Use of Zinc Supplements in Reducing the Risk of Upper Respiratory Infections in Air Force Academy Cadets

SWARM Conference
Albuquerque, New Mexico

Rachael Wenger
United States Air Force Academy

Background

- During academic year Academy Cadets experience high rates of upper respiratory infections (URIs)
  - Cold and flu season
  - Medical Staff wants to reduce URI cases
- Zinc supplements
  - Used to shorten duration and severity of URIs (lozenges and nasal swabs)

Background

- Over 100+ studies with similar results, but . . .
- Design inconsistencies
  - Caruso, Prober and Gwaltney (2007) – meta-analysis of zinc gluconate lozenges
- Limited data when using Zinc to prevent colds and URIs
  - Prasad (2007) – provided Zinc to subjects ahead of illness…found 2/3 reduction in URI rate

Purpose

- Investigate URI rate between groups (supplemented vs. non-supplemented) over cold and flu season (6 month trial)
  - Earlier data suggest the timing and amount of Zinc may be critical for immune response

Why Is Zinc Important?

- Key mineral for immune system
  - Important for making immune cells
  - Enzyme regulator (activate immune cells)
  - Maintains protein structures (maintain immune cells)
- Antioxidant Function (protect cells)

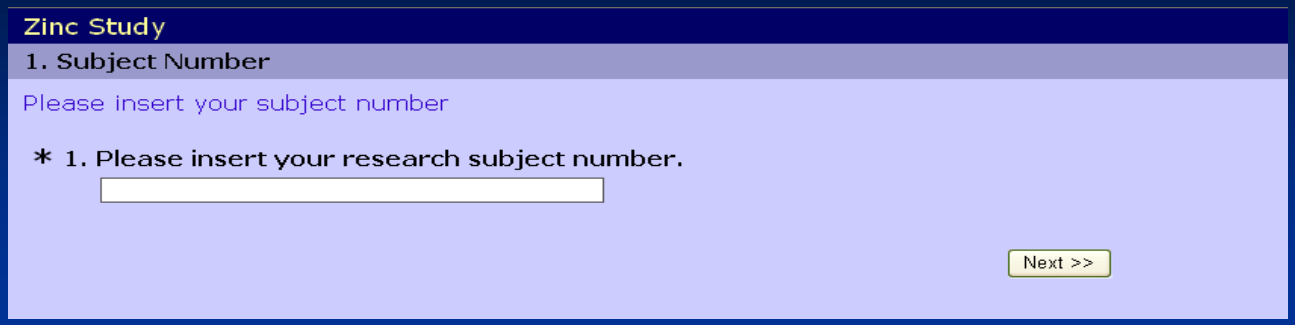
Methods

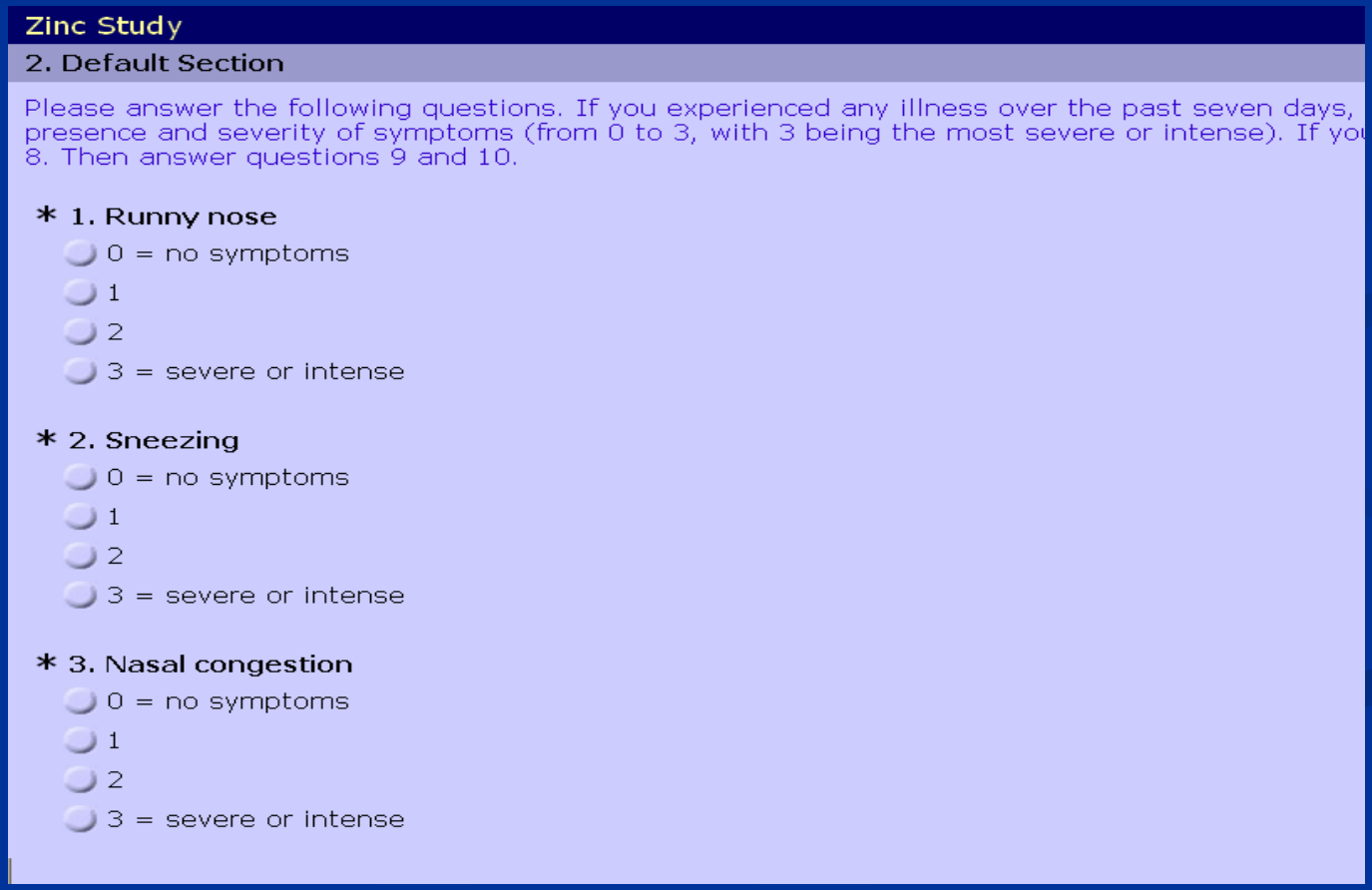
- Randomized, double-blinded, placebo controlled trial
  - Two groups fed identical capsules
  - October 2007 through March 2008
- Blood drawn
  - Pre and Post-study (plasma Zinc and Copper levels)
- Medical records (recorded physician visits)
- Online survey (self report)

Materials

- FDA approved lab created supplements (15 mg zinc gluconate or placebo cornstarch capsules)
- Supplements underwent independent lab certification

