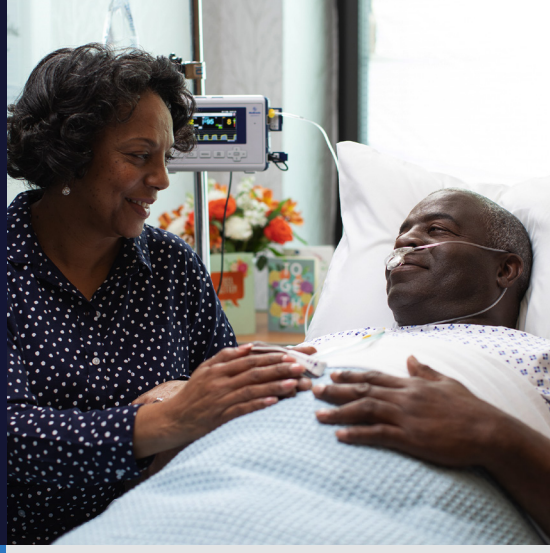
THE PRODIGY STUDY AT A GLANCE.
GLOBAL STUDY OF RESPIRATORY COMPROMISE, A TOP PATIENT SAFETY ISSUE.



PRODIGY

PRediction of **O**pioid-induced Respiratory **D**epression **I**n Patients Monitored by Capno**G**raph**Y**

About the PRODIGY study

PRODIGY, a global, Medtronic-sponsored, 16-site prospective study, is the largest of its kind and fills significant knowledge gaps in the prevention of opioid-induced respiratory depression (OIRD), a form of respiratory compromise.

Its primary objective was to develop an easy-to-use OIRD Risk Prediction Tool. This tool provides a PRODIGY Risk Score, which serves as a guide to identifying patients who would benefit most from continuous monitoring including capnography and oximetry on the general care floor.

The study found that:

46 percent of patients experienced respiratory depression episodes (RDEs).[9]

Patients experiencing RDEs show evidence of poorer outcomes.[9]

Patients with ≥ 1 respiratory depression episode were more likely to experience an adverse event that required action.[9]

Patients experiencing RDEs also show increased costs and increased lengths of stay (LOS).[9] In patients with ≥ 1 RD episode, mean hospital length of stay was three days longer.[9]

About respiratory compromise

In respiratory compromise, there is a high likelihood of decompensation into respiratory failure or death, but continuous monitoring and early intervention might prevent or mitigate decompensation.[1]

The number of respiratory compromise cases is on the rise and can occur anywhere in the hospital.[2,3]

Patients receiving opioids may be at increased risk of experiencing respiratory compromise.[4]

Respiratory compromise is common, costly, and deadly — but preventable:

- **Common** — a leading patient safety issue[5]
- **Costly** — top-five condition leading to increasing hospital costs; fifth-most rapidly increasing hospital inpatient cost in the United States[6]
- **Deadly** — general care floor patients with respiratory compromise are 14.4 times more likely to die[7]
- **Preventable** — in many cases, respiratory arrests are potentially avoidable[8]

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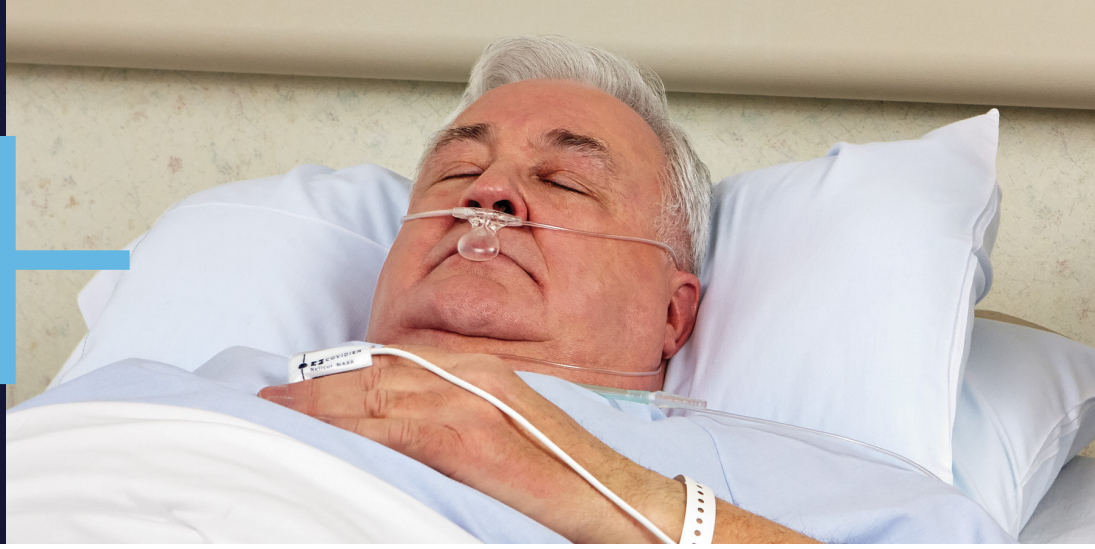
Further, Together

