

# Terrorism Preparedness: Have Office-based Physicians Been Trained?

National Ambulatory Medical Care Survey (2003-2004)

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# Background

- Preparedness for biological, chemical and radiological terrorism became a national priority after 2001 anthrax outbreak
- Important for ambulatory care physicians because patients may have undifferentiated symptoms
- Evaluated by National Center for Health Statistics (NCHS)
- Results published May 2007 in *Family Medicine* - available at <http://www.stfm.org/fmhub/fm2007/May/Richard357.pdf>

# Objective

- To study associations between terrorism preparedness training and physician demographic and practice characteristics
- Terrorism preparedness items added to the 2003—2004 National Ambulatory Medical Care Survey (NAMCS)

# Methods

- 3,968 nonfederal office-based physicians surveyed in 2003–2004
  - Identified from Masterfiles of American Medical Association and American Osteopathic Association
- Multistage random sampling design
  - 112 geographic primary sampling units (PSUs)
  - Random stratified sample of physicians within PSUs, by 15 specialty areas
  - Saw patients during randomly assigned 1-week reporting period
  - Response rate over both years was 56.3%
- Face-to-face interaction between physician and U.S. Census Bureau interviewer
- Data weighted by inverse of selection probability
  - Nonresponse adjustment
  - National estimates done based on weighting
- Surveys approved annually by NCHS Ethics Review Board

# Analyses

- Chi-square
  - Significance at  $p < 0.05$
- Logistic regression
  - Included significant variables from chi-square analysis
  - 95% confidence intervals
- SAS-callable SUDAAN 9.0
  - For multistage, complex sampling designs

# Dependent Variables

- Training in identification and diagnosis of Centers for Disease Control and Prevention (CDC) category A (weaponizable) diseases:
  - Smallpox
  - Anthrax
  - Plague
  - Botulism
  - Tularemia
  - Hemorrhagic fevers
- Training for other exposures:
  - Chemical
  - Radiological

