outlet or from a tank. Resuscitation guidelines recommend that the most appropriate and accurate way to administer oxygen in the delivery room is by use of blender [1]. In preterm infants, it is recommended to initiate positive pressure ventilation with 21-30% oxygen. In response to resuscitation, oxygen needs to be titrated in a graded manner. Blender is required for optimal oxygen delivery, weaning and use of continuous positive airway pressure (CPAP). In absence of oxygen blender, the recommendations are not met and the dose is 'flow' (liters/min) driven which leads to variable and unrestricted oxygen delivery.

Unrestricted use of oxygen leads to hyperoxia, release of oxygen free radicals and oxidative stress causing organ dysfunction, disease and death [2]. Of major concern is retinopathy of prematurity (ROP), which is a leading cause of avoidable blindness in preterm and term infants. WHO has identified ROP as a priority area particularly in the middle income countries [3].

Blender is currently the 'missing link' in provision of quality care for newborns. It is not considered as 'essential' equipment in government supplies, in National Neonatology Forum (NNF) accreditation guidelines, or in neonatal intensive care unit (NICU) equipment procurement list. It is not unusual to see a well equipped, technology driven NICU without a blender. Blenders are practically non-existent in majority of centers where child-birth occurs, and in nurseries across India. There is a need to train and raise awareness amongst doctors and nurses regarding the danger of treating infants with 100% oxygen. There is an urgent need for innovative blenders for therapeutic use of oxygen. All sick newborn care units must place priority in investing in air-oxygen blenders for regulating oxygen delivery in order to provide rational, ethical and scientific neonatal care.

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An Indian Tool for Assessing Appropriateness of Pediatric Hospitalization

Das, *et al*. [1] published their unique study on a tool for assessing appropriateness of pediatric hospitalization in a recent issue of *Indian Pediatrics*. I seek following clarifications:

- Authors used semi-Delphi technique to arrive at pre-defined objectives. What were the intended objectives/end points of Delphi method?
- What was the method of raters' orientation?
- Authors assessed appropriateness of hospitalization of 274 patients during a period from July-September 2015 from five medical colleges in Delhi and surrounding states. This comes out as 0.6 case/day/ medical college. Considering that all these are public hospitals, number of hospitalizations would have been much higher. What was the sampling method to select only 274 cases?
- Sampling should also have taken account of season when minimum/least number of admission season for better validity and more accurate representative of actual population. There are more chances of appropriateness of admission criteria in peak season than in trough season of admissions. Bianco, *et al*. [2] reported that inappropriate admission was significantly higher if it occurred during the daytime. Considering the circumstances in such hospitals (less chances of follow-up, biased health seeking behavior for male children, distance from home to hospital, availability of night conveyance, ignorance, loss of wages for attending health facility), admission at night time tend to be more inappropriate as compared to day time. Were these factors taken into consideration?
- Sample consisted of 274 patients from Northern India

(Delhi-NCR) and 622 from Southern India (Coimbatore and Kollam). The population from Sothern India consisted of mostly infants which were part of another study, and taken from 146 hospitals. So overall, almost two-thirds of sample population were infants making the tool less valid for older age groups. Besides that, not all states of India have same Doctor and bed availability [3]. Thus, samples should have been more representative of the country to have more valid applicability of results.

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AUTHOR'S REPLY

We thank the expert for the critical clarifications. We submit the following responses to the clarifications sought:

- The semi-Delphi method was adapted for the appropriateness tool development/adaptation for Indian context. Thus the objective was to develop the PAEP India tools for Indian context with adaption and reference to the guidelines/protocols in practice.
- All the raters underwent an orientation session to have common understanding using the PAEP reviewers' manual. The PAEP reviewers' manual guides how to use the PAEP tools, and can be made available on request.
- These 274 cases from medical colleges were selected from the total admissions during July-Sep 2015 according to age strata: newborns/≤28 days; >28 days-12 months, 13-59 months, and >5-18 years (the number breakup under each age band has been specified in the Results section). These cases were randomly selected by the medical records section from the admissions in these age strata under Neonatology, Pediatric medicine and Pediatric surgery departments. The investigators from the medical colleges had no influence on selection of the cases.
- We expected that the admissions to medical college affiliated hospitals were mostly appropriate (as observed 97.8% admissions categorized as appropriate). The study did not examine the appropriateness proportion and variations according to either seasonality, department or other determinants from these medical colleges.
- The sample from Northern India was drawn for validation of the tool. Thus an age band representative sample was strategically selected for application.

The cases from Southern India were a dataset available for application of the PAEP tool to document its performance. These cases were part of a cohort (n=30688) to document the hospitalizations during first year of life. In this cohort, all hospitalizations were captured through weekly follow-up of the recruited cases. All the hospitalizations for any period and to any level of hospital (level 1, 2 or 3 and private or public) were captured. Out of these cases, the breakup of admissions to hospitals at different levels were: 7 cases to Level 1, 304 cases to Level 2 and 311 cases to Level 3 hospitals. While 409 cases were admitted to private hospitals, 213 cased were admitted to public hospitals.

Regarding the performance of the PAEP tool in different state and regional contexts, we have recommended its use in diverse settings across India for performance assessment and triangulation.

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