Low-Flow Anesthesia:
Assessing Current Utilization and Creating Best Practice Recommendations

Sasha Hourany, RN, BSN, SRNA
Norman Kung, RN, BSN, SRNA
Kha Nguyen, RN, MSN, SRNA

Kaiser Permanente School of Anesthesia

Dr. Sandra Bordi, DNP, CRNA, FAANA, Team Leader
Dr. Rachel McClanahan, DNP, RN, NCSN, CNE, Team Member
Dr. Mark Gabot, DNP, CRNA, FAANA, Team Member

REDTalk:

Anesthesia Solutions

Research

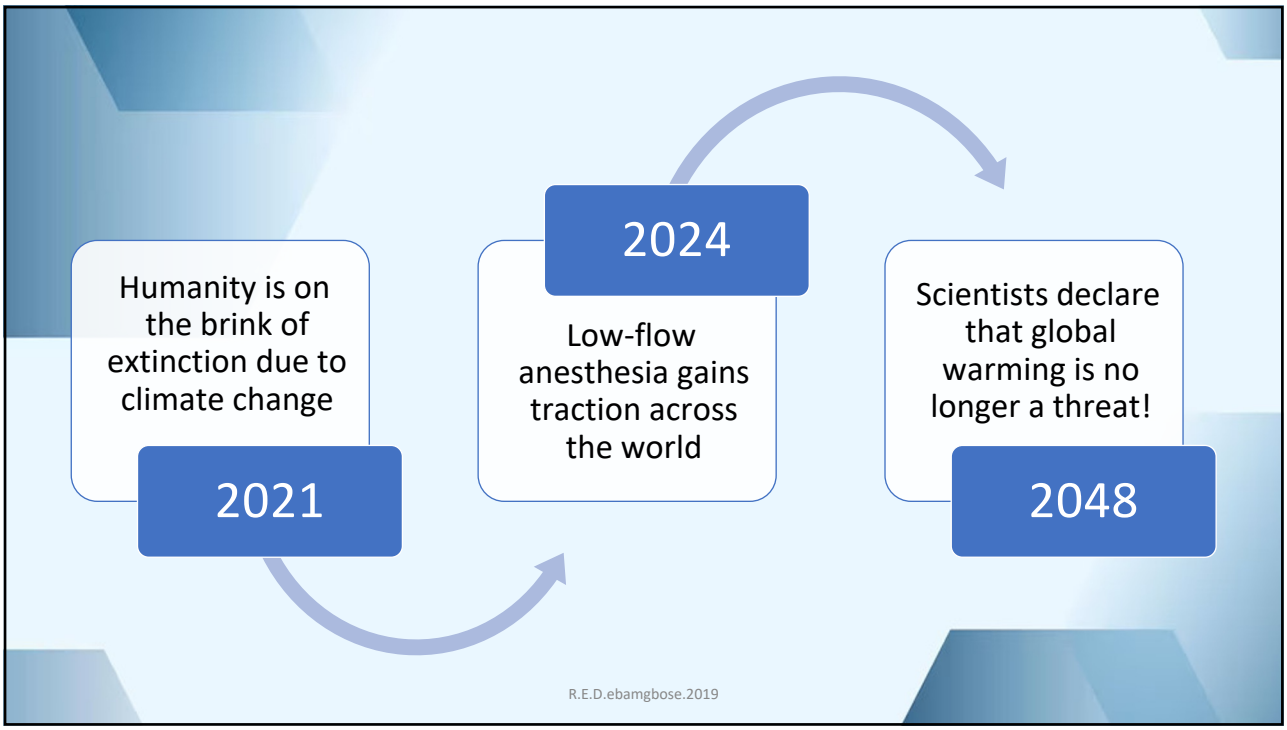
Education

Dissemination

1

R.E.D.ebamgbose.2019

2



3

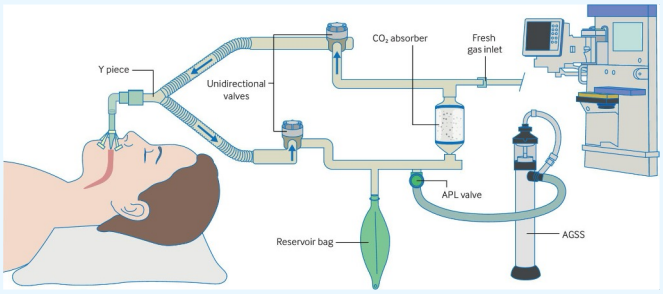
What is the current utilization of low-flow anesthesia?

