardized template for a triage decision	Patients informations and images were sent to two teledermatologists and independently analysed and fulfilled a triage and diagnosis forms	Diagnostic concordance of triage plans and the decision to biopsy, diagnostic agreement.	Triage concordance between the in-person dermatologist and the teledermatologists was moderate (Kendall $\tau$ rank correlation coefficient ranged 0.41-0.48). Interrater reliability between the two teledermatologists was moderate (Kendall $\tau$ rank correlation coefficient 0.41, 95% CI 0.19-0.62). Decision to biopsy concordance was fair to moderate (kappa 0.35, 95% CI 0.12-0.58, between the in-person dermatologist and teledermatologist 1, and kappa 0.61, 95% CI 0.39-0.82, between the in-person dermatologist and teledermatologist 2. Interrater reliability between the two teledermatologists was substantial (kappa=0.63, 95% CI 0.42-0.84).
Chung et al., 2007	US	Preliminary study	n=10	Usual FTF inpatients dermatologic consultation	Imagens of the lesions were transmitted by phone for examination by the supervising board certified attending dermatologist.	Diagnostic concordance, accuracy.	The concordance of the diagnoses between dermatologic resident and teledermatologist was 80 percent (8/10 cases).
Di Stefani et al., 2007	Italy	Prospective pilot study	n=465 pigmented skin lesions	Usual clinical and dermoscopic FTF examination with subsequent diagnosis and management recommendation for each lesion by a dermoscopy expert	Images of the lesions were sent via e-mail to two experts in dermoscopy including clinical data. They independently evaluated the lesions conducted to an additional dermoscopy whether is needed, and in a second step, proposed their final management recommendation.	Interobserver agreement; diagnostic concordance	The concordance was moderate between the FTF and the two teledermatologists (kappa=0.530-0.565) and between the two teledermatologists (kappa=0.493) in the first step (triage), and it was substantial between FTF and the two teledermatologists (kappa=0.681-0.703) and moderate between the two teledermatologist (kappa=0.584) in the second step (dermoscopy).
Fabroccini et al., 2007	Italy	Prospective study	n=44 atypical lesions	Usual FTF consultations was done by two clinicians, one of them were responsible for 28 lesion and the other, for 16 lesions	Clinical and dermoscopic pictures of all lesions were sent by e-mail to the observer who examined them teledermatologically.	Interobserver agreement, diagnostic agreement	Interobserver agreement between the two teledermatologists was fair (kappa=0.362) for clinical diagnosis, and moderate (kappa=0.435) for dermoscopic diagnosis of melanocytic lesions. The agreement between clinical and dermoscopic diagnoses in FTF consultation, and histopathological diagnoses were moderate (kappa=0.520) and substantial (kappa=0.696), respectively. The agreement between clinical and dermoscopic diagnoses in teleconsultation, and histopathological diagnoses were moderate (kappa=0.443 and kappa=0.450, respectively).
Ferrer et al., 2009	Spain	Prospective non-randomized study	n=158, female=94 (59.5%), age (mean±SD)=55.25±21.5 years	Usual FTF dermatologic consultation	Images obtained by patients were transmitted through web server to two teledermatologists..	Diagnosis concordance	In grouped diagnosis, concordance between general practitioner of primary care and final diagnosis was moderate (kappa=0.598, CI 95% 0.50–0.70, p<0.0001) and between telediagnosis and final diagnosis was almost perfect (kappa=0.947, CI 95% 0.90–0.99, p<0.0001).
Fruhlf et al., 2010	Austria	Prospective non-randomized study	n=10, male=6, age (mean±SD)=40 years, patients with psoriasis	Usual FTF consultation and evaluation of patients their lesions using the severity score PASI/PPPASI	To compare diagnostic accuracy between in-person and teledermatology using a severity score for psoriasis.	Interrater agreement	The PASI/PPPASI scores correlated significantly between the face-to face and the teledermatologists (r=0.71-0.98) as well as between the two teledermatologists (r=0.93) (p<0.001). The interrater variability (mean PASI/PPPASI deviation from FTF) was very low for both teledermatologists, with values ranging from 0.86 to 3.39. For patient outcomes, the agreement between teledermatologists and FTF was moderate to substantial (kappa=0.52-0.78).
Heffner et al., 2009	US	Prospective study	n=137, age (mean±SD)=6.2 years, pediatric patients	Usual FTF dermatologic consultations	Patients informations and images were presented to dermatologist and he also evaluated the patient in a FTF consultation, establishing a diagnosis. The same images and clinical datas were presented to another dermatologist, establishing a diagnosis.	Intrarater agreement, interrater agreement	Intrarater concordance between the in-person and photographic diagnosis by the primary dermatologist was 82% (95% CI 75-89%), with substantial agreement (kappa=0.80, 95% CI 0.73-0.88). Interrater concordance between the two dermatologists receiving photographs and history alone was 73% (95% CI, 64%-80%), with substantial agreement (kappa=0.69, 95% CI 0.61-0.77). Interrater concordance between the two dermatologists, one viewing the patient in person and the other viewing photographs alone was 69% (95% CI, 60%-77%), with substantial agreement (kappa=0.65, 95% CI 0.58-0.73).
Hill et al., 2009	US	Prospective study	n=42, male=40 (95%), age (mean±SD)= 58±13 years, patients assessed for skin integrity and pressure ulcers	FTF consultation for the assessment of the lesions in a prepared room	Videoconferences were made by a teleconsultant simultaneously to FTF visual inspection of the skin and clinical informations were resumed for an in-person evaluator to the same teleconsultant	Diagnostic agreement	The agreement on the primary diagnosis of the stage of pressure ulcer was good between telephone and FTF diagnosis (Spearman's rho=0.76) and between videoconferencing and FTF diagnosis (Spearman's rho=0.83). In validation assessment, sensitivity and specificity on detection of pressure ulcer was excellent in both telephone (0.87 and 0.93, respectively) and videoconferencing conditions (1.00 and 0.97, respectively). The telephone and videoconferencing modalities showed a tendency to larger measurements of wound size than those made in-person. There was a tendency for the evaluators in the videoconferencing condition to be more accurate in the aspects of the pressure ulcer and surrounding skin than the evaluators in the telephone condition (sensitivity values ranged from 0.53 to 0.88 in the videoconferencing condition, and from 0.20 to 0.81 in the telephone condition).
Karlsson et al., 2015	Sweden	Prospective study	n=97, female=56 (57.7%), median age=11 (range 7-16) years	FTF manual counting of CMN on the back of children and digital imaging by a dermatologist	Two dermatologists independently viewed all digital images, estimated the total number and sizes of CMN and indicated the location of each naevus on an anatomical paper chart	Diagnostic agreement	The inter-method reliability for the total number of common melanocytic naevi showed substantial agreement for both teledermatologists when compared with the manual counting (weighted kappa=0.69-0.78) and inter-rater reliability was also substantial (weighted kappa=0.80) between the two dermatologists. Lower agreement was seen for common melanocytic naevi of size between 2 and 6 mm and even lower agreement for size lower than 2 mm.

