Nitrous Oxide Exposure in a Pediatric Dental Clinic

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Field Research and Consultation Group

Health Effects

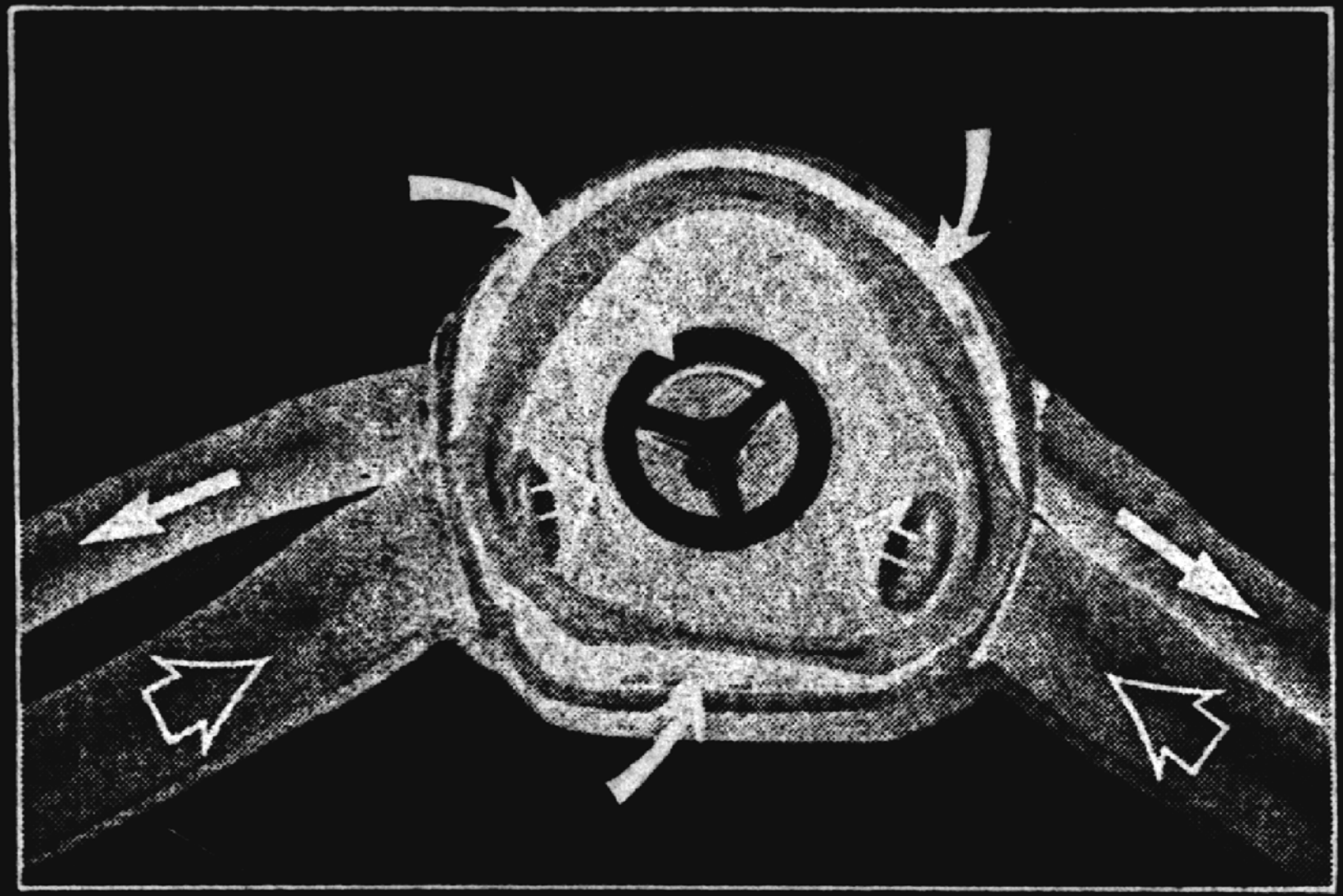
- Spontaneous abortion - increased rate
- Fetal abnormalities - suspicion
- Central nervous system - decreased performance of complex tasks
  basis for TLV level
- Liver and kidney - increased disease rate