# Independent Variables

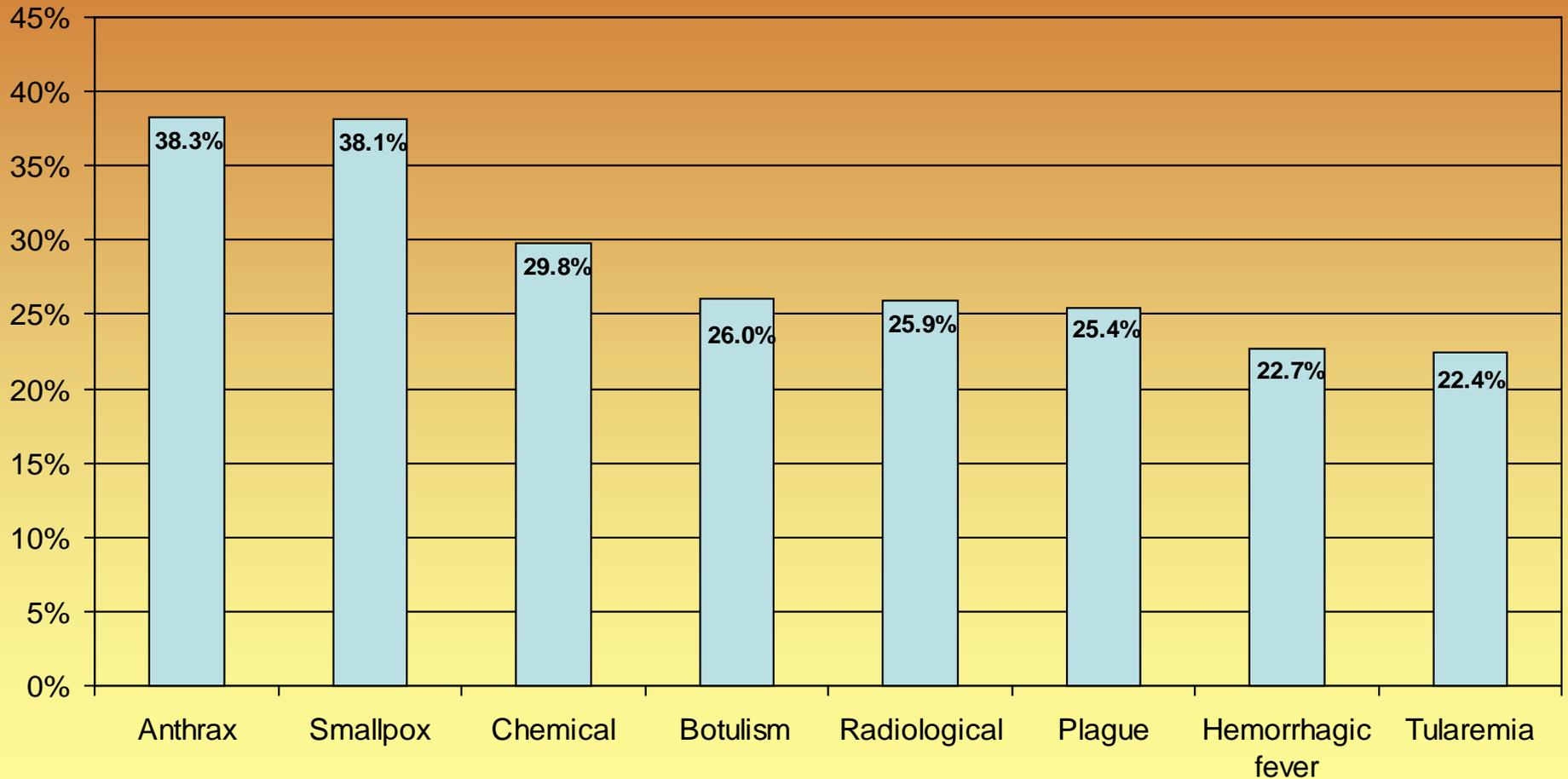
## Physician characteristics

- Age
  - 30-39 years
  - 15-year bands for age 40–85 years
- Degree
  - Allopathic (MD)
  - Osteopathic (DO)
- Specialty group
  - Family medicine
  - Other primary care
  - Medical
  - Surgical

## Practice characteristics

- Region
  - Northeast
  - South
  - Midwest
  - West
- Metropolitan statistical area
  - Urban
  - Rural
- Managed care contracts
  - None
  - One or more