The PRODIGY Risk Prediction Tool can help identify patients at increased risk — and guide the use of continuous monitoring, including capnography and oximetry.



PRODIGY
RISK PREDICTION TOOL

Risk Factors	Scoring Criteria	Points	Score
Patient Age (years)	Age < 60 Age 60–69 Age 70–79 Age ≥ 80	= 0 pts = 8 pts = 12 pts = 16 pts	
Sex	Male Female	= 8 pts = 0 pts	
Previous Opioid Use	Opioid naïve Previous opioid use	= 3 pts = 0 pts	
Sleep Disordered Breathing (SDB)	Known SDB or high STOP-BANG score No SDB or normal STOP-BANG score	= 5 pts = 0 pts	
Chronic Heart Failure (CHF)	Coexisting CHF No known CHF	= 7 pts = 0 pts	
		Total PRODIGY Risk Score	

PRODIGY Risk Level

- ☐ Low risk of respiratory depression episodes for less than 8 pts
- ☐ Intermediate risk of respiratory depression episodes for 8–14 pts
- ☐ High risk of respiratory depression episodes for 15 pts or higher

1. Morris TA, Gay PC, MacIntyre NR, et al. Respiratory compromise as a new paradigm for the care of vulnerable hospitalized patients. *Respir Care*. 2017 Apr;62(4):497–512. **2.** Agarwal SJ, Erslon MG, Bloom JD. Projected incidence and cost of respiratory failure, insufficiency and arrest in Medicare population, 2019. Abstract presented at AcademyHealth Congress, June 2011. **3.** Wang HE, Abella BS, Callaway CW. Risk of cardiopulmonary arrest after acute respiratory compromise in hospitalized patients. *Resuscitation*. 2008;79(2):234–240. **4.** Dahan A, Aarts L, Smith TW. Incidence, reversal, and prevention of opioid-induced respiratory depression. *Anesthesiology*. 2010;112:226–238. **5.** ECRI Institute. Executive Brief. Top 10 patient safety concerns for healthcare organizations. 2016. https://www.ecri.org/components/HRC/Pages/Top10Survey.aspx. Accessed Feb 1, 2019. **6.** Wier LM (Thomson Reuters), Henke R (Thomson Reuters), Friedman B (AHRQ). Diagnostic groups with rapidly increasing costs, by payer, 2001–2007. HCUP Statistical Brief #91. June 2010. Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcup-us.ahrq.gov/reports/statbriefs/sb91.pdf. Accessed Feb 1, 2019. **7.** Buist M, Bernard S, Nguyen TV, Moore G, Anderson J. Association between clinically abnormal observations and subsequent in-hospital mortality: a prospective study. *Resuscitation*. 2004;62(2):137–141. **8.** Lee LA, Caplan RA, Stephens LS, et al. Postoperative opioid-induced respiratory depression: a closed claims analysis. *Anesthesiology*. 2015;122(3):659–665. **9.** Khanna A, Bergese S, Jungquist CR, Morimatsu H, Uezono S, Lee S. Prediction of opioid-induced respiratory depression on inpatient wards using continuous capnography and oximetry: an international prospective, observational trial. *Anesth Analg*. 2020; in press.

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