



## Topic Exploration Report

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

1. Inform discussions on new topics received by HTW.
2. Determine the quantity and type of evidence available on a topic.
3. Assess the topic against HTW selection criteria.

Topic:	Teleophthalmology
Topic exploration report number:	TER046
Referrer:	Claire Morton, Consultant Ophthalmologist, Betsi Cadwaladr University Health Board
Topic exploration undertaken by:	Cedar (on behalf of Health Technology Wales)

### Aim of Search

Cedar researchers searched for evidence on the use of teleophthalmology to diagnose acute eye problems in hospital casualty departments without an on-call ophthalmologist.

### Summary of Findings

A systematic review by Tan et al (2017) found that in terms of diagnostic accuracy, real-time teleophthalmology was considered superior to face-to-face consultation in one study and comparable in six studies, although this included chronic as well as acute conditions.

We also identified two small pilot studies, one of which was conducted in North Wales (Kulshrestha et al 2010), a retrospective analysis by Rosengren et al (1998), and a prospective review by Blackwell (1997). These suggest good diagnostic agreement between face-to-face consultation and teleophthalmology, a reduction in the need for acute hospital transfers and good acceptability. Verma et al (2007) reported on the successful use of teleophthalmology in the diagnosis of acute and chronic conditions.

A 2001 economic study by Lamminen et al involving teleconsultations in primary care found that it was cost effective and educational.

### Conclusions

There is evidence on the use of teleophthalmology in chronic conditions such as age related macular degeneration or glaucoma, but evidence on the use of teleophthalmology in acute conditions is more limited.

The available evidence suggests that teleophthalmology has good diagnostic accuracy and has the potential to improve patient care. However, the evidence is of poor quality and much of it is relatively old.

### Areas of Uncertainty

The relevant evidence identified is relatively old, and may not therefore be representative of current practice or more up-to-date versions of teleophthalmology technology.

It is unclear if there are plans to expand any of the pilot studies identified to a fuller assessment of teleophthalmology.

### Feasibility of Technology Assessment

There is evidence suggesting that teleophthalmology could offer patient benefits and quality improvement, but the evidence specific to acute conditions is very limited. It is unlikely that there is sufficient published evidence on acute care upon which to base a technology assessment.

HTW's Assessment Group concluded not to progress this topic further. This topic may be revisited in future and its suitability for fuller assessment reconsidered.

## Brief literature search results

Resource	Results
HTA organisations	
<a href="#">Healthcare Improvement Scotland:</a>	No results relevant to teleophthalmology
<a href="#">Health Technology Assessment Group</a>	No results relevant to teleophthalmology
<a href="#">Health Information and Quality Authority</a>	No results relevant to teleophthalmology
UK guidelines and guidance	
<a href="#">SIGN</a>	No results relevant to teleophthalmology
<a href="#">NICE</a>	<ul style="list-style-type: none"> <li>NICE Guideline NG82 January 2018. Age related macular degeneration: diagnosis and management. Available at: <a href="https://www.nice.org.uk/guidance/ng82/evidence/full-guideline-pdf-170036251098">https://www.nice.org.uk/guidance/ng82/evidence/full-guideline-pdf-170036251098</a> [Accessed: 25 March 2019]. Related to age related macular degeneration with some reference to use of teleophthalmology in its management.</li> </ul>
Secondary literature and economic evaluations	
<a href="#">EUnetHTA</a>	No results relevant to teleophthalmology
<a href="#">ECRI</a>	No results relevant to teleophthalmology
<a href="#">Cochrane library</a>	No results relevant to teleophthalmology
Medline	<ul style="list-style-type: none"> <li>Tan IJ, Dobson LP, Bartnik S1, Muir J, Turner AW. Real-time teleophthalmology versus face-to-face consultation: A systematic review. [Review] Journal of Telemedicine &amp; Telecare. 23(7):629-638, 2017 Aug. DOI:<a href="https://doi.org/10.1177/1357633X16660640">10.1177/1357633X16660640</a></li> </ul>
Primary studies	
Medline	<ul style="list-style-type: none"> <li>Kulshrestha M; Lewis D; Williams C; Axford A. A pilot trial of tele-ophthalmology services in north Wales. Journal of Telemedicine &amp; Telecare. 16(4):196-7, 2010. DOI:<a href="https://doi.org/10.1258/jtt.2010.004009">10.1258/jtt.2010.004009</a></li> <li>Verma M; Raman R; Mohan RE. Application of tele-ophthalmology in remote diagnosis and management of adnexal and orbital diseases. Indian Journal of Ophthalmology. 57(5):381-4, 2009 Sep-Oct. doi: <a href="https://doi.org/10.4103/0301-4738.55078">10.4103/0301-4738.55078</a></li> <li>Gonzalez F; Iglesias R; Suarez A; Gomez-Ulla F; Perez R. Teleophthalmology link between a primary health care centre and a reference hospital. Medical Informatics &amp; the Internet in Medicine. 26(4):251-63, 2001 Oct-Dec.</li> <li>Lamminen H; Lamminen J; Ruohonen K; Uusitalo H. A cost study of teleconsultation for primary-care ophthalmology and dermatology. Journal of Telemedicine &amp; Telecare. 7(3):167-73, 2001. DOI: <a href="https://doi.org/10.1258/1357633011936336">10.1258/1357633011936336</a></li> <li>Rosengren D; Blackwell N; Kelly G; Lenton L; Glastonbury J. The use of telemedicine to treat ophthalmological emergencies in rural Australia. Journal of Telemedicine &amp; Telecare. 4 Suppl 1:97-9, 1998. DOI:<a href="https://doi.org/10.1258/1357633981931650">10.1258/1357633981931650</a></li> <li>Blackwell NA; Kelly GJ; Lenton LM. Telemedicine ophthalmology consultation in remote Queensland. Medical Journal of Australia. 167(11-12):583-6, 1997 Dec 1-15.</li> </ul>

<a href="#">Cochrane library</a>	No results relevant to teleophthalmology
Ongoing secondary research	
<a href="#">PROSPERO database</a>	No results relevant to teleophthalmology
Ongoing research	
<a href="#">Clinicaltrials.gov</a>	No results relevant to teleophthalmology
Other	
Evidence provided by topic proposer	<ul style="list-style-type: none"> <li>Ribeiro AG, Rodrigues RAM, Guerreiro AM, Regatieri CVS. A teleophthalmology system for the diagnosis of ocular urgency in remote areas of Brazil. <a href="#">Arq Bras Oftalmol 2014;77(4):214-8.</a></li> <li>Johnson KA; Meyer J; Yazar S; Turner AW. Real-time teleophthalmology in rural Western Australia. <a href="#">Aust J Rural Health. 2015; 23(3):142-9</a></li> </ul>
Snowballing from identified literature	<ul style="list-style-type: none"> <li>Khan AA, Mustafa MZ, Sanders R. Improving patient access to prevent sight loss: ophthalmic electronic referrals and communication (Scotland). <a href="#">Public Health. 2015 Feb;129(2):117-23.</a></li> <li>Bar-Sela SM, Glovinsky Y. A feasibility study of an Internet-based telemedicine system for consultation in an ophthalmic emergency room. Journal of Telemedicine and Telecare. 2007; 13(3):119-24. DOI: <a href="#">10.1258/135763307780677640</a></li> </ul>

<b>Date of search:</b>	April 2019
<b>Concepts used:</b>	teleophthalmology, telemedicine and ophthalmology, or digital ophthalmology