## Teledermatology - current perspectives

Table S5 - Summary table of the diagnostic reliability studies

Author, year	Country	Study design	Participants	Comparison	Intervention	Outcomes	Main results
Lamel et al., 2012	US	Prospective diagnostic concordance	n=86, female=50 (58%), age (mean±SD)=45.24±13.64 years	FTF examination by a dermatologist	A teledermatologist evaluated digital images acquired from the mobile phone while being blinded to the evaluations and recommendations from the FTF dermatologist	Management concordance, aggregated diagnostic concordance as any agreement between FTF and teledermatologists, and primary categorical diagnostic concordance as the agreement of the diagnostic category of the lesion	There was moderate agreement between FTF and mobile teledermatology evaluation for both management and aggregated diagnostic concordance (kappa 0.57 and 0.60, respectively). The agreement for primary categorical diagnostic concordance was substantial (kappa=0.62)
Nami et al., 2015	Italy and Austria	Prospective diagnostic concordance	n=391, female=240(52.2%), age (mean±SD)=54 years	FTF examination by a dermatologist	Images of skin lesion (1-6 images) from two centres was taken and send to a expert dermatologist in addition to the patients' medical history for the examination	Diagnostic agreement, therapy agreement	The diagnostic agreement between FTF and store-and-forward evaluation was almost perfect (kappa=0.906), while the therapy agreement was substantial to almost perfect (kappa 0.65-0.86).
Osei-tutu et al., 2013	Ghana and US	Diagnostic concordance randomized	n=34	FTF examination with one of three Ghanaian dermatologists who made a diagnosis of a primary skin condition	Images of lesions acquired in FTF visit, was transferred to a World Wide Webbased interface for subsequent viewing by separate and remote Ghanaian and US teleconsultants	Diagnostic concordance	Diagnostic concordance in skin disease was 79.4% and 78.8% of the cases when comparing FTF visits with remote Ghanaian and US teleconsultants, respectively.
Paradela-de-la-Morena et al., 2015	Spain	Retrospective observational study	Same 421 consultations in 383 patients younger than 15 years	FTF examination by a pediatrician with subsequent diagnosis and management suggestion by a teledermatologist.	The pediatrician uploads images and clinical data through a web portal. The teledermatologist replies to the pediatrician with diagnosis and management suggestions. If needed, patients were sent to FTF dermatology consultation.	Diagnostic agreement	The agreement between teledermatologist and general pediatricians was substantial for global diagnosis (kappa 0.78) and for specific diagnosis (0.73). The diagnostic agreement between teledermatology and FTF consultation was also substantial (kappa 0.79).
Rennekampff et al., 2015	Germany	A secondary analysis of data obtained from two prospective open-label randomized controlled clinical trials	n=47, different wound halves	Documented time to heal of wound lesions made in FTF consultation performed in two clinical trials	Two plastic surgeons, a dermatologist, and a maxillofacial surgeon constituted a rater panel that assessed high resolution images of the time of healing of patient wounds derived from two randomized controlled trials	Intrarater reliability, interrater reliability, validity	The mean intraclass correlation coefficient of all four examiners was 0.79 (95% CI 0.61-1.00) representing an excellent value. The interrater correlation coefficient including all four raters was good (r=0.67, 95% CI 0.57-1.00). The agreement between remote visual assessment and clinical assessment at the time of healing was good (r=0.64, 95% CI 0.52-0.76).
