Anesthetic Gas Systems: Outline

• Overview of anesthetic gas systems
• Environmental impact
• Mitigation strategies
• Summary
Anesthetic Gas Systems: Overview
Environmental Impact

- Energy used for conveyance and management of waste anesthetic gasses
- Exhausted greenhouse gas emissions
- Embodied energy
Environmental Impact: Energy
Environmental Impact: Emissions
Primer on Greenhouse Gasses

• 3 types of GHG emissions
  • Scope 1 – direct (exhausted gasses)
  • Scope 2 – indirect (electricity consumption)
  • Scope 3 – other (supply chain embodied energy)
Primer on Greenhouse Gasses

- Global Warming Potential (GWP)
  - Measure of the impact of a gas on global warming by unit volume as compared with that of CO2
- Anesthetic gasses can have a GWP of between 349 and 3714 depending on the gas used
  - GWP (Sevoflurane) = 349
  - GWP (Isoflurane) = 1401
  - GWP (Desflurane) = 3714
- Example: 1 MT of Desflurane = 3714 MT of CO2
Mitigation Strategies

• Energy savings – Scavenging valves
• Emissions reductions – anesthetic gas recovery systems
Mitigation Strategies: Energy
Mitigation Strategies: Emissions
Mitigation Strategies: Emissions

MED GAS ROOM

NO EMISSIONS
ANESTHETIC GAS RECOVERY SYSTEM

MEDICAL VACUUM PUMP

ENERGY

OPERATING ROOM

DGSS VALVE

Download patient
Mitigation Strategies: Supply Chain
Mitigation Strategies: Supply Chain
Summary

• Anesthetic gas systems are an essential part of OR procedures
• These systems have a significant environmental impact
• There are several available technologies to mitigate these impacts
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