

# Direct ophthalmoscopy should be taught to undergraduate medical students—yes

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The place of ophthalmology in the undergraduate medical curriculum is slowly fading—with certainty, and yet without objection. Over the past 30 years, the duration of the ophthalmology placement has dwindled in the United States,<sup>1</sup> the United Kingdom,<sup>2</sup> and elsewhere.<sup>3</sup> The inescapable truth is that without renewed activism from ophthalmologists interested in the education of tomorrow's doctors,<sup>1</sup> the ophthalmology clerkship—exposed by poor representation from ophthalmologists on medical school committees—may soon disappear entirely.<sup>1–3</sup> The likely outcome is a generation of clinicians who lack confidence and competence in basic ophthalmic examination,<sup>1</sup> the management of simple eye complaints, and the safe triaging of patients under their care who develop serious ophthalmic disease.<sup>4</sup>

Skills in direct ophthalmoscopy among undergraduates have declined in parallel.<sup>5</sup> Medical students lack confidence in direct ophthalmoscopy,<sup>6</sup> and often request additional training to improve their performance.<sup>7</sup> Several challenges exist for ophthalmologists and others involved in training of direct ophthalmoscopy: (1) reduced exposure to ophthalmology clinics where direct ophthalmoscopy is traditionally taught; (2) ownership of direct ophthalmoscopes in the United Kingdom has fallen since 1986 following withdrawal of grants traditionally used to fund them;<sup>8</sup> (3) there is no clear consensus as to the standard of proficiency in direct ophthalmoscopy a medical student should satisfy;<sup>1,9</sup> (4) direct ophthalmoscopy is poorly represented in undergraduate examinations<sup>2</sup>—an influential determinant of student learning behaviour.

With crisis comes opportunity, and approaches have been suggested to address these challenges:<sup>1,10</sup> to identify and prioritize

essential ophthalmic clinical skills; to advocate for ophthalmology clerkships in the undergraduate curriculum; to integrate ophthalmology in the teaching of all basic sciences and allied clinical disciplines; and to innovate to create opportunities for clinical training in ophthalmology for undergraduates.<sup>10</sup> One cannot advocate direct ophthalmoscopy without supporting undergraduate ophthalmology training around it: fundal findings are interpreted in the context of other elicited clinical signs, synthesized with relevant clinical knowledge to accurately triage or manage a patient's ocular complaint.

It is common for patients with ophthalmic symptoms to present to primary care, minor injury units, and emergency departments.<sup>11</sup> Immediate access to an ophthalmologist for clinical assessment is not universal. Non-specialist clinicians have a duty of care to perform a competent basic ophthalmic examination—of which direct ophthalmoscopy may be an essential component—to safely assess or triage a patient.<sup>11,12</sup> Omission of the components of a basic ophthalmic examination may be medico-legally indefensible, yet is common.<sup>4</sup>

Direct ophthalmoscopy adds a valuable weapon to the diagnostic armamentarium of a clinician. The identification of spontaneous venous pulsation may exclude raised intracranial pressure and prevent the need for acute neuroimaging in a child with meningococcal meningitis.<sup>13</sup> The detection of papilloedema may be life-saving—potentially indicating a cerebral space occupying lesion or accelerated hypertension.<sup>14</sup> Concealed systemic disorders may be elucidated on direct ophthalmoscopy, for example, endocarditis or cytomegalovirus retinitis—obviating the need for invasive investigations. Abusive head trauma may be supported by the finding of bilateral retinal haemorrhages on direct ophthalmoscopy in an infant with unexplained encephalopathy.<sup>15</sup>

Direct ophthalmoscopy may accurately distinguish causes of acute, painless visual loss into those requiring immediate treatment or referral (such as central retinal artery occlusion) from those which may be referred non-urgently (central retinal vein occlusion). Timely diagnosis of retinal artery occlusion could permit reversal of sight loss or prevent an impending stroke through identification of an embolic source. Swift recognition of leukocoria on direct ophthalmoscopy may improve visual outcome in congenital cataract or eye-saving in cases of retinoblastoma.

To deprive medical students of a valuable clinical skill will leave them exposed in such contexts, and may endanger their patients.<sup>12</sup> The cost of its omission is the additional time, investigation, anxiety, and travel required of a patient to arrive at a diagnosis—or worse—failure to make a diagnosis at all. Medical school committees would consider it unthinkable to omit training in cardiac auscultation simply because it is a difficult clinical skill. They would challenge any assertions that it is specialist skill undertaken only by cardiologists, or that an echocardiogram may safely circumvent it. Put simply, it is bad medicine to omit direct ophthalmoscopy in such contexts. Accordingly, the relegation of direct ophthalmoscopy from the undergraduate medical curriculum may be considered negligent.

Technological advances may, in time, supersede the direct ophthalmoscope. The pan-ophthalmoscope circumvents the technical skill of direct ophthalmoscopy, but not the interpretation of the retinal image. Non-mydriatic digital fundus cameras promises accurate remote diagnosis by ophthalmologists using images captured by non-specialists at the point of care<sup>16</sup> (emergency departments, primary care). It requires investment and training, and few ophthalmic units have established it. It is unlikely to be available in the foreseeable future in the developing world.

The imperative for ophthalmologists to protect the teaching of direct ophthalmoscopy transcends the diagnostic value of the clinical skill itself. It strikes at the quintessence of the real issue of ophthalmology in the undergraduate curriculum: influential non-specialists contend—largely unchallenged—that the responsibility for ophthalmic assessment, diagnosis and treatment rests exclusively with the ophthalmologist. Defending the place of direct ophthalmoscopy in the undergraduate curriculum emphasizes our opposition to the global relegation of ophthalmology, and underlines a clear message: basic skills in ophthalmic assessment are mandatory. Students are required to learn them, doctors to practice and teach them, and patients to receive them. To forfeit direct ophthalmoscopy is to concede to this erroneous notion of diminished responsibility for

ophthalmic health by non-specialists. Ophthalmologists are on occasion witnesses to mistakes in referral or assessment by non-specialists—errors whose root cause is the inadequate training at the undergraduate level, and where an irretrievable attitude of passivity to ophthalmology is ingrained. As ophthalmologists we are advocates for ophthalmic health. We must take action locally, regionally, and nationally to preserve direct ophthalmoscopy—and ophthalmology—in the undergraduate medical curriculum for the benefit of our future patients.<sup>1,12</sup>

It is in the interests of the Royal College of Ophthalmologists to support it. Why? *'Ut Omnes Videant'*: so that all may see.

### Conflict of interest

The authors declare no conflict of interest.

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