Rios-Yuil et al., 2011	Panama	Analytical, correlational, quasi-experimental, randomized and open study	n=30, female=19 (63.30%), age = 50-59 years	Presential case conference (patient was in the room for evaluation - FTF) regarding to the diagnose of the lesion. The biopsy results were considered gold standard.	The case (clinical history + lesion images) was presented in the teleconference room for analysis of the teledermatologists. They had to provide a diagnose in a individual sheet after the case presentation and discussion in the conference room.	Diagnostic concordance	The concordance of diagnostic between FTF and teleconsultation was substantial (kappa=0.6512).
Romero et al., 2010 / Romero-Aguilera et al., 2014	Spain	Prospective, randomized, controlled, experimental diagnostic-concordance.	FTF group (n=89), store-and-forward group (n=192), hybrid videoconferencing and store-and-forward group (n=176)	FTF consultation by a dermatologist	Two arms of teledermatology intervention: i) remote store-and-forward consultation was done by a teledermatologist based solely on the clinical data and photographs submitted by another dermatologist; ii) teledermatologist first assessed the photographs and clinical data submitted by another dermatologist, and then a videoconference session via webcam was held, with both the general practitioner and patient present. No new photographs could be included with the videoconference session	Diagnostic agreement, treatment agreement	Intraobserver agreement between FTF and remote consultations (store-and-forward and videoconference) in diagnosis and treatment was higher than 85% and higher than 75%, respectively. Concordance in diagnosis was influenced by image quality (p<0.001), confidence in diagnosis (p<0.001) and need for conventional consultation (p<0.001).

## Teledermatology - current perspectives

**Table S5 - Summary table of the diagnostic reliability studies**

Author, year	Country	Study design	Participants	Comparison	Intervention	Outcomes	Main results
Vano-Galvan et al., 2011	Spain	Descriptive transversal study of measures repeated	n=100 patients	Usual FTF dermatology consultation compared to teledermatology intervention regarding to diagnosis and management of skin lesions.	Images of the lesions taken by GPs (in primary care and emergency settings) were sent through the web to 20 teledermatologists who provided a diagnose, management decision and reasons for a FTF consultation when needed.	Diagnostic concordance	Complete agreement between teledermatology and FTF diagnosis was 69.05% (95% CI 66.9-71.0%) and aggregate agreement was 87.80% (95% CI 86.1-89.0%). The percentages of complete and aggregate agreements of teledermatology were higher in the group of patients from primary care (76.1% and 91.8%, respectively) than in those from emergency care (61.8% and 83.4%, respectively), and also in the group of patients diagnosed with infectious disease (73.3% and 91.3%, respectively) than in those with inflammatory disease (70.8% and 86.4%, respectively) or with tumoral disease (63.0% and 87.2%).
Wu et al., 2015	US	Prospective cohort study	n=34, female=18, age (mean±SD)= 43.6 (18-81) years	Short-term teledermoscopy monitoring of atypical nevi by patients compared to conventional FTF visits monitoring.	Mobile dermoscopic images took by patients were sent via the Internet to a teledermatologist at baseline and follow-up visits. The aim was to evaluate the presence of significant clinical lesion change.	Diagnostic concordance, patient receptivity to the intervention	The diagnosis agreement between the in-person dermatologist and the teledermatologists was almost perfect (kappa 0.87). Regarding the patient receptivity, questions in domains 1 (image capture) and 2 (facilitators for use) reflect patient user confidence and favorable attitude toward teledermoscopy, and patient agreement in these domains was significantly higher compared with responses for questions in domain 3 (barriers to use), which represent a negative attitude toward teledermoscopy ( $p < 0.01$ ).

CI, confidence interval; CMN, common melanocytic naevi; FTF, face-to-face; PASI, Psoriasis Area and Severity Index; PPPASI, Palmoplantar Psoriasis Area and Severity Index; SD, standard deviation.