

Quality Improvement Initiative to Reduce Severe Retinopathy of Prematurity (ROP) in Very Low Birthweight Infants (VLBW)

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Problem Description

In 2016 upon review of the 2015 Annual Report for UofL Hospital an alarming higher incidence of severe ROP (defined by VON as > Stage 2 disease) was noted for the center's VLBW (i.e. 22 to 29-week gestation) population. After further inspection of previous years' data there appeared to have been a steady increase of severe ROP in VLBW infants since 2012 (Graph 1). Despite the rise in ROP there were no significant changes in patient characteristics from year to year during the same time period.

SMART Aim

The aim of this project is by the 4th quarter of 2018 achieve <VON average incidence of severe ROP (defined by VON as > Stage 2 disease) of 8% in VLBW infants (22 to 29-week gestation at birth).

Interventions

Highlights of interventions initiated in early 2016 (Figure 1 and Graph 3)):

- Review literature related to ROP
- Review/update NICU guidelines, protocols, and policies
- Institute periodic audits on bedside oxygen saturation limits and alarm settings
- Provide updated bedside recommendations/reminders for ROP prevention "Oxygen With Love Cards (OWL)" cards (Figure 2)
- Provide annual Pediatric Ophthalmology ROP in-services for staff/providers

Key Drivers

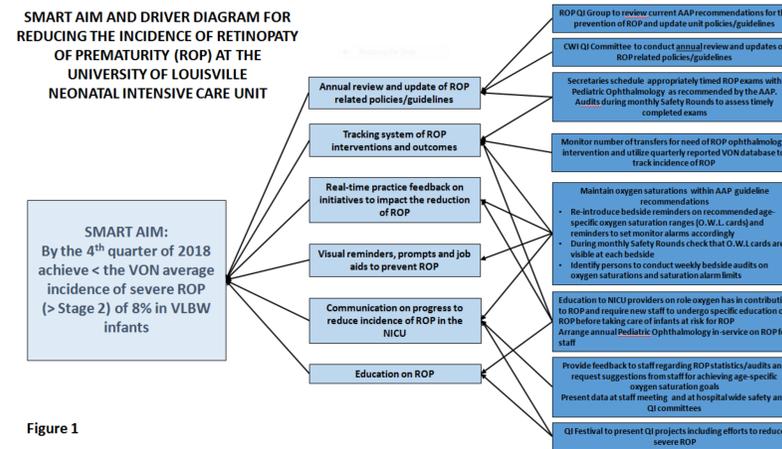


Figure 1

Figure 1

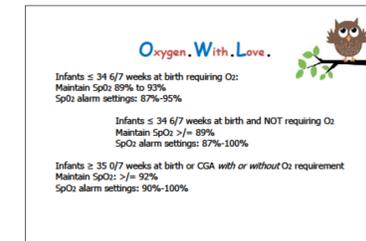
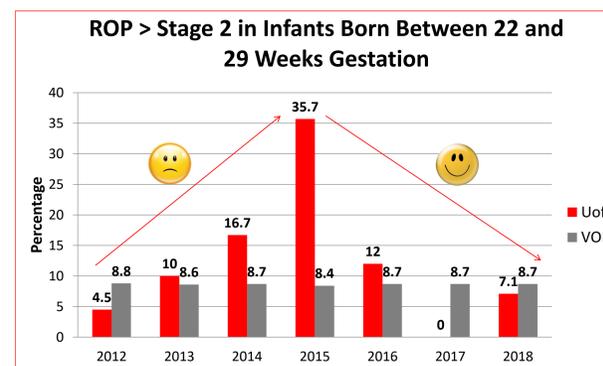
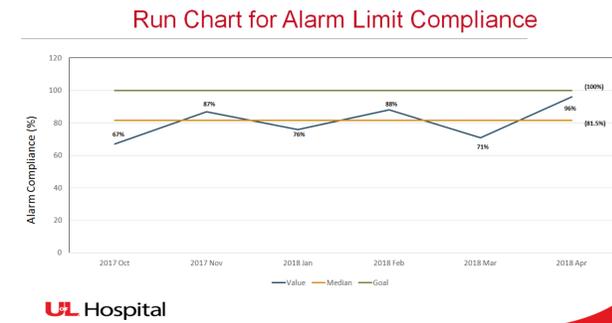


Figure 2

Results

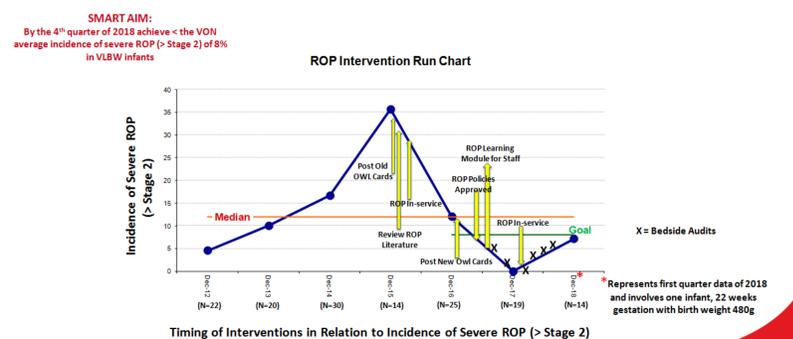


Graph 1



Graph 2

Run Chart Depicting Yearly Incidence of Severe ROP (> Stage 2) and Timing of Interventions Initiated to Prevent ROP



Graph 3

Results

Audits of bedside oxygen saturation monitor limits are ongoing. Since initiating the audits alarm limit compliance has ranged between 67 to 96% (Graph 2).

Prior to implementation there was an alarming increase in severe ROP from 2012 to 2015 with a 4.5% incidence of severe ROP in 2012, 10% in 2013, 16.7% in 2014 and 35.7% in 2015. After implementation of ROP prevention interventions the incidence of severe ROP decreased to zero in 2017 and one case as of second quarter 2018. (Graph 1).

Discussion

Revision of ROP policies, education of staff specifically on etiology/prevention of ROP, development and utilization of visual reminders of preventative strategies and the fostering of communication with staff regarding our NICU data have resulted in a significant decline in the incidence of severe ROP.

After review of the literature, our team elected to increase oxygen saturation target ranges to 89-93% despite our high incidence of severe ROP. We are monitoring for adverse trends, but for 2017 have been able to maintain a lower incidence of ROP without increased co-morbidities/mortality.

Future Direction:

- Further PDSA cycles and outcome measurement points
- Focus on goal of improved compliance with target oxygen saturation ranges
- Determine if target saturation ranges are appropriate for reduction of ROP without increased co-morbidities/mortality