

## Teaching exchange

We have two short articles this time. The first one is perhaps a bit more technical than we would normally publish but, given that clinical skills for undergraduates are nowadays largely taught in primary care, it seems very relevant. The authors' preliminary evaluation of their method is interesting and it will be even more interesting to see the results of their 'trial' of the eye model.

The second article raises some very important questions with regard to the appraisal of GPs who are not principals. The system is not entirely geared to the differing circumstances of these doctors. John Pitts poses some very pertinent questions – and offers some ingenious solutions.

We are always looking out for articles for *Teaching exchange*. We like to think that short accounts of educational ideas that have worked, or look as though they might work, in your neck of the woods, are of interest to other primary care educators. The writing need not be polished – we can easily sort that out 'in-house' – it's the ideas that count. If you feel daunted by producing a finished article please email Paul Sackin ([paulsackin@compuserve.com](mailto:paulsackin@compuserve.com)) with a rough draft, or even just with your preliminary ideas. He will be delighted to discuss how they might be turned into a finished article.

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### Improving the teaching and learning of fundoscopy skills: the Timberlake Eye Model

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Keywords: clinical skills, fundoscopy, teaching and learning

#### INTRODUCTION

Fundoscopy is a necessary clinical skill for medical learners and primary care physicians, and formal teaching in direct fundoscopy has been shown to improve learners' skills.<sup>1,2</sup> Eye models offer advantages over humans as fundoscopy teaching subjects because they never tire, move or blink and can illustrate multiple retinal pathologies.<sup>3</sup> Commercially available eye models that offer sophisticated features are often expensive, yet inexpensive models may lack important features for a useful teaching tool, for example, the ability to alter pupil size and simulate myopia and hyperopia.<sup>3,4</sup> To address these teaching challenges, we developed and evaluated a simple, inexpensive eye model to improve fundoscopy skills teaching and assessment for medical learners.

#### METHODS

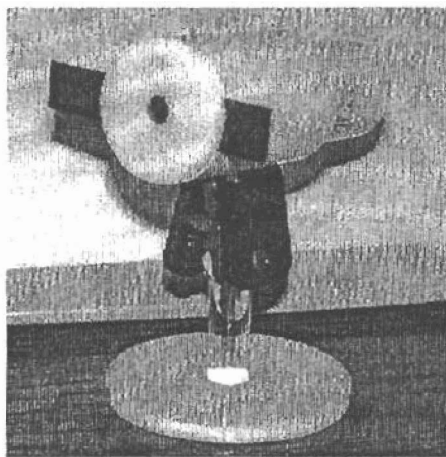
##### Construction methods

Our multidisciplinary team of medical teachers developed and piloted an inexpen-

sophisticated features for teaching and assessing medical learners' funduscopy skills. Key features of the model include:

- different pupil sizes from fully dilated (8 mm) to completely undilated (2 mm)
- a calibrated scale that allows the eye to be set from  $-8$  dioptres of myopia to  $+8$  dioptres of hypermetropia
- easily inserted images of multiple retinal pathologies
- durable, break-proof plastic construction.

Initially, early prototypes of the model eyes were hand-assembled with a square cardboard housing. Later, with funding from the School of Medicine, we produced a more robust plastic model in association with Gulden Ophthalmics, Inc. (see Figure 1).



**Figure 1** The Timberlake Eye Model

Figure 2 illustrates the features of the Timberlake Eye Model. Students change pupil size by adjusting the perforated pupil strip in front of the lens. They set the eye from  $-8$  dioptres of myopia to  $+8$  dioptres of hypermetropia by adjusting the calibrated scale on the inner pipe. By changing the image disks attached by Velcro to the

proximal end of the inner pipe, students can view normal or diseased retinas.

#### Initial evaluation

We conducted an expert panel evaluation of the eye model's feasibility, acceptability and usefulness as a teaching and evaluation tool in a focus group session at the annual meeting of the Society of Teachers of Family Medicine at New Orleans in May 2005. Eight clinician educators from different regions of the USA listened to a lecture on the Timberlake Eye Model, assembled eye models from the kits, and experimented with them using ophthalmoscopes. After a large group discussion, which focused on the model's strengths and weaknesses as a teaching and evaluation tool, participants completed a written nominal group feedback form, where they listed strengths of the model and made suggestions for improvement.

#### RESULTS

The focus group evaluators reported that the main advantages of the Timberlake Eye Model are that it is inexpensive and simple, offers the ability for learners to adjust pupil size and optical power while viewing multiple pathologies, and that it represents a potentially useful teaching and evaluation tool for funduscopy. The main suggestion for improvement was to improve the retinal image quality, as the existing photographs on semi-gloss paper had insufficient definition to appear authentic when viewed through the ophthalmoscope. Participants suggested using high-quality illustrations or slide material instead of photographic paper in order to improve the image quality. Participants also suggested adding anatomical positioning guides to the images, as learners might not otherwise know how to position images within the tube. Finally, participants suggested that we identify right and left eye images, so that students would learn to discriminate between these.

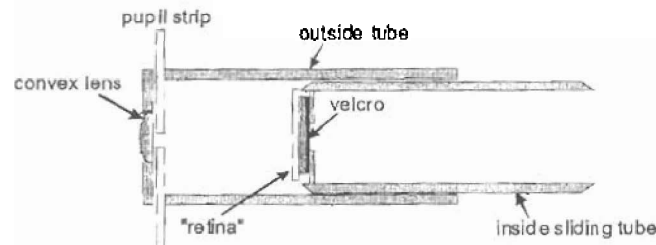


Figure 2 Features of the Timberlake Eye Model

### CONCLUSIONS

The Timberlake Eye Model was positively evaluated for practicality, usefulness and cost by a focus group of primary care clinician-educators. It shows promise as a formal funduscopy teaching and assessment tool since it allows learners to practise the difficult skill of funduscopy while eye movement, refractive power, and pupil size are controlled. Our next step is to validate the model as a teaching and evaluation tool in a quasi-experimental control group study with third-year medical students during their clinical clerkships. If it proves valid and reliable in real learning and testing conditions, our model is highly generalisable to other medical schools.

### References

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#### Authors' note

Dr Timberlake developed the model without funding. The Office of Academic Affairs and Professional Development of the University of Kansas School of Medicine provided funding for the manufacture of the model eyes. The Timberlake Eye Model is not patented and neither the authors nor the School of Medicine have any financial interest in its dissemination or sales.

The current model is fabricated from plastic PVC pipe and comes in an easily assembled kit. Cost per unit to the consumer is approximately \$69 plus about \$20 shipping to Europe or \$7 to the USA. The models are available direct from the manufacturers, Golden Ophthalmics. Please email credit card orders to Tom Cockley on [cockley@goldenophthalmics.com](mailto:cockley@goldenophthalmics.com).