appeared in either mean control values or
per cent deviation from these values for min-
ute ventilation, hemoglobin or base excess.
Conclusions: Although there were only slight
changes in esophageal temperature, patients
receiving warmed blood during ether anesthe-
sia had significantly lower peripheral resistance
and higher cardiac output and PCO₂ than pa-
tients receiving cold ACD blood. This sug-
gests that warming infused blood results in
better tissue perfusion. (Supported by U. S.
Public Health Service Grant HE-10248-02.)

Effects of Halothane, Cyclopropane and
Nitrous Oxide on Isolated Human Uterine
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Effects of anesthetic drugs on uterine muscle
have been reported by many investigators.
Most drugs studied produced some depression
of uterine muscle activity. Comparison of
drug effects from previous studies is not pos-
sible since neither anesthetic dose nor response
have been quantitated. The purpose of this
study is to measure and compare the respons-
se of isolated human nongravid uterine muscle
strips to equipotent concentrations (partial
pressures) of halothane, cyclopropane and
nitrous oxide. The standard of equipotency
used is the minimum alveolar (anesthetic)
concentration (MAC), (Saidman et al.,
Anesthesiology 27: 225, 1966). Method:
Forty-seven fundal muscle strips (15 X 3 X
1 mm.) were excised from 12 nongravid hu-
man uteri removed at surgery. Specimens
were stored for 18-20 hours at 6° C. in a
bicarbonate-buffered solution equilibrated
with a gas mixture of oxygen and carbon
dioxide (5 per cent). Spontaneous uterine
contractions were recorded isometrically at
37° C. Thirty-one muscle strips were exposed
to halothane concentrations ranging from
0.37 - 1.11 per cent. Six strips were exposed
to 10 per cent cyclopropane and 10 strips were
exposed to 50 per cent nitrous oxide. Cyclo-
propane and nitrous oxide concentrations were
achieved by calibrated flowmeters. Haloth-
ane concentration was monitored with a
Beckman infrared analyzer. Data were ana-
lyzed for changes in frequency, developed
tension and resting tension. Contractility was
calculated according to Caldeyro-Barcia
permit comparison of results concentrations
of anesthetic drugs are expressed relative to
their respective MAC values. Results: Mean
contractility values and standard deviations,
expressed as fractions of control values, are
as follows: Halothane 0.66 x 0.22 at 0.5 MAC,
0.40 x 0.27 at 0.75 MAC, 0.44 x 0.11 at
1.0 MAC, 0.06 x 0.10 at 1.25 MAC, and
0.04 x 0.04 at 1.5 MAC; cyclopropane 1.04 x
0.59 at 1.0 MAC; and nitrous oxide 1.00 x
0.41 at 0.5 MAC. Extrapolation of the regres-
sion of contractility on halothane concentra-
tion (MAC) indicates that zero contractility would
occur at 1.6 MAC (1.2 per cent halothane).
Contractility values for halothane show sig-
nificant differences (P < 0.05) from control
values at each level studied. No significant
difference could be demonstrated between
halothane and nitrous oxide at 0.5 MAC.
However, comparison of halothane and cyclo-
propane values at 1.0 MAC shows a sig-
nificant difference (P < 0.05). Depression of
developed tension during anesthetic
exposures did not correlate solely on the
basis of changes in frequency. No correlation
could be made between variations in contractil-
ity, endometrial phase, or patients’ ages. The
effects of hypoxia and variability of contractil-
ity patterns in serially-excised muscle strips
were noted also. Discussion: Previous studies
of the effects of nitrous oxide and cyclopropane
on uterine contractility show conflicting results.
Our findings reveal no significant depression
of mean contractility values during exposure to
0.5 MAC nitrous oxide and 1.0 MAC cyclo-
propane. However, at equipotent concentra-
tions of halothane, mean contractility values
show significant reduction (P < 0.05) from
control. Further reduction in contractility was
proportional to halothane concentration. Our
results also show no significant reduction in
the resting tension of muscle strips exposed to
halothane in concentrations capable of pro-
ducing marked reductions of contractility. It
is concluded that at equipotent concentrations
halothane is a more potent depressant of
uterine muscle than nitrous oxide or cyclo-
propane. Of the three drugs studied cyclopro-
pane has the least depressant effect.