What are the best practice recommendations for low-flow anesthesia?

R.E.D.ebamgbose.2019

4

- Fresh Gas Flow
- Low-Flow Anesthesia



R.E.D.ebamgbose.2019

5

- Baseline fresh gas flow rates administered by anesthesia providers
- Correlations between fresh gas flow rates and other surgical factors (age, sex, type of surgery, position)
- Best practice recommendations for low-flow anesthesia

R.E.D.ebamgbose.2019

6

Literature Review:

- Patient physiology
- Consumption and cost
- Environmental impact

However, inconsistencies in recommendations and practice remain common

R.E.D.ebamgbose.2019

7

Multispecialty teaching facility: EMRs of all patients undergoing surgery between 1/1/23 and 6/30/23

- GA
- Volatile agents
- Duration >1 hr

8

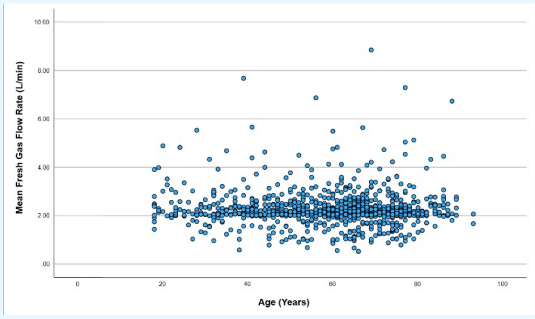
Data Analysis: IBM SPSS Statistics version 29.0

Case Number	Service	Position	Length (min)	Age	Sex 1=M 0=F	Mean FGF (L/min)	O2 (L)	O2 (min)	Air (L)	Air (min)	Nitrous (L)	Nitrous (min)	Aux air (L)	Aux air (min)	Sevo (L)	Sevo (min)	Iso (L)	Iso (min)	Des (L)	Des (min)
1																				
2																				
3																				
4																				
5																				

R.E.D.ebamgbose.2019

9

- **Mean fresh gas flow (FGF) rate:** 2.28 L/min
- **Age**: No significance
- **Position**: No significance
- **Sex**: Males 0.125 L/min higher (weak)
- **Type of surgery**: Orthopedics ~0.3L higher (weak)



R.E.D.ebamgbose.2019

10

Implement low-flow anesthesia into personal practice

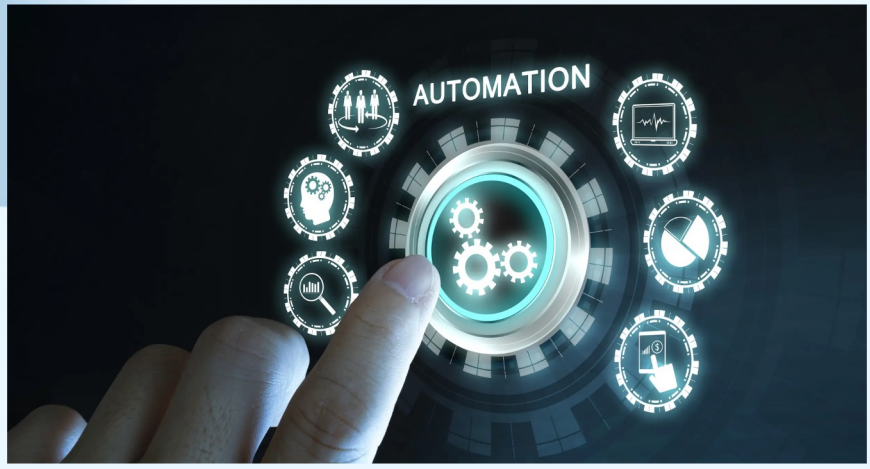
Adjust FGF to <1 L/min whenever feasible
(Requires increased vigilance in monitoring oxygenation, ventilation, temp, and humidity)

Explore low-flow anesthesia in other settings

Develop facility protocols

R.E.D.ebamgbose.2019

11



R.E.D.ebamgbose.2019

12

R.E.D.ebamgbose.2019

13

References

14