1.2 Background

For more than twenty years, the use of pulse oximetry for anaesthesia monitoring during surgery has been a standard of care in the developed world. Pulse oximeters are applied in nearly every procedure that involves anaesthesia or sedation. As a result of its universal application and other important advancements in anaesthesia safety and monitoring, anaesthesia death rates have decreased significantly over the past two decades. Most experts agree that the death rate solely related to anaesthesia in the developed world currently ranges from 1 in 50,000 to 1 in 200,000.1,2 However, these safety practices have not been routinely implemented in the developing world. Estimates suggest that more than half of the operating rooms are not equipped with pulse oximeters. Anaesthesia death rates in these settings are reportedly 100 to 1,000 times higher than in the developed world.3,4,5,6

The reasons for this tremendous disparity are numerous. The severity of patients’ conditions, inadequate clinical training, and poorly developed infrastructure are all important factors. The inability to appropriately monitor patients during surgery is another major contributor. Pulse oximetry, one of the most important monitoring tools, is often not available.

It is estimated that over 230 million surgical procedures are performed around the world each year.7 This volume exceeds the number of childbirths globally, but with far higher death rates. As the developing world continues to modernize and life expectancy continues to improve, surgical volume is expected to increase significantly over the next several decades. In the developed world, 3-16% of hospitalized surgical patients have major complications and nearly 1% experience permanent disability or death as a result of their operation.8,9 If these numbers are extrapolated globally, at least 7 million people will develop disabling complications this year, including 1 million who will die. Due to substantial differences in the safety of surgery between developed and developing countries, a disproportionate number of complications and deaths are likely to occur in resource-limited settings. Thus, the provision of safe surgical care has become a major global health priority.

To address these issues and improve the safety of surgery, WHO launched the Safe Surgery Saves Lives program in 2007. One goal was to define a minimum set of surgical safety standards that could be applied in all countries and hospital settings. The result was the creation of the WHO Surgical Safety Checklist, which was launched in June of 2008. Over 280 professional organizations, hospitals, and ministries of health have endorsed the checklist which includes a set of basic steps to follow before, during and after surgery.10,11 These steps include confirming patient identity, documenting medication allergies, administering antibiotics on time, counting instruments, sponges, and needles, and ensuring that a pulse oximeter is on the patient and functioning. In total, 19 steps must be performed to complete the checklist. Only two require capital outlay: antibiotics – which are frequently given but on an inconsistent basis – and pulse oximetry.