

## Feasibility and Acceptability of Direct Observation of Procedural Skills to Improve Procedural Skills

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Procedural skill learning is usually unobserved during post graduate training. This study is an attempt to evaluate feasibility and acceptability of direct observation of procedural skills in a medical school in Northern India for postgraduates in Pediatrics. Eighty procedures performed by 15 trainees were observed by 9 faculty members. Seven of nine assessors considered direct observation to be feasible and non-intrusive in their routine clinical and teaching schedule while 5 out of 9 felt that it was time consuming. All fifteen trainees felt that direct observation enhanced their procedural skills and wished it to be extended to all procedures.

**Keywords:** Postgraduate, Training, Evaluation.

Acquiring clinical and procedural skills is an essential part of the training of doctors for safe patient care. Skill training and assessment during postgraduate training is often negligible and opportunistic. Much of the trainee's skill learning is unobserved, occurring as a result of job requirements or peer instruction. Assessing trainees through direct observation of procedural skills (DOPS) has been shown to significantly improve skill learning [1,2] and is used in a number of countries [3-5]. We assessed feasibility and acceptability of DOPS for pediatric trainees in an Indian medical school.

Fifteen, second and final year MD and DCH residents were assessed. Assessors (teachers of the rank of senior resident upwards) and trainees were sensitized regarding DOPS by a short presentation, including a video clip and live demonstration in separate sessions. A session on techniques of feedback was taken for assessors not versed with providing feedback. The generic DOPS form was used for observation and recording [6]. The focus of DOPS was on core procedures like intravenous cannulation, lumbar puncture, endotracheal intubation; other procedures were observed as and when performed. The procedures were observed in different clinical settings (OPD, inpatients, Emergency room and PICU) depending on availability of patients, and faculty time. An assessor observed a trainee while doing procedure on the patient, asked about indications, potential complications and post procedure care, and then provided immediate feedback to the trainee on observed encounter and suggestions for further improvement. At the end of study, feedback about DOPS

was collected from the assessors and trainees regarding the feasibility and acceptability of DOPS using a 5- point scale and an open-ended question.

Eighty procedures performed by 15 trainees were assessed by 9 assessors. Each trainee had five to six DOPS encounters. About 80% of DOPS cases were done on inpatients and 85% encounters focused on core clinical skills. Time taken for observation and providing feedback ranged 7-10 min and 4-7 min, respectively. Seven of nine assessors considered DOPS to be feasible while 5 out of 9 felt that it was time consuming. Assessors were comfortable in providing the feedback to the trainees and almost all the assessors felt that faculty training and practice will improve the quality of their feedback. Seven of nine assessors observed an improvement in trainee's skills over repeated observations. All trainees felt that immediate feedback by senior faculty improved their skills. Thirteen trainees felt that direct observation by senior faculty improved their skills. Eleven of 15 trainees felt DOPS facilitated the learning of skills, and feedback by faculty on observed procedures improved their confidence levels. Twelve of fifteen trainees reported being nervous when observed by assessors while performing the procedures.

We conclude that DOPS is a feasible and acceptable tool under Indian settings. Direct observation followed by contextual feedback helps postgraduates to learn and improve practical skills. It requires initial faculty training, some extra time and faculty and trainee sensitization.

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## Serum Alkaline Phosphatase for Screening of Hypovitaminosis D

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This study assessed the utility of serum alkaline phosphatase as a screening test to identify vitamin D deficiency and documented that it was not a useful screening tool.

**Keywords:** *Rickets, Vitamin D deficiency.*

Assessment of levels of serum 25-hydroxy vitamin D [25(OH)D], the major circulating form of vitamin D, is the best available indicator of vitamin D status. However, the assays are costly and not widely available. In view of the high prevalence of subclinical vitamin D deficiency, a simple and cost effective method of detecting hypovitaminosis D is required. Raised levels of serum alkaline phosphatase (SAP) indicate a state of increased bone turnover as it is a product of osteoblasts [1]. Osteomalacia causes high levels of SAP, thereby leading to the hypothesis that raised SAP levels can predict hypovitaminosis D. The present study aimed to evaluate the utility of SAP as a screening tool to detect hypovitaminosis D. This study was conducted in a tertiary care teaching hospital in Chennai, South India, between June 2012 and January 2013. Institutional human ethics committee approval was obtained. Children aged between 6 months and 18 years who were either normal or suffering from minor illness were eligible for inclusion in the study. Children with serious illness requiring ICU admission and patients with other skeletal diseases (renal rickets, osteogenesis imperfecta) were excluded. After obtaining informed consent from parents/guardians, clinical examination and blood sampling was done. Serum alkaline phosphatase was estimated by the para-nitro phenyl phosphate (PNPP) method. Serum was separated in a centrifuge and stored at -20°C until analyzed. 25 (OH)D levels were measured by an immunochemiluminometric assay in ADVIA Centaur auto analyzer with a assay range of 3.7-150 ng/mL.

A total of 230 children were included in the final

analysis. Out of the total study subjects, 49.6% were below five years, 30.9% were between 5 to 9 years, and 16.5% were between 10 to 14 years. There were 112 (48.7%) females. Sixty (26.1%) children were healthy; infections (18.7%), undernutrition (13.9%), recurrent abdominal pain (16%), asthma/wheeze (6.5%) and allergies (4.8%) were the most common morbidities. Clinical vitamin D deficiency was present only in 7 (3%) of the study participants. Neuro-developmental problems, seizures, and skin and soft tissue infections contributed to the remaining morbidity.

Based on 25(OH) D levels, participants were classified as either normal (>20 ng/mL) or insufficient/deficient (<20 ng/mL). The utility of SAP to predict vitamin D deficiency/insufficiency was assessed by sensitivity, specificity and predictive values for different cut-off levels of SAP.

Out of 230, only 87 (37.8%) children were having normal and the remaining 143 (62.2%) were having insufficient/deficient 25(OH) D levels. For no cut-off value of SAP the combination of sensitivity and specificity was high enough to make SAP a good screening test. The predictive values were also very poor for all the cut-off levels (**Table I**).

In a study by Baig, *et al.* [2], only 19% of vitamin D deficient patients had raised SAP levels. Kovar, *et al.* [3] were the first to establish the role of SAP as a marker of vitamin D deficiency in premature infants. Several others [4-6] hypothesized that SAP could be the earliest marker of vitamin D deficiency. In contrast, current study documents that SAP is not a useful parameter for the screening of hypovitaminosis D, which is consistent with the studies done by other authors [7,8].

Rise in SAP has been well documented with rickets or