# Figure 1. Percentage of Physicians Trained for Terrorism-Related Exposures

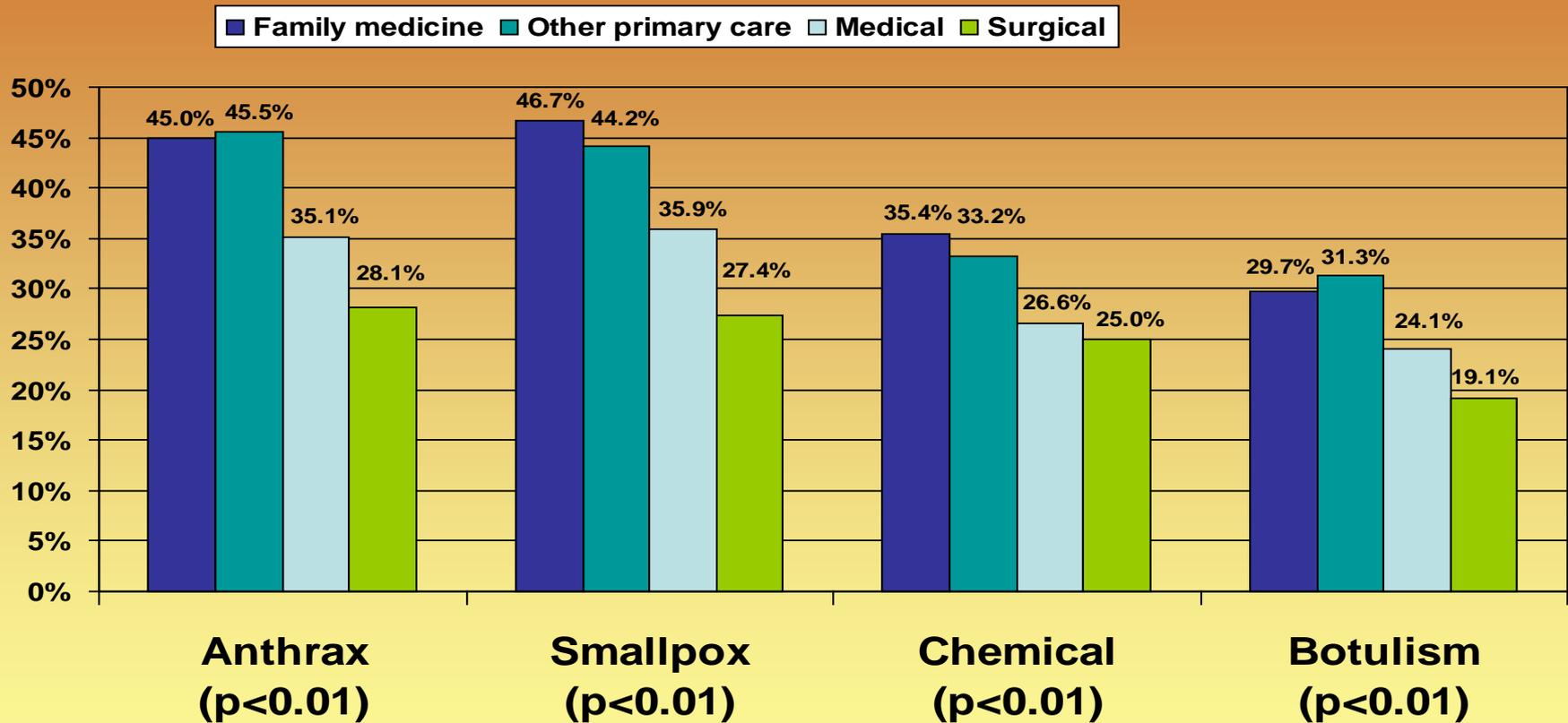


**NOTE: No significant differences by medical degree, urban-rural, or geographic region.**  
**SOURCE: National Ambulatory Medical Care Survey, 2003-2004**

# Training for Exposures, by Specialty (Compared with Surgeons), Adjusted for Age and Managed Care Contracts

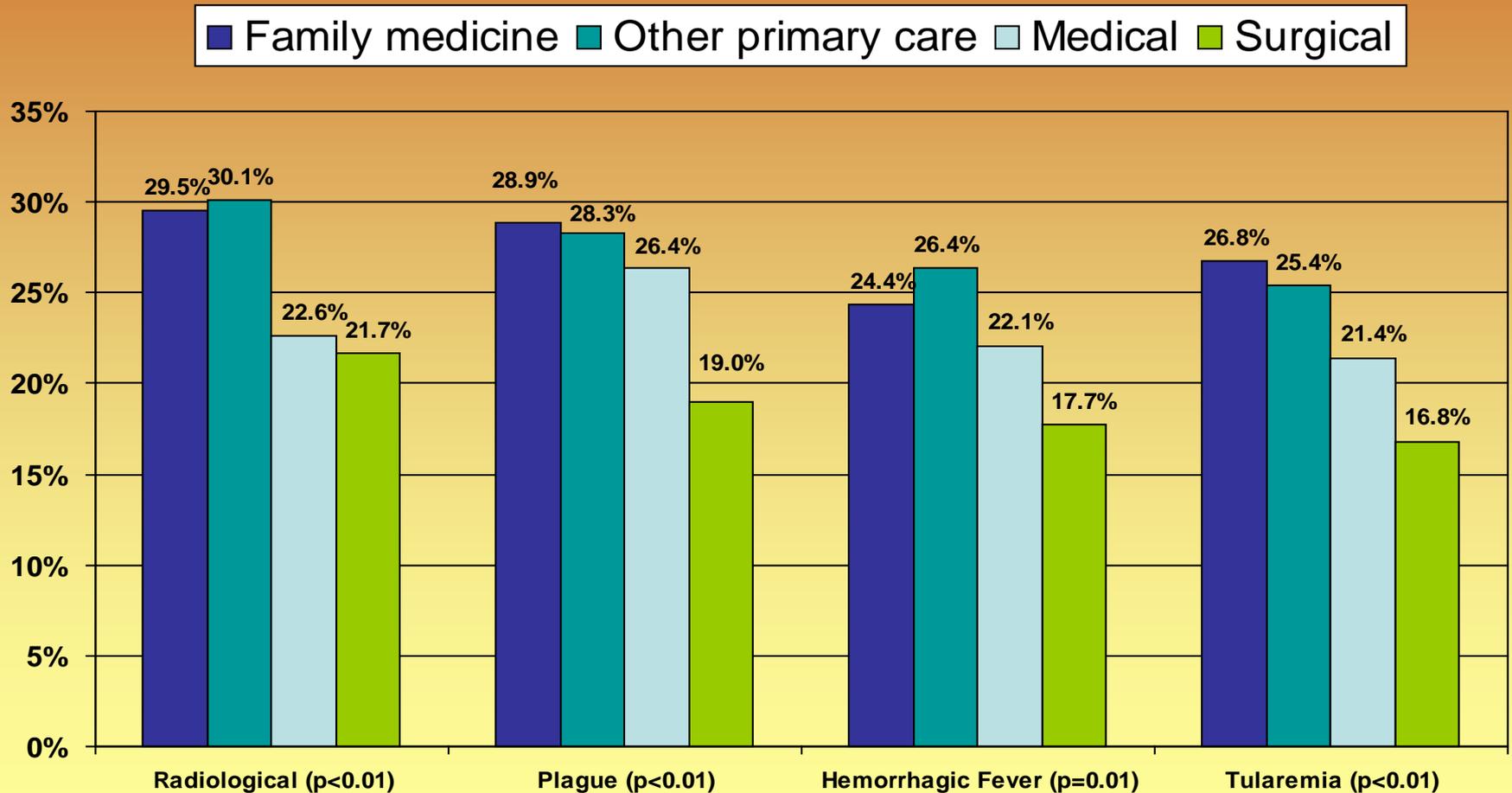
- Family physicians more likely to be trained in any exposure
  - Odds ratio (OR) 2.05 (95% CI 1.51-2.78)
  - More likely to be trained in all eight individual exposures
- Other primary care physicians more likely to be trained in any exposure
  - OR 1.95 (95% CI 1.47-2.60)
  - More likely to be trained in all eight individual exposures
- Medical specialists more likely to be trained any exposure
  - OR 1.37 (95% CI 1.02-1.84)
  - More likely to be trained for anthrax, smallpox and plague

