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Title

Non-inferiority comparison of on-site ophthalmic diagnosis by residents versus remote, asynchronous diagnosis by faculty

Priority 1 (Research Category)

Evaluation of diagnostic or screening test

Presenters

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Abstract

Context: Teleophthalmology via portable retina cameras usable by non-ophthalmologists may increase access to ophthalmology care in underserved populations, but there is limited data on their accuracy.

Objective: To evaluate the diagnostic accuracy of two novel optic devices between on-site residents and remote, asynchronous faculty.

Study Design and Analysis: Single-blinded prospective comparative trial. Ophthalmology residents from the University of São Paulo (USP) provided care to a remote population in Iguape, Brazil through a joint effort between USP and Unidade Mista de Saúde. Residents recorded a brief history and visual analysis using two novel digital cameras. Image(s) and/or video(s) of the anterior anatomy of the eye were captured using a prototype camera with 2 settings: diffuse light and slight lamp. Images of the posterior chamber were captured using Eyer®. Residents documented their provisional diagnosis. USP ophthalmology faculty completed a blinded review of the history and images and documented a diagnosis. On-site versus remote diagnoses were compared, and considered the same if they were either identical or if the difference was not clinically significant, as determined by independent faculty review. Concordance was measured by Cohen's kappa for inter-rater reliability to 95% confidence.

Setting: Rural outpatient clinic.

Population Studied: Adults living in the greater Iguape, Brazil catchment area.

Intervention: Ophthalmic assessment.

Outcome Measures: Similarity of ophthalmologic diagnoses.

Results: Inter-rater reliability for 120 anterior chamber images examined from the prototype camera and 130 retinal images from Eyer® were 0.98 (95%CI 0.96-1.00) and 0.97 (95%CI 0.94-0.99) respectively.

Expected Outcomes: On-site resident diagnoses of optic diseases almost perfectly agrees to that of remote, asynchronous faculty diagnoses. Asynchronous teleophthalmology consultation using a brief history and detailed image(s) and/or video(s) may be used to expand ophthalmology capacity in remote areas.