Example of Online Survey





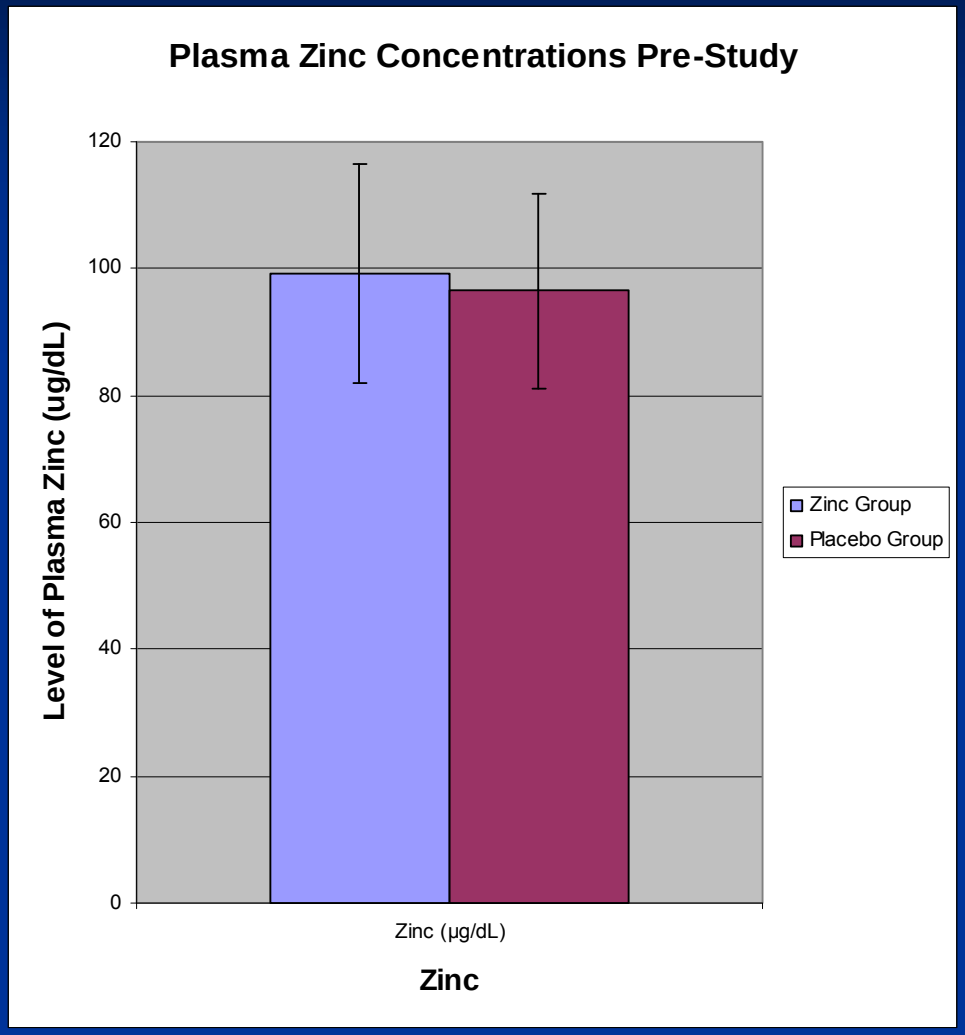
Demographic Data

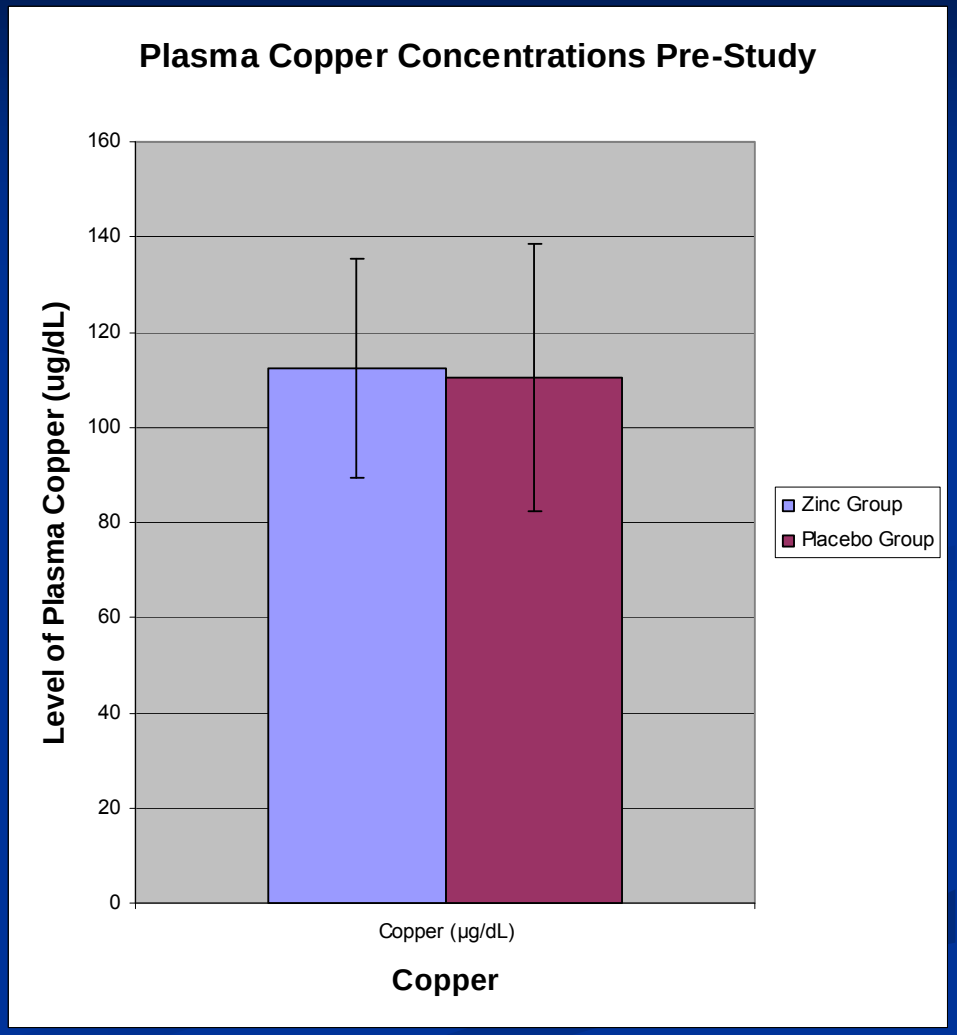
Variable	Zinc Group	Placebo Group
Age (y)*	18.5 ± .88	18.6 ± .86
Gender MALES	16	14
FEMALES	4	3
Use of Meds	0	0
Use of supplements	0	0
Any medical history§	0	0
Under medical care	0	0