# Figure 2a: Percentage of Physicians Trained for Terrorism-Related Exposures, by Specialty Group



SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey, 2003-2004

# Figure 2b: Percentage of Physicians Trained for Terrorism-Related Exposures, by Specialty Group

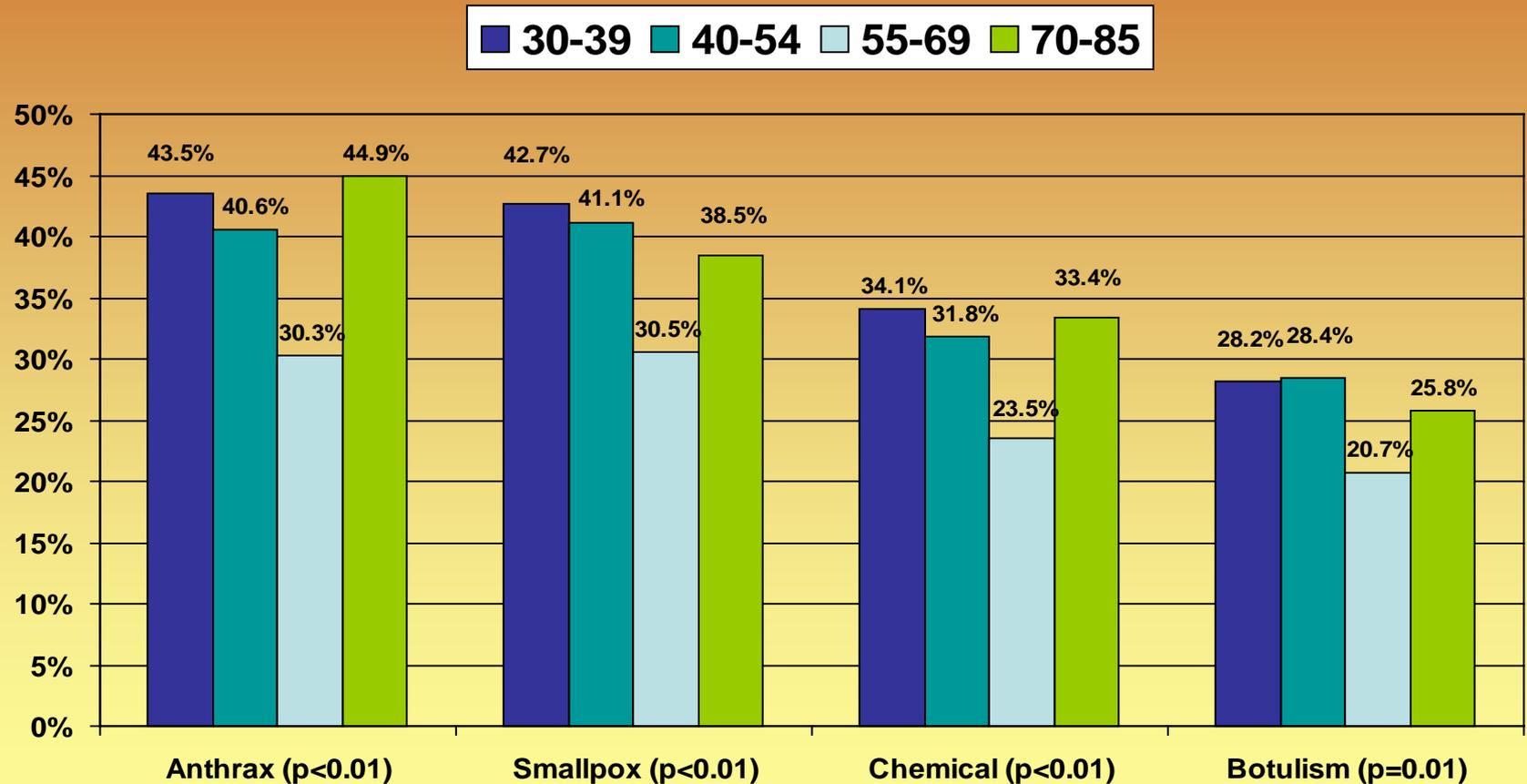


SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey, 2003-2004