Methods

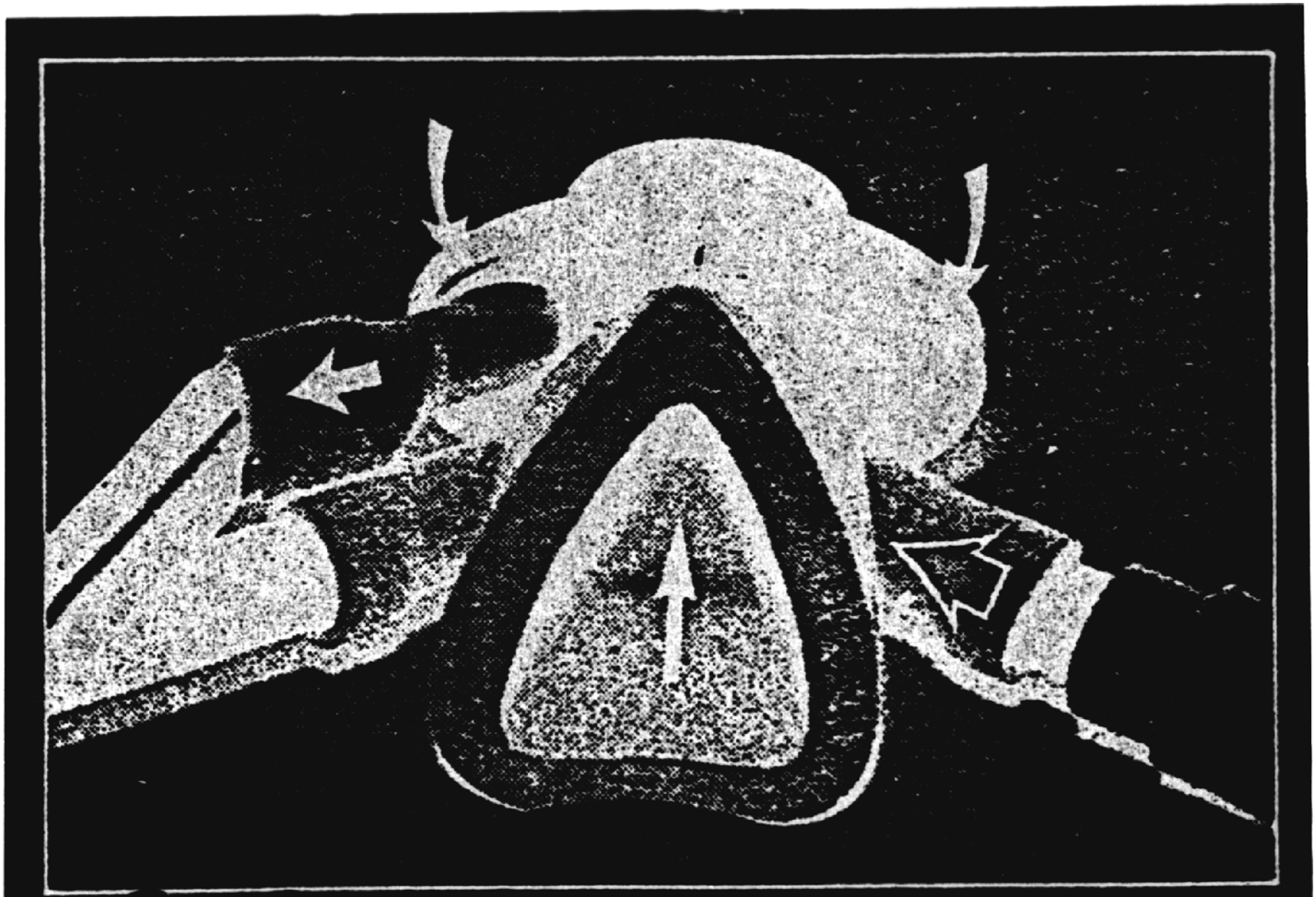
- Badge monitoring

  full shift and procedure length
- Minute-by-minute recording of:

  distance from patient, N_2O+O_2 flow rate, N_2O%, scavenging flow rate, & adjacent N_2O
- Ventilation measurements
- Leak testing
- Change of mask



