

Prevention of Medical Gas Contamination

PATIENT SAFETY AND QUALITY BULLETIN

SingHealth Duke-NUS Institute for Patient Safety and Quality (IPSQ), Singapore

What can go WRONG?

Dust Particle creates havoc in Medical Gas Piping System

Case example: A patient was supposed to be anaesthetised with nitrous oxide (from piped supply), but patient continued to be conscious after sometime. The anaesthetist found that the nitrous content was much lower than expected and the nitrous oxide piped supply was contaminated with oxygen gas. Soon, the problem crept into other wards as well.

The source tanks and all related gas devices were checked and no issues were found. As a precautionary measure, all unused medical devices were disconnected from the piped gas supplies, and the nitrous oxide gas lines were purged. The situation returned to normal temporarily. However, the problem reappeared after a few days.

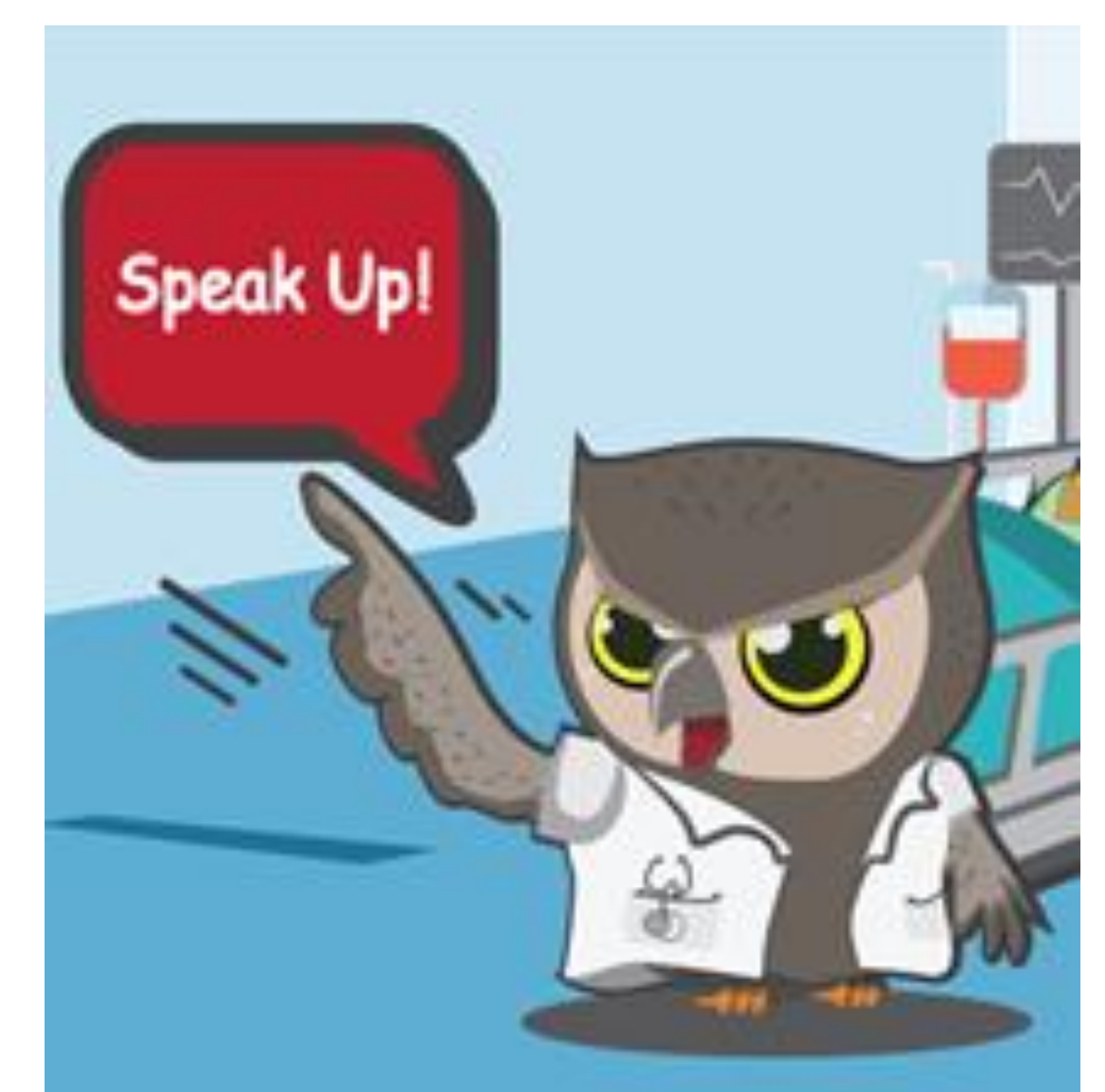


Upon close examination on the gas mixer, dust particles were found trapped at the mouth of the one-way valve. The dust particles prevented the valve from fully closing and resulted in cross-contamination of oxygen gas and nitrous oxide. A clean valve was changed and the nitrous oxide supply was back to normal. No patient was harmed during the course of the incident.

Preventive Measures for Medical Gas Contamination

- **Regular maintenance and monitoring** of the gas supplies and medical devices
- **Unused devices should preferably be removed** from the gas supplies
- **Speak Up** and inform engineering department if there are any signs of corrosion on the gas panel or medical devices
- **Report any unusual symptoms** observed in the Risk Management System.

For example: Gas pressure fluctuations outside the acceptable range or adverse patient reactions.



Contributor: Goh Kok Siong

Editor: Tan Kok Hian Editorial Board Members: Pang Nguk Lan, Siau Chuin Editorial Executive: Nurhuda Ishak