Aim: To reduce the incidence of IVH in infants <31 weeks GA to VON 25th centile by 10/1/15.

Setting: A 40-bed Level III referral NICU with a diverse, largely urban population of inborn and outborn infants.

Mechanisms: From our key driver diagram* we identified several potential mechanisms producing IVH in our population:
1. Underdeveloped germinal matrix: a function of GA, possibly improved by antenatal corticosteroids and indomethacin
2. Changes in cerebral blood flow: affected by labor and delivery room management and possibly by indomethacin and hypothermia (Ment, Ped 1994)
3. Unproven associations: MgSO4 neuroprotection

Interventions: initiated 4/15/14
1. Ensuring all eligible women receive MgSO4 neuroprotection and betamethasone, even if only 4 hours prior to delivery. (Elimian, A, et al, Obstet Gynecol 2003)
2. Minimal handling and stimulation; midline head position: protocol for the “Golden Hour and Beyond”
3. Gentle and non-invasive ventilation, prevention of hypocapnea and increased intrathoracic pressure
5. Slow flushing and withdrawal from vascular lines: reducing potential acute changes in CBF
6. Management of umbilical cord at delivery: protocol in development
7. Parent engagement in implementation of #2 (especially the “beyond” part)

Measures: data will be updated October 2014
1. Outcome: incidence of IVH (pending assessment at 6-month intervals)
2. Process:
   a. eligible mothers receiving betamethasone: 100%; MgSO4: 83%
   b. eligible infants receiving indomethacin: 100%
   c. hypothermia on admission: 2.5% < 36; 17% < 36.5
   d. completion of entire Golden Hour bundle: 41%
3. Balancing:
   a. time to first hold
   b. polycythemia

Results/Discussion:
Both antenatal and neonatal interventions are important in preventing IVH. Building a strong collaborative relationship with obstetric and labor and delivery staff is key in addressing
issues such as this (see video “Tear Down This Wall”). Engaging in structured multidisciplinary quality improvement activities such as those provided by VON is an excellent means of accomplishing that.

Although our approach involves multiple interventions concurrently, the bundle approach has been proven effective in other arenas. We hope to show (have shown) decreasing incidence of IVH with increasing bundle compliance through multiple PDSA cycles. Parent engagement via education and empowerment can play a significant role in accomplishing quality improvement goals.