Better Breathing Bundle: Outcome Ascertainment Project

Mount Sinai Hospital BPD Task Force

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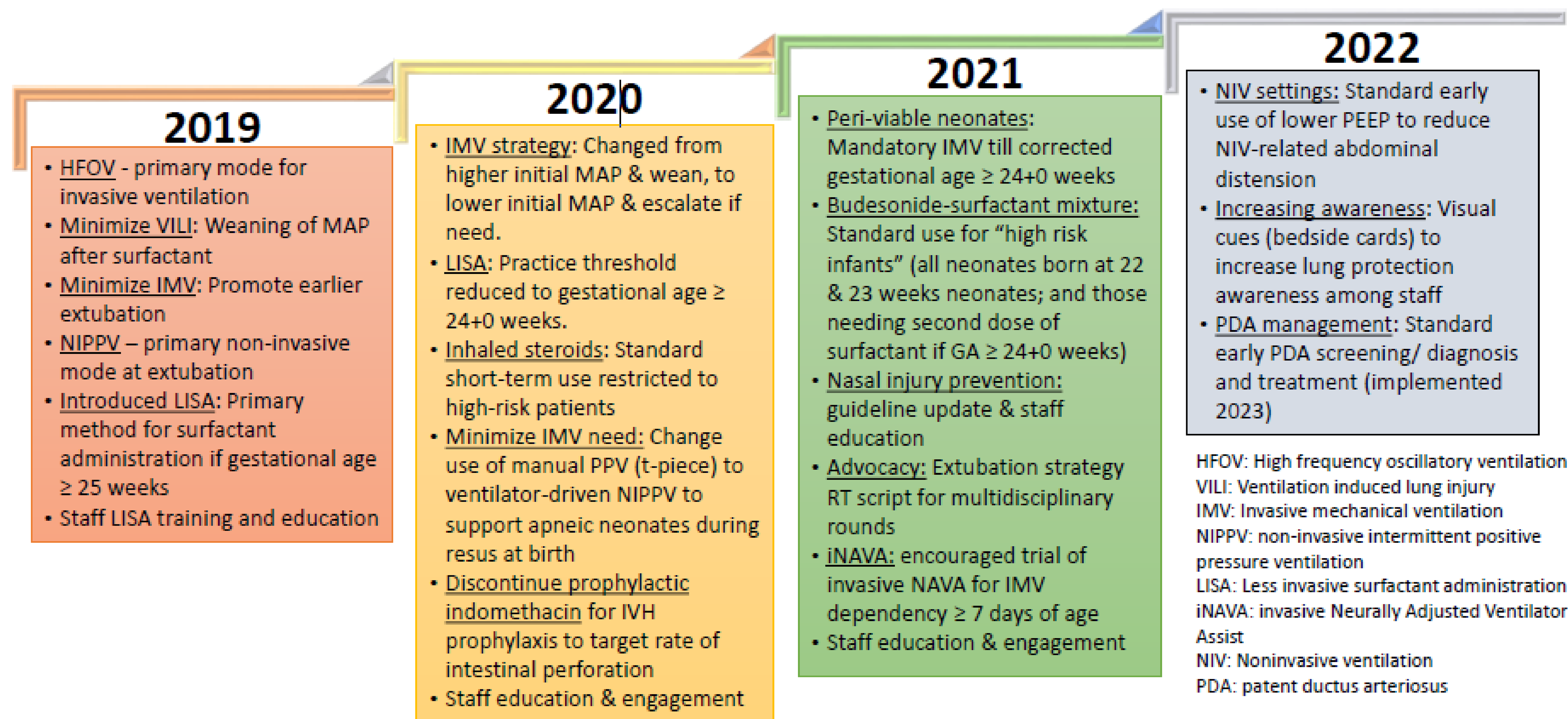
Background & Objective

Typically, preterm neonates transferred from MSH-NICU to community hospitals on any respiratory support < 36 weeks cGA are classified with BPD, which may result in over-estimation of BPD rates and impede our ability to monitor the impact of QI interventions. In recent years, a higher number of preterm infants were transferred to community hospitals on respiratory support < 36 weeks cGA.

Our objective was to document the precise rates of BPD among preterm neonates admitted to MSH-NICU at < 29 weeks GA

Key Strategies Employed to Date



Outcomes

- Total infants transferred < 36 weeks cGA on respiratory support to Level-2 = 232 [98 LFO_2, 134 NCPAP/HF]
- Data obtained to correctly classify BPD status = 192 [40 with missing data continued to be classified as BPD]
- 118/192 **(61%)** were misclassified as BPD [i.e., in room air at 36 weeks cGA]

Year		2016	2017	2018	2019	2020	2021	2022
Total admitted < 29 weeks, n		178	196	193	192	191	179	189
Sickkids transfers < 36 weeks (All ascribed BPD), n		16	30	30	32	28	23	20
Remained in MSH at 36 weeks on respiratory support, n		46	49	51	52	58	59	39
Respiratory support type at 36 weeks	Low flow	32	35	30	41	37	50	24
	NCPAP/high flow	14	14	21	11	21	9	15
Transferred to Level 2 < 36 weeks on respiratory support								
	Total	36 (20%)	33 (17%)	35 (18%)	34 (18%)	13 (7%)	24 (13%)	57 (30%)
Respiratory support type at discharge	Low flow	19	12	17	21	9	8	12
	NCPAP/high flow	17	21	18	13	4	16	45
Actual status at 36 weeks cGA ascertained		26	28	26	27	10	22	53
Infants in room air at 36 weeks, n (% of transfers) [Previously misclassified as BPD]		19 (73%)	16 (57%)	8 (31%)	22 (81%)	3 (30%)	16 (72%)	34 (64%)
CNN reported BPD diagnosis rate		**55%**	**62%**	**64%**	**62%**	**52%**	**66%**	**68%**
Actual total number of infants with BPD, n		79	96	108	96	96	90	82
Corrected BPD rate in neonates < 29 weeks GA		**44%**	**48%**	**56%**	**50%**	**50%**	**50%**	**43%**
Absolute misclassification rate		↓11%	↓8%	↓8%	↓12%	↓2%	↓16%	↓25%
Other major outcomes								
NEC ≥ stage 2a		8 %	14 %	10 %	16 %	10%	12%	9%
Spontaneous intestinal perforation		2 %	6 %	9 %	12 %	7%	7%	N/A
Intraventricular hemorrhage ≥ 3		15 %	16 %	17 %	13 %	13%	12%	10%
Nosocomial infection		23 %	29 %	34%	26%	25%	22%	24%
Mortality		18%	15%	16 %	13 %	14%	14%	9.5%

Pre-BPD Prevention bundle years (2016–2018)

Outcome Ascertainment

- Reviewed discharge information for all neonates discharged < 36 weeks cGA on respiratory support
- Data compiled for 7 years, 2016-2022 [3 years before, when BPD rates were apparently rising (baseline data), and 4 years after implementation of the *Better Breathing Bundle*]
- Infants for whom community hospital information was unavailable, or for those transferred to SickKids Hospital, remained classified as BPD to avoid the potential for under-estimation.

Conclusions

- Assigning diagnosis of BPD to preterm neonates transferred to community hospitals on respiratory support < 36 weeks cGA does result in an over-estimation of BPD rates.
- Corrected BPD rates confirmed that BPD QI interventions are associated with the reversal of the previous trend of rising BPD rates among preterm neonates cared for in MSH-NICU