## Training for Exposures, by Age (Compared with Age 30-39 Years), Adjusted for Specialty and Managed Care Contracts

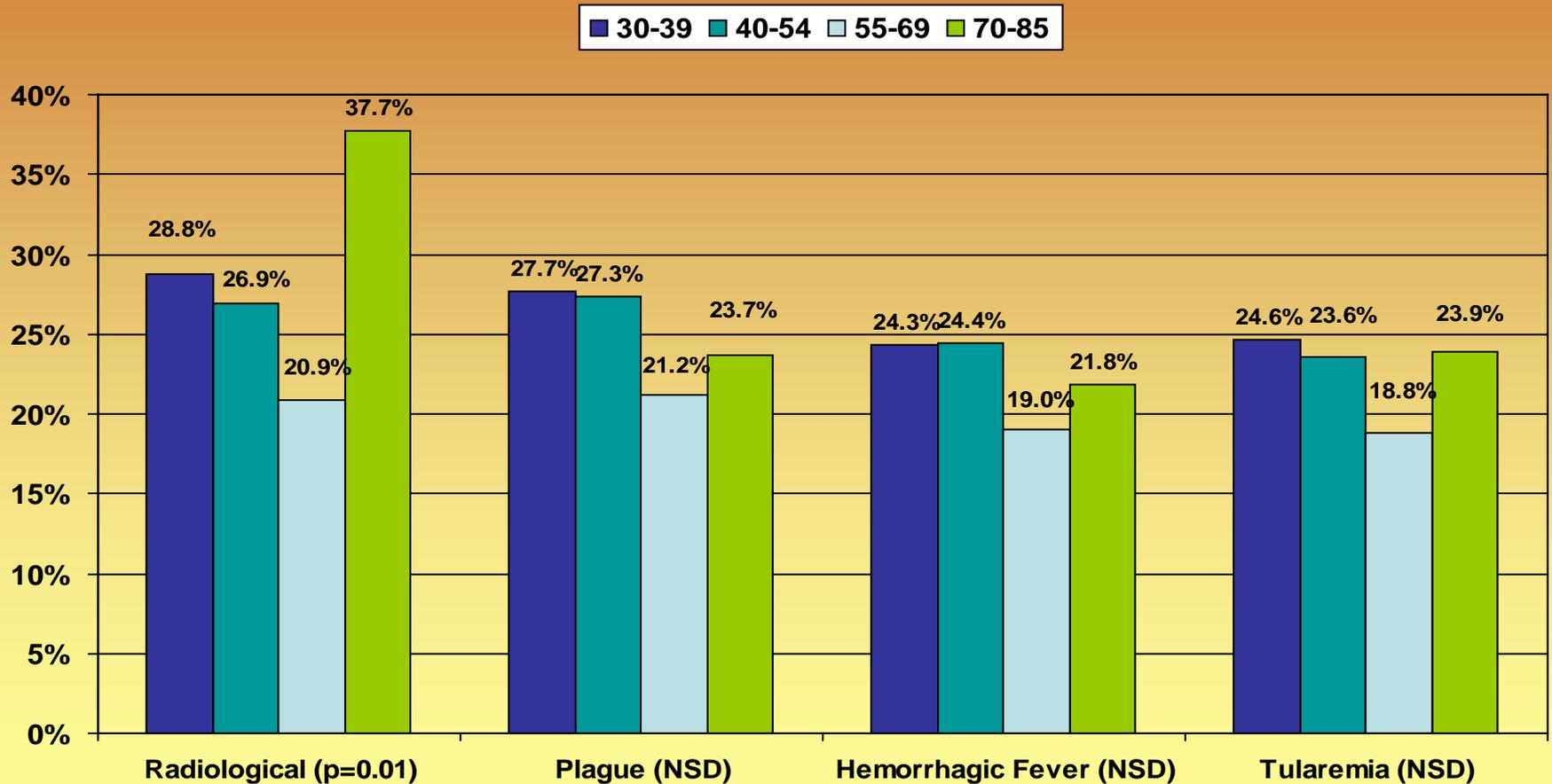
- Physicians aged 55-69 years less likely to be trained for
  - Smallpox
    - OR 0.70 (95% CI 0.49-0.99)
  - Chemical exposures
    - OR 0.67 (95% CI 0.46-0.96)
  - Anthrax
    - OR 0.66 (95% CI 0.46-0.95)
- No differences for other exposures or age groups

