

## **Observation for Infants and Children**

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### **Terminology and Global Scope**

There has been a long history of observation units (OUs) being used for the diagnosis and/or treatment of children and infants with many different illnesses and injuries throughout the world (United States, Canada, Australia, Great Britain, France)<sup>1-7</sup>, and in all types of settings including pediatric hospitals, general hospitals, academic or teaching and community hospitals. The terms used may vary: including observation unit, clinical decision unit, holding room, short stay unit, short stay ward, short stay observation unit and holding unit; but the principles are the same: the provision of high quality, efficient (decreased length of stay), and cost effective care, whether the patient is a child or even an infant, as well as for adults.

### **History**

Indeed, pediatric observation medicine may even antedate the adoption and widespread use of observation for adults with chest pain and other diagnoses. As early as 1969 (results published in 1972), 447 pediatric patients with all types of diagnoses were treated in a pediatric emergency area of an outpatient clinic with documented cost savings, a 1% readmission rate, and the prevention of 20.6 admissions to the hospital per month saving 2,480 hospital days.<sup>8</sup> Other studies in the 1970s continued to document the successful treatment of asthmatics<sup>9</sup> and children with all types of illnesses in the United States.<sup>10</sup> Since then reports have continued to note the accomplishments of pediatric observation medicine in the ensuing decades.<sup>11, 12</sup>

### **Diagnoses/Conditions Managed in the Observation Unit**

All types of patients: both medical and surgical and trauma patients have been managed in an observation unit. Asthma is the most common diagnosis for pediatric observation patients followed by dehydration/gastroenteritis.<sup>8, 11-13</sup> Other common diagnoses include pneumonia, abdominal pain, seizures, fever, bronchiolitis, croup, trauma, and ingestions. The use of the OU to manage pediatric patients with traumatic injuries including closed head injuries and orthopedic injuries has been reported in multiple studies in the United States and internationally.<sup>5, 7, 13-16</sup>

### **Locations of Pediatric Observation**

Although much of the literature is from pediatric observation units in Children's Hospitals,<sup>1-6, 9, 10, 14, 15</sup> there are also reports of children and infants successfully managed in Observation Units (OUs) in general hospitals where both adult and pediatric patients are treated in the same unit, termed a "hybrid" unit by some, and in community hospitals<sup>1, 12, 13, 17</sup> as well as in academic or tertiary care hospitals.

### **Ages of Patients Managed in Observation Unit**

All ages of pediatric patients, even infants and neonates have been successfully managed in OUs. One study of 78 infants/children (mean age 19 months, range 14 months – 12.6 years) status post uncomplicated barium enema compared inpatients and OU patients. The baseline characteristics were similar in both groups but the OU patients a significantly shorter length of stay (LOS): 7.12 hours (OU) vs. 22.7 (inpatients) ( $p < 0.001$ ).<sup>18</sup> A study of neonatal (median age 5 days) hyperbilirubinemia found a significant difference at  $p < 0.0001$  in LOS (hours) between pre-OU (historical controls) 41.8 vs. 17.8 and in median time (hours) to phototherapy: pre-OU 6.7 and OU 1.6.<sup>19</sup>

### **Benefits of Pediatric Observation Units**

The benefits of observation for children and infants are similar for adults: better patient care, shorter LOS, better patient/family and referring physician satisfaction, and decreased cost.<sup>11,12</sup>

## References

1. Browne GJ. A short-stay or 23 hour ward in a general and academic children's hospital: Are they effective? *Pediatr Emerg Care* 2000; 16(4):223-229. (Australia)
2. Geelhoed GC. Sixteen years of croup in a Western Australian teaching hospital: effects of routine steroid treatment. *Ann Emerg Med* 1996; 28(6):621-626. (Australia)
3. Gouin S, Macarthur C, Parkin PC, et al. Effect of pediatric observation unit on the rate of hospitalization for asthma. *Ann Emerg Med* 1997; 29(2):218-222. (Canada)
4. Martineau O, Martinot A, Chatier A, et al. Effectiveness of a short-stay observation unit in a pediatric emergency department. *Archives de Pediatrie* 2003; 10:410-416. (France)
5. Najaf-Zadeh A, Hue V, Bonnel-Montuaire C, et al. Effectiveness of multifunction pediatric short stay units: a French multicenter study. *Acta Paediatrica* 2011; 100:e277-e225. (France)
6. Lamireau T, Lanas B, Dommange S, et al. A short-stay observation unit improves care in the pediatric emergency department setting. *Eur J Emerg Med* 2000; 7:261-265. (France)
7. Beattie TF, Ferguson J, Moir PA. Short-stay facilities in accident and emergency departments for children. *Arch Emerg Med* 1993; 10:177-180. (United Kingdom)
8. Gururaj VJ, Allen JE, Russo RM. Short stay in an outpatient department: an alternative to hospitalization. *Amer J Dis Child* 1972; 123:128-133.
9. O'Brien SR, Hein EW, Sly RM. Treatment of acute asthmatic attacks in a holding unit of a pediatric emergency room. *Ann Allergy* 1980; 45(3):159-162.
10. Ellerstein NS, Sullivan TD. Observation unit in a children's hospital: adjunct to delivery and teaching of ambulatory pediatric care. *New York State J Med* 1980; 80(11):1684-1686.
11. Klein BL, Patterson M. Observation unit management of pediatric emergencies. *Emerg Med Clin North Amer* 1991; 9(3):669-676.
12. Mace SE. Pediatric observation medicine. *Emerg Med Clin North Amer* 2001; 19(1):239-254.
13. Crochetti MT, Barone MA, Dritt Amin D, et al. Pediatric observation status beds on an inpatient unit: an integrated care model. *Pediatr Emerg Care* 2004; 20(1): 17-21.
14. Holsti M, Kadish HA, Sill BL, et al. Pediatric closed head injuries treated in an observation unit. 2005; 21(10):639-644.
15. Leduc K, Haley-Andrews S, Rannie M. An observation unit in a pediatric emergency department: one children's hospital experience. *JEN* 2002; 407-412.
16. Wiley JF. Pediatric clinical decision units: observation, past, present, and future. *Clin Ped Emerg Med* 2001; 2:247-252.
17. Hostetler B, Leikin JB, Timmons JA, et al. patterns of use of an emergency department –based observation unit. *Amer J Therapeutics* 2002; 9:499-502.
18. Bajaj L, Roback MG. Postreduction management of intussusception in a children's hospital emergency department. *Pediatrics* 2003; 112(6):1302-1307.
19. Adekunle-Ojo AO, Smitherman HF, Parker R, et al. Managing well-appearing neonates with hyperbilirubinemia in the emergency observation unit. *Pediatr Emerg Care* 2010; 26:343-348.