ACP Educational Grant- Preliminary report

TITLE: Refining funduscopic examination using smartphones.

PI Claudia L. Campos, MD

Assistant Professor

General Internal Medicine

Wake Forest Baptist Health

ABSTRACT BODY:

Needs and objectives: Funduscopic retinal examination is a useful bedside tool in the diagnosis of many diseases, yet it is underutilized in the primary care setting mainly because of lack of operator proficiency. One important limitation of traditional ophthalmoscopes is the inability to capture images making demonstration of findings to learners difficult.

Our objectives were to enhance resident’s expertise in interpreting retinal examination findings and to introduce them to new technology that would facilitate the performance of retinal exams at the bedside.

Setting and participants: Our target audience was Internal Medicine Residents in our academic Institution during a scheduled half-day instructional session.

Description: On September 30th we conducted a 90 minute workshop that included 2 Power Point presentations covering normal and pathologic findings of the retina; followed by a hands on portion to practice non dilated retinal examination offering traditional ophthalmoscopes and smartphones with retinal adaptors (iPhone 5 with 2 D-eye adaptor and its application). Minimal 1 minute instruction on how to use the I- phone device was given during the lecture.

Evaluation: Anonymous pre and post workshop surveys with a total of 7 questions were administered to all participants. The 6 initial questions of the survey assessed their perceived abilities to use the portable retinal device and to recognize ophthalmic pathology (hypertensive retinopathy, diabetic retinopathy, glaucoma, macular degeneration, cataracts) using a 5 point Likert scale from (1-extremely unconfident to 5- extremely confident). The last question assessed their enthusiasm on the ability to access new technology to perform retinal exam in the clinic (1 strongly disagree to 5-strongly agree).

Survey results: A total of 28 residents responded the pre course survey and 24 responded the post course survey (out of 30 participants).The majority of residents (96%) reported a deficiency in the perception of their ability to use a portable retinal camera (extremely and somewhat unconfident) during the pre-course questionnaire. After the workshop, that perception dropped by half (extremely unconfident 4.5%, somewhat unconfident 36.4%). As far as the residents’ ability to recognize pathology prior to the course, the majority felt unable (extremely and somewhat uncomfortable) to identify hypertensive retinopathy (70%), diabetic retinopathy (81%), macular degeneration (92.9%), glaucoma (63%). After the course, they rated that their ability (somewhat and extremely comfortable) to recognize hypertensive retinopathy (54%), diabetic retinopathy (42%), macular degeneration (37%), glaucoma (63%). Before the course, their enthusiasm regarding the retinal device was moderate (48% agree) and after the course it was good (50% agree and 45% strongly agree).

Observations: Most residents were able to capture in video the optic disk during their first attempt following the software instructions. None of the residents chose to practice the exam with traditional ophthalmoscopes.

Discussion / reflection / lessons learned: The ability to perform and interpret retinal examination findings is a clear deficiency for our Internal Medicine Residents. A short course reviewing retinal pathology and funduscopic technique is a valuable teaching tool to enhance their physical examination skills.

The use of smartphones as ophthalmoscopes was received enthusiastically by residents. The I phone with 2 D Eye and its application are user friendly and did not need much instruction from facilitators to capture images.

The availability of new Smart phone technology with retinal adaptor is a user friendly and attractive teaching tool that may help revive retinal examination in primary care.

Budget: attached