

# Medical Education

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## Online learning in newborn health: A distance learning model

ASHOK DEORARI, ANU THUKRAL, V. ARUNA

Improvement in neonatal healthcare is an essential requirement for the attainment of Millennium Development Goal 4, which aims at reducing under-5 child mortality by two-thirds by the year 2015 from the 1990 baseline. Nearly all neonatal deaths occur in middle- and low-income countries. In India, 50% of the under-5 deaths occur in newborns. Most of these can be prevented if simple interventions for essential newborn care are practised by healthcare providers.<sup>1</sup>

The challenge in training healthcare professionals in India is to provide high-quality training to a large number of providers. There is a paucity of good teachers, and healthcare professionals often find it difficult to attend time-bound educational activities because of their other service commitments. Adults do not take easily to passive learning through didactic lectures. While small-group training by facilitators is ideal for bringing about an attitudinal change and giving a personalized touch to the learning process, the approach is time-consuming and costly.

With the wide availability of information technology (IT), the concept of personalized and tutored online learning can provide high-quality, uniform and standardized education to trainees spread over vast geographical areas. It has the advantage of being environment-friendly and ensures monitored interactive learning at a convenient time. Internet and associated multimedia technologies have been used earlier to deliver medical education and continuing professional development (CPD) to doctors.<sup>2-6</sup> With the advent of newer information communication technologies with faster broadband speeds, it is possible to create a virtual classroom environment for students in remote locations. To some extent, skills can also be demonstrated through the use of multimedia with simulators. One can create a virtual learning community and, in future, with easy access to video conferencing systems, a face-to-face learning environment can be achieved. Local faculty at partnering institutions can provide skill-learning to students by conducting demonstrations and return demonstrations, often using videos or real-life situations. Need-based learning courses which offer flexible modules are likely to gain importance for continued development of healthcare professionals. These include not only online interactive lectures, but also tutoring by experienced teachers, where adults learn from the experience of others by sharing and, at times, even contributing additional information from the literature.

The educational principles in online learning can be applied to all clinical disciplines. It is likely that in future such professional development courses will get integrated into the accreditation

process and professional recognition of individuals. Today's generation is familiar with IT and students will also want to maximize the potential of technology, if these enhance their learning opportunities and experience.

The non-availability of sufficient bandwidth for fast streaming of videos is a barrier to online learning in developing countries. Moreover, not many expert tutors are ready to give time to moderate discussions online. Initially, resources will be required to develop high-quality learning content, but with widespread use it will prove to be cost-effective. One needs to evaluate feasibility, acceptability and demonstrated superiority of flexible online learning over conventional methods of teaching.

### OUR EXPERIENCE WITH ONLINE LEARNING

At the WHO Collaborating Centre for Training and Research in Newborn Care, All India Institute of Medical Sciences (AIIMS), we are committed to spreading evidence-based best practices to health professionals. Our team has created a number of learning resource materials on newborn health with the help of experts, teachers and neonatologists through support from UN agencies, which are available at [www.newbornwhocc.org](http://www.newbornwhocc.org). This website is regularly accessed for downloading educational tools such as webinars, learning modules, videos, power point presentations and pdf files with matching scripts. Recently, we have created Moodle, which is a popular e-learning platform that allows course instructors to prepare educational resources for users as well as provides a repository for educational resources.<sup>7,8</sup> This platform was used for distance-learning courses for nurses working in neonatal units.<sup>9</sup> A working group was formulated at AIIMS (the nodal centre), which sent the course content and the procedure of its administration to selected institutions all over India and the Maldives. For each group, two local tutors were selected, who were assigned the responsibility of mentoring their respective cohorts and assisting in skill-learning of the group.

We developed a module on Essential Newborn Care (ENC) for nurses as there is no well-structured or standardized in-service training programme available. The newborn-care curriculum in the pre-service training course of the nurses is often scanty and theoretical. A training tool was developed following a series of meetings with technical experts and with considerable team effort. About 250 experts, teachers, neonatologists and nurses contributed to the making of the content of this learning package. The aim of the package is to strengthen the core competence of nursing colleagues in newborn care. The resultant package has the latest evidence-based practices related to newborn care from materials of the ENC package and the pregnancy, childbirth and postnatal care guidelines of WHO. The contents of modules were subjected to field-testing at Jaipur, Indore and Dhaka and administered for multiple courses in the state of Gujarat. Incorporation of feedback

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All India Institute of Medical Sciences, Ansari Nagar, New Delhi 110029, India