Brown mask



Matrx mask with scavenging cone

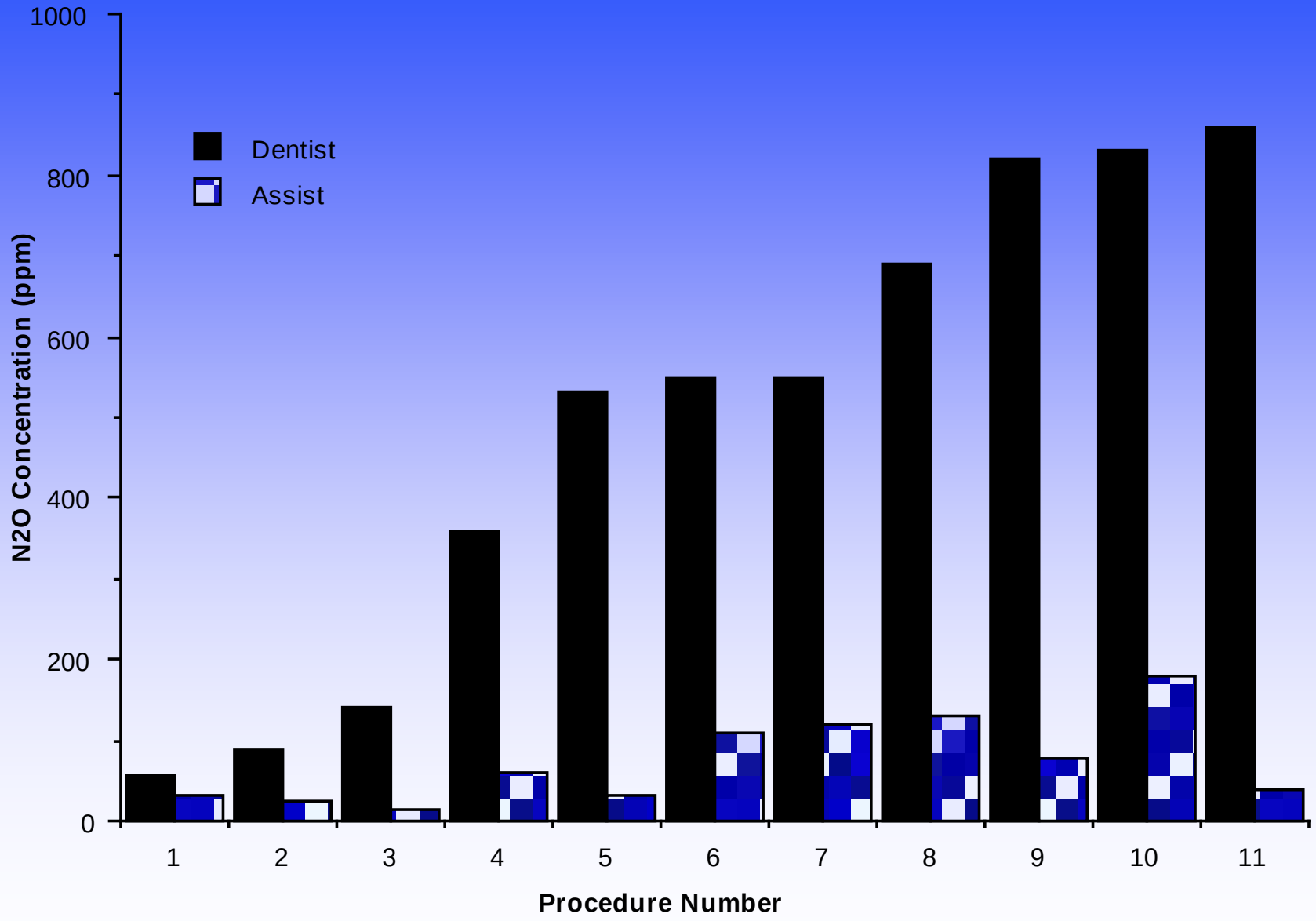
Full Shift N2O Levels

Study Part	TWA_{shift} Mean (ppm)	No. Sampled	>PEL of 50 ppm
Baseline	32	12	29%
Inter-vention	36	12	42%

Procedure N2O Levels

Phase	TWA_{proc} Mean (ppm)	Stnd. Dev. (ppm)	Nbr. Sampled
Baseline	177	218	18-assist. 8-dent.
Intervention	217	310	12-assist. 9-dent.

Dentist and Assistant Exposures During Same Procedure



Conclusions

- Still a problem
- Dilution ventilation not enough
- Requires complete management system: leak-testing, training, scavenging/mask system and dilution ventilation