Use of Nitrous Oxide for Peripheral Intravenous Cannulation for Pediatric
Procedural Sedation with Propofol: The Patient/Parent/Provider Point of View

McCollum N1, Kamat P2,3, Stockwell J2,3, Travers C1, McCracken C1, Pettignano R1,3

1Department of Pediatrics, Emory University School of Medicine. Atlanta, GA
2Division of Pediatric Critical Care Medicine, Department of Pediatrics, Emory University
School of Medicine. Atlanta, GA
3Children’s Healthcare of Atlanta, Atlanta, GA

Introduction:
Patient stress and anxiety related to peripheral intravenous (PIV) cannulation needed for pediatric
procedural sedation (PPS) with propofol is common. Our objective is to report the experience of
the patient, parents, nurses, and physicians with N2O use for peripheral intravenous (PIV)
cannulation for PPS.

Methods:
A survey was administered (Jan 2014-Dec 2015) to determine above stakeholders satisfaction
following N2O use for PIV. Demographics, adverse events (AE), and success rate were collected.
Physicians were trained in the use of N2O that included a didactic and a supervised practical
application of N2O. N2O was delivered via the Porter portable Matryx system®. After pre-
oxxygenation and patient was placed on 70% N2O for ~4 minutes prior to PIV placement by the
nurse. N2O mask was held by the patient, parent or physician depending on patient/parent
preference. At the completion of the procedure patient, stakeholders were asked about their
overall satisfaction with the nitrous use with 3 distinct questions 1) Very satisfied, 2) Acceptable
and 3) Dissatisfied.

Results
A total of 262 N2O sedations were identified. PIV cannulation was done in 248/262(94.7%).
Most common AE’s seen were dysphoria 7/262(2.6%), and vomiting 3/262(1.1%). None of the
patients needed any medical intervention for the AE. Overall procedure success was 95.5%.
From the survey, the N2O sedation dissatisfaction: 1) for physicians was 9/259(3.5%), 2) for
patient 10/256(3.9%), and 3) for parents and the nurses was the same at 7/259 (2.7%). Agreement
about N2O satisfaction between the patient/parent was at 95.4%. Top reasons for dissatisfaction
included inability to tolerate mask, or patient screaming and lack of cooperation with N2O
administration.

Discussion
N2O can be successfully used for PIV cannulation for PPS with propofol with no clinically
significant AE, and a high satisfaction rate amongst various stakeholders.