ASHOK DEORARI, ANU THUKRAL, V. ARUNA Division of Neonatology, Department of Paediatrics, WHO Collaborating Centre for Training and Research in Newborn Care

Correspondence to ASHOK DEORARI; [ashokdeorari\\_56@hotmail.com](mailto:ashokdeorari_56@hotmail.com)

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TABLE I. Feedback from participants of the Online Neonatal Training and Orientation Programme in India (ONTOP-IN)

Item	Satisfaction on 5-point Likert scale (median [range])
Individual attention was given to all the participants	5 (4–5)
The learning was useful for your professional activities	5 (5–5)
This has increased your confidence to manage newborns in hospital	5 (5–5)
You were satisfied with your tutor	5 (5–5)
Your doubts were cleared	5 (5–5)
Teachers displayed satisfactory open-mindedness to your doubts	5 (5–5)
You will be able to implement in your practice the skills learnt during the sessions	5 (5–5)
You would recommend a similar activity for the benefit of your colleagues	5 (5–5)
Overall satisfaction from the course	5 (5–5)
The time-pace of loading the modules was optimum with desired time-frame being given	5 (5–5)
The webinar contents were informative and useful	5 (5–5)
The module content with regard to power point presentations was explicit and clearly defined	5 (5–5)
How would you grade the chat session?	5 (4–5)
Discussion forum helped you learn more and clarify doubts	5 (5–5)
Is this learning material exhaustive and time-consuming?	No (100%)
Who gave you the first information regarding this online learning?	All of them received this information from their online tutors
Would you like to enrol again on a new course?	Yes (100%)
Did you know the use of computers before enrolling for this course?	22% did not know
Did you know the use of internet before enrolling for this course?	22% did not know
Name two sessions conducted which you felt were the most informative and helpful?	40% hypothermia; 48% resuscitation
Mention two sessions which you felt needed more improvement?	30% newborn health; 36% routine care

from the facilitators and students resulted in creation of high-quality content of the training package.<sup>7</sup>

The ENC online course was first piloted and then run simultaneously at seven centres in India and one at the Maldives. Participants at these centres could either study the lessons by a linear approach or they could access only particular sections of each lesson. They were required to log in for about 3 hours a week to read the lessons at a time convenient to them. Every 1–2 weeks the groups had individual chat sessions mentored by their online tutor, during which they had to log in at a pre-specified time and date for about 60 minutes to discuss the management of simple case scenarios posted in the previous week.

Besides synchronous (chat sessions) and asynchronous (self-learning, case studies, video clips, discussions) online learning, a personalized touch to the learning process was provided by ensuring 20% time for skill-learning at partnering institutions under the supervision of local tutors.

The detailed results of this course including the pre-test and the post-test multiple choice questionnaire and objective structured clinical examination scores will be presented separately. However, all participants felt that individual attention was given to them during the entire course and enrolment in the course was useful for their professional activities. It increased their confidence and skills for day-to-day work and resolved their doubts to a reasonable extent. They were satisfied with the tutoring skills of their online tutor. They achieved overall satisfaction from the course and felt that the content of the modules (including the text, power point presentations and the webinar) was clearly defined and explicit. None of the participants felt that the reading material was exhaustive and all were satisfied with the pace and the time given for reading lessons (Table I).

This is the first feasible model of an ENC course administered online with skill-learning in partnering institutions. Some online training courses exist, such as the Neonatal Online Training in Europe ([www.neonataltraining.eu](http://www.neonataltraining.eu)), the Academy of Neonatal Nursing ([www.academyonline.org](http://www.academyonline.org)), the Neonatal Resuscitation Program ([www.aap.org/nrp](http://www.aap.org/nrp)), etc. However, most online courses

require a substantial fee, which is unaffordable for the majority in developing countries. Our course is free of cost. Further studies are required to evaluate other benefits and compare this training activity with conventional classroom training and teaching.

The limitations of this programme include its limited utility in areas with no facility of internet. In one-third of the institutions, extra support was needed for making internet available in hospitals and providing protected time for learning during duty hours. We encountered few problems during the sessions such as slow streaming of video but the majority of the resource material could be easily downloaded using a normal internet connection.

To conclude, online training and teaching in essential newborn care is feasible. Based on the feedback and the observed improvement of knowledge and skills of participants, we have introduced additional courses on continuous positive airway pressure, intensive newborn care nursing and sick newborn care for South Asia.

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