

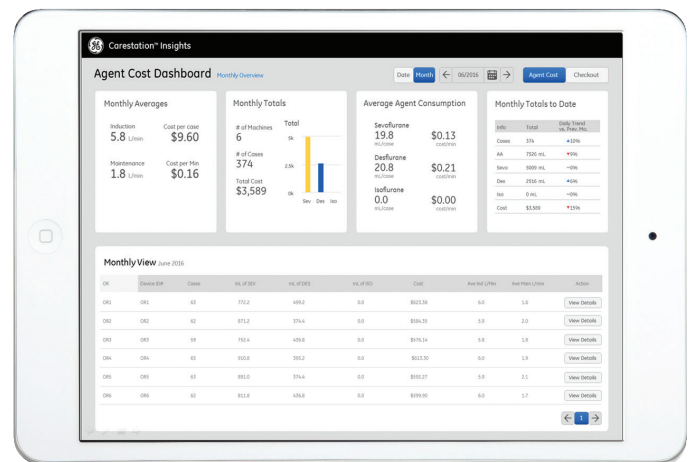


Hospital leverages Carestation Insights to reduce average fresh gas flow rates

GE Healthcare's latest anesthesia delivery systems are engineered to capture and stream hundreds of data points with every breath, from breath measurements and ventilation settings to alarm, error, and status codes. This data provides great visibility into the clinician experience and patient care, and advanced algorithms can unlock actionable insights within a large data set to help clinicians with their clinical, operational and economic improvements.

Obtaining and generating meaningful insights from high fidelity captured data can be a daunting task, and unless a facility has resources dedicated to data flow and data analytics, an impossible task. That's why GE created Carestation™ Insights for data extraction, collection, storage, and analysis, that includes applications powered by algorithms that can help a facility immediately start leveraging the data to drive measurable outcomes. GE started with two of the OR's biggest challenges – operation costs and room utilization – and developed a pair of simple, cloud-based applications that can easily be accessed on your computer or tablet and provide data analysis to help drive low flow initiatives, reduce anesthetic drug waste, and optimize room utilization.

To kick off evaluations of these two cloud-based applications, GE focused first on the agent cost dashboard. As you may know, there are several benefits associated with low flow anesthesia. First, anesthetic agents are the biggest ongoing expense associated with anesthesia units, and by lowering flow, anesthetic expense can be minimized without negatively impacting patient care. Second, low flow reduces greenhouse gas emissions. For example, a busy midsize hospital purchasing 1000 liters of inhaled anesthetic per year is equivalent to 1200 passenger car emissions.¹ Thus, reducing agent usage has a positive impact on the environment.



Agent Cost Dashboard

Support low flow initiatives and provide transparency to anesthetic agent usage and costs across your department.

“The data derived from Carestation Insights has profoundly altered our understanding of how our anesthesiologists are conducting volatile based anesthesia. It's allowed specific educational interventions which have produced an immediate reduction in fresh gas flow rates. Our facility has traditionally had low mean fresh gas flows when audited, so being able to reduce this further is a testament to the power of high quality data collected from large numbers of cases.”

–Dr Richard French

How low did they go?
Already low mean fresh gas flow rates during agent delivery were decreased by an additional 13% to an astounding 0.745 l/min after the intervention.²



Reducing fresh gas flow rates correlated to a significant reduction in agent usage, which led to less emitted greenhouse gases and a 12% reduction in agent spend.



Think about it!
The facility achieved a fresh gas flow rate of 0.745 l/min.
That's astounding!



Promising dashboard application results

In 2016 GE Healthcare teamed up with Dr. Ross Kennedy, Anesthesiologist at Christchurch Hospital, New Zealand, and Associate Professor at University of Otago, New Zealand, and Dr. Richard French, Anesthesiologist and Clinical Director at Christchurch Hospital, to use the Carestation Insights platform and its Agent Cost Dashboard to discover previously unidentified opportunities to further reduce an already low mean fresh gas flow rate at their facility. The team identified that a significant impact on flow reduction could be made during the induction phase. Turning the insights gained from the platform into action, a simple intervention allowed them to effectively implement behavioral change in the operating room, and resulted in significant reduction of the duration of high flows as well as significant overall gas usage savings. "The intervention was very simple." Dr French explained. "Firstly the data on how we use high flows during the induction phase was presented to the Department, which created discussion on how we could improve. Secondly, on the days they were in Insights equipped theatres, Anaesthesiologists received a reminder text message, and were prompted by Anaesthesia Assistants, to reduce flows once the airway was secured." This resulted in already low mean fresh gas flow rates decreasing by an additional 13% to an astounding 0.745 l/min.² This correlated to a significant reduction in agent usage, which led to less emitted greenhouse gases and a 12% reduction in agent spend.

	Intervention		DIFF
	Before	After	
Cases	408	189	
Total AA Minutes	27,042	11,928	
Total AA \$ (New Zealand dollars)	\$5,029.08	\$1,953.28	
AA \$/Minutes	\$ 0.19	\$ 0.16	-12%
Avg. High Flow Duration (minutes per case flow>6lpm)	2.63	1.71	-35%
Avg. Induction Flow (l/min, overall time weighted)	6.11	5.76	-6%
Avg. Maintenance Flow (l/min, overall time weighted)	0.60	0.56	-7%
Avg. Total Flow (l/min, overall time weighted)	0.86	0.74	-13%

What lies ahead?

With clinicians continually focused on clinical, economic and operational outcomes, facilities are motivated to look for solutions that can give them greater visibility into day to day practice and leverage that visibility to improve outcomes, including limiting waste or inefficiencies. If a facility with an already low fresh gas flow rate can use Carestation Insights data to further lower gas flows, there seems to be great opportunity for other hospitals to harness the power of data to lower excess flows without compromising patient care.

- (1) Greening of the Operating Room: Reduce, Reuse, Recycle and Redesign ASA website PDF T. Kate Huncke, MD; Susan Ryan, PhD, MD; Harriet W. Hopf, MD; Deborah Axelrod, MD; Jeffrey M. Feldman, MD, MSE; Toni Torrillo, MD; William Paulsen, PhD; Caitlin Stanton, MPH; Spencer Yost, MD; Adam B. Striker, MD. 2012
- (2) The role of the induction period in determining overall gas and vapour consumption. Ross Kennedy, MB ChB PhD FANZCA, Richard French MB BS FANZCA, Christchurch Hospital & University of Otago Christchurch, NEW ZEALAND. James Hanrahan BS MBA, and Guy Vesto BSc, GE HealthCare, Madison WI, USA

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