

## Smart Glasses – A New Tool in Medicine

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### Abstract

Smart glasses, defined as a computerized communicator with a transparent screen and a video camera, wearable as a pair of glasses, have started to be tested for a variety of health related applications. This poster reviews some of the early experiences and gives a series of proposals for possible uses in medicine with a particular emphasis on medical education.

### Keywords:

Clinical informatics; Educational models; Google Glass.

### Introduction

Smart glasses have the following set of features:

- A hands free communicator, that can communicate via Bluetooth with, for example, a smart phone, or directly with the Internet when Wi-Fi is available.
- A video camera and voice recorder/transmitter.
- A display for viewing text and images.
- A voice input interface.

The most published product today is Google Glass which has been available for pilot beta tests since February 2013. Like tablets and smart phones, smart glasses are a platform for various applications [1]. They were not specifically targeted at health care but there are already numerous pilots supporting various medical applications. On January 15, 2015 Google announced [2] that the production of the Glass prototype was stopped but Google remains committed to the development of the product.

### Methods

This poster is based on a literature review of 17 full papers.

### Results

Since their release, smart glasses have been tested in health care for a variety of applications using limited numbers of patients and reported in various news media and conferences. Our literature review found seventeen scientific papers which provide a clinical evaluation of these new devices. In addition to monoapplication papers, Muensterer *et al* had a pediatric surgeon wear a glass device throughout the day for four weeks and recorded possible situations where the technology might assist. These papers provide mostly promising results but also caution where the technology was deemed not suited for the tested application, for example for ECG interpretation and autopsy documentation.

Table 1 – Different application areas described

Application area	Findings
Remote instruction of users wearing Glass	Beneficial use in cardiologist education, Orthopedic surgery training, Cancer surgery, Central venous access, Ultrasound interpretation, and in Diabetic limb assessment
Documenting procedures	Autopsy documentation, Airway intubation
Patient empowerment	Allergy patients getting access to information, Macula patients getting augmented vision
Reading signal data	ECG assessment, Immunochromatography, Vital signs during radiological intervention
Providing instructional films and simulation	Disaster medicine, Anatomy and palpation

### Discussion

There are many potentially important applications of this new technology in medical education both for remote supervision and for the production of educational films. The usefulness in clinical practice, for example for seeking a second opinion or providing assistance to the workflow or reading of adapted EHRs remains to be studied.

### References

- [1] Google Glass: Tech specs. Available at: <https://support.google.com/glass/answer/3064128?hl=en>. Accessed 6th, August, 2014.
- [2] Google Glass sales halted but firm says kit is not dead. Available at: <http://www.bbc.co.uk/news/technology-30831128>. BBC News. January 15, 2015.

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