# Figure 3a: Percentage of Physicians Trained for Terrorism-Related Exposures, by Age in Years



SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey, 2003-2004

# Figure 3b: Percentage of Physicians Trained for Terrorism-Related Exposures, by Age in Years



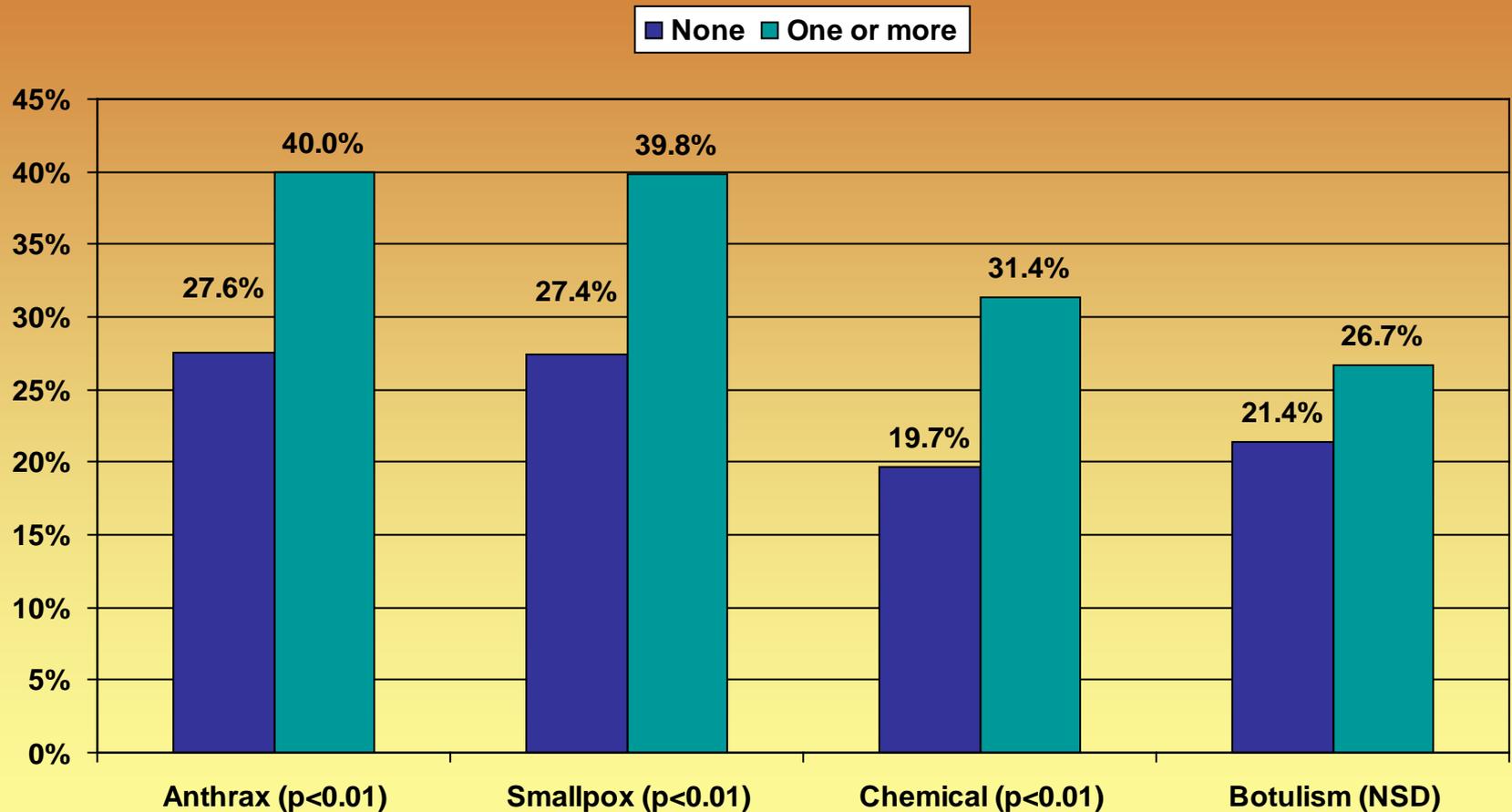
NOTE: NSD is no significant difference.

SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey, 2003-2004

## Training for Exposures, by Managed Care Involvement, Adjusted for Age and Specialty

- Physicians with one or more managed care contracts more likely to be trained in any exposure than those without contracts
  - OR 1.78 (95% CI 1.26-2.52)
- More likely to be trained in these individual exposures:
  - Chemical
  - Smallpox
  - Anthrax
  - Plague
  - Radiological

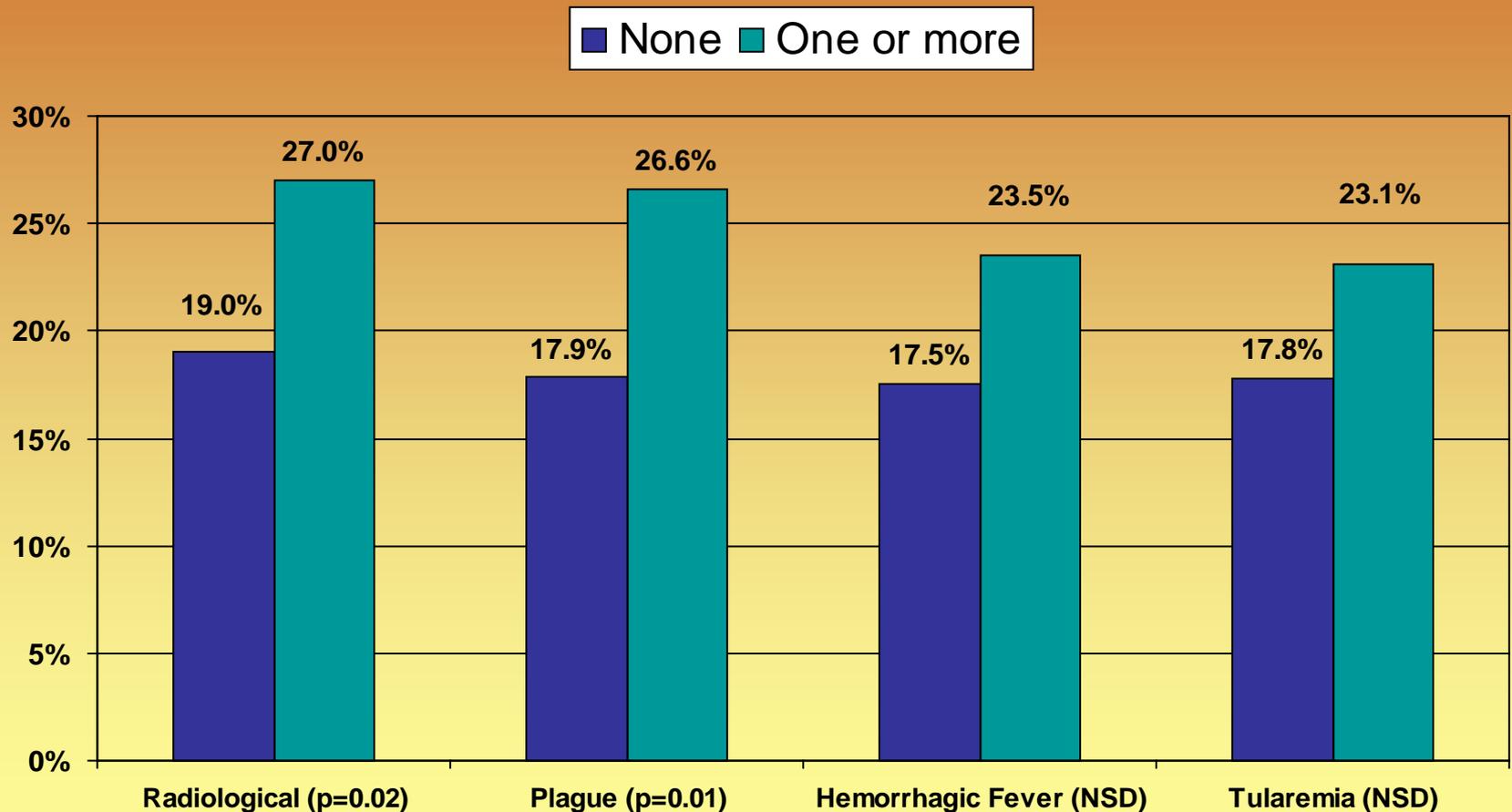
**Figure 4a: Percentage of Physicians Trained for Terrorism-Related Exposures, by Number of Managed Care Contracts**



NOTE: NSD is no significant difference.

SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey, 2003-2004

**Figure 4b: Percentage of Physicians Trained for Terrorism-Related Exposures, by Number of Managed Care Contracts**



NOTE: NSD is no significant difference.

SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey, 2003-2004

# Discussion

- Most office-based physicians are not trained for weaponizable biological, chemical and radiological exposures.
  - Best: 38% for anthrax
  - Worst: 22% for tularemia
- Some improvement for family physicians since 2001
  - About 50% of family physicians had received training in any exposure in our study (2003-2004).
  - Only 18% of members of American Academy of Family Physicians had received bioterrorism training by October 2001 (Chen et al, 2002).

# Specialty

- Primary care and medical specialists more likely than surgeons to be trained for terrorism-related exposures
- About one-quarter of surgeons trained for chemical exposures in our study
- Consistent with other recent literature
  - About one-third of trauma surgeons prepared to manage hazardous materials exposures (Ciraulo et al., 2004)

# Age

- Middle-aged physicians less likely to be trained than young physicians
- Oldest physicians comparable to youngest
- No explanation in literature for differences by age of physician

# Managed Care

- Physicians involved in managed care more likely to be trained than those not involved
- Continuing education seen by some as a means of positively influencing practice behavior and meeting organizational goals (Piatt, 1996)
- No literature found on value of terrorism preparedness training to managed care organizations specifically

# Strengths and Limitations

## Strengths

- Nationally representative sample
- First to address physician training comprehensively since September 11, 2001

## Limitations

- Self-reported yes-or-no nature of questions
- No assessment of training quality
- Relatively small sample size in some strata (e.g., osteopathic physicians)

# Conclusions

- Naturally occurring weaponizable agents rare
  - Smallpox eradicated worldwide
  - CDC reports for 2004
    - No anthrax
    - 3 cases of plague
    - 133 cases of botulism
    - 134 cases of tularemia
- But concern remains about terrorist attacks and natural exposures
  - Low probability
  - Devastating impact
- Terrorism response training is transferable to management of
  - Epidemics (SARS, pandemic flu)
  - Chemical mishaps (chlorine release in Cary, North Carolina, October 2006)
  - Radiological emergencies (nuclear power plants)