



## ***Runner up for trainee prize***

### **Optimal spectral irradiance for laryngoscopy**

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#### **Abstract:**

##### Introduction:

Changing the colour of light produced by laryngoscopes may improve the view at laryngoscopy and facilitate intubation. This could be crucial in children with anatomically difficult airways and in acute airway emergencies. Infra red light has been shown to be detrimental to optimal laryngoscopy (1). Anaesthetists have expressed a preference for blue/white light output to facilitate intubation (2). Blue light corresponds to peak haemoglobin absorption (415 nm) and therefore enhances the view of capillary vessels within the surface mucosa.(3) Green light defines deeper structures more clearly (3). Specific combinations of blue and green light spectra may provide the best conditions for intubation. Light Emitting Diodes (LEDs) have the advantage of producing light in a more appropriate part of the spectrum. LEDs are not currently used in laryngoscopes available in the UK. The aim of this study was to compare the spectral irradiance of the ProAct Miller 1 Paediatric blade laryngoscope (containing an incandescent bulb) with a custom-made laryngoscope containing an LED. Methods:

The light spectral irradiance from the laryngoscope blades was measured under standardised conditions using the Bentham spectroradiometer. Blackout conditions were applied to eliminate background light. The tip of each laryngoscope blade was placed in contact with the sample port of the spectroradiometer. A mains voltage supply was set at 3 V for the Miller 1 blade (A) and 3.6 V for the blade with the LED (B), as specified by the manufacturers. Results:

The Miller 1 paediatric blade produced spectral irradiance mainly in the infrared region (>660 nm) in contrast with the LED which produced most irradiance in the blue/green region of the spectrum (400-550 nm). Discussion and conclusions:

Paediatric laryngoscopes with LEDs may provide superior intubating conditions than that currently available with incandescent light sources. LEDs can be further modified to emit the optimal spectral irradiance required for laryngoscopy. This may prove invaluable when presented with a difficult airway. References

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