§ any current or family history of digestive disorders

* p=.613339

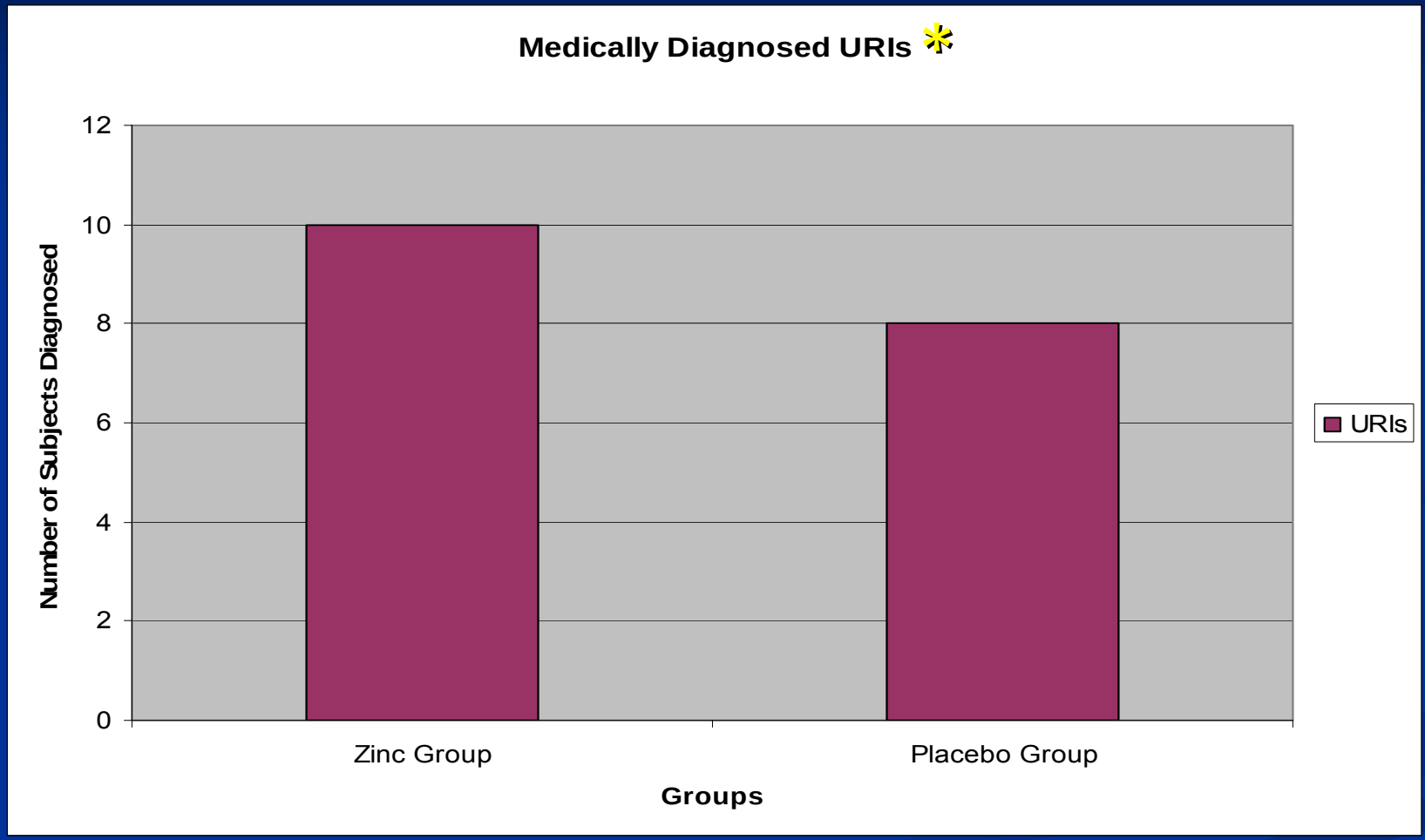
Pre-Study Blood Draw





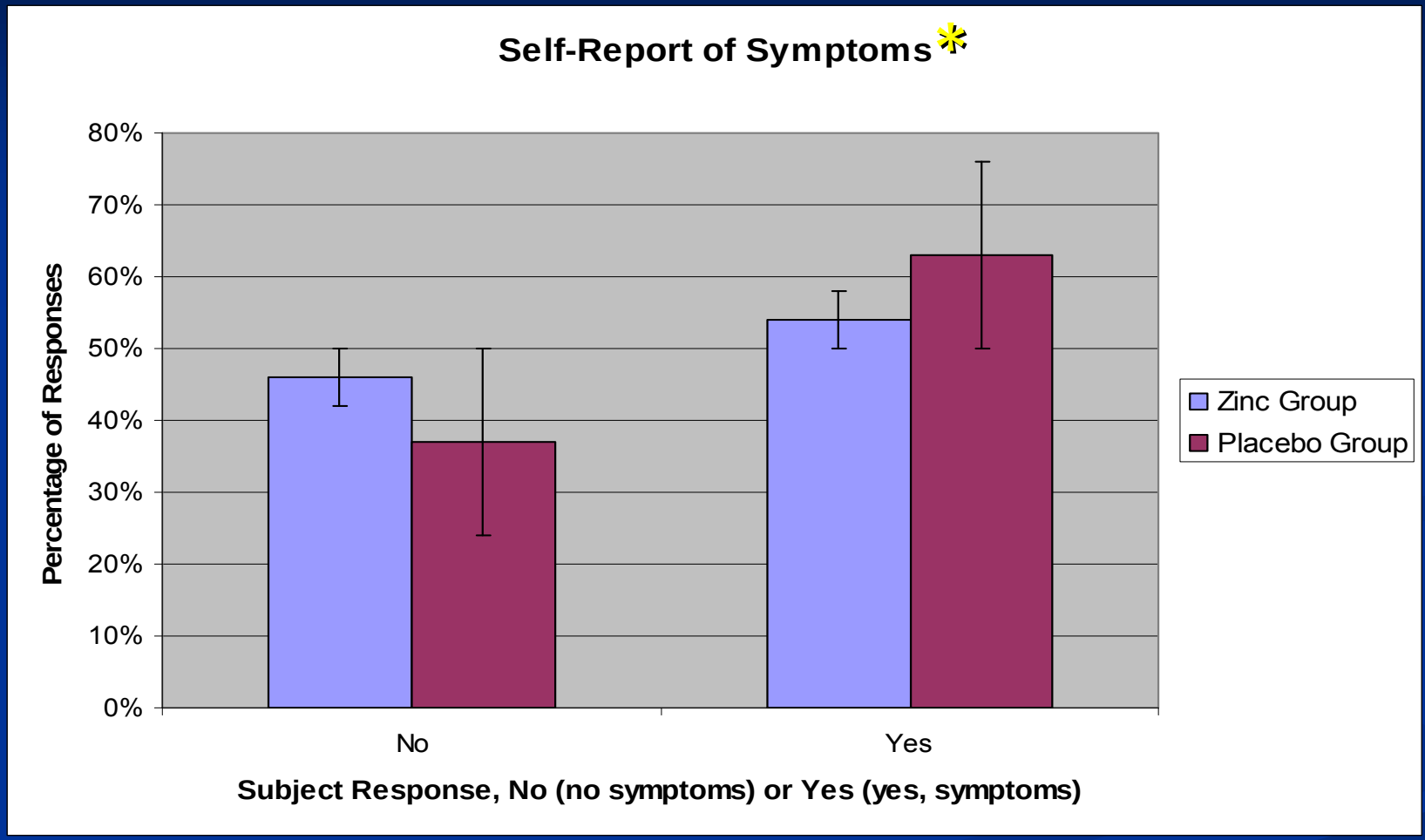
No statistically significant difference in the plasma Zinc and Copper levels between the Zinc Group and the Placebo Group

Post-Study Diagnosed Sickness



* No statistical difference in the number of diagnosed URIs between Zinc Group and Placebo Group

Survey Data



* No statistical difference in the self-report symptoms between Zinc Group and Placebo Group

Conclusion

- No statistically significant difference between Zinc and Placebo Groups
- Observed difference in symptoms
  - Zinc Group: less reported symptoms
- Possible factors
  - Subject noncompliance
  - Amount and timing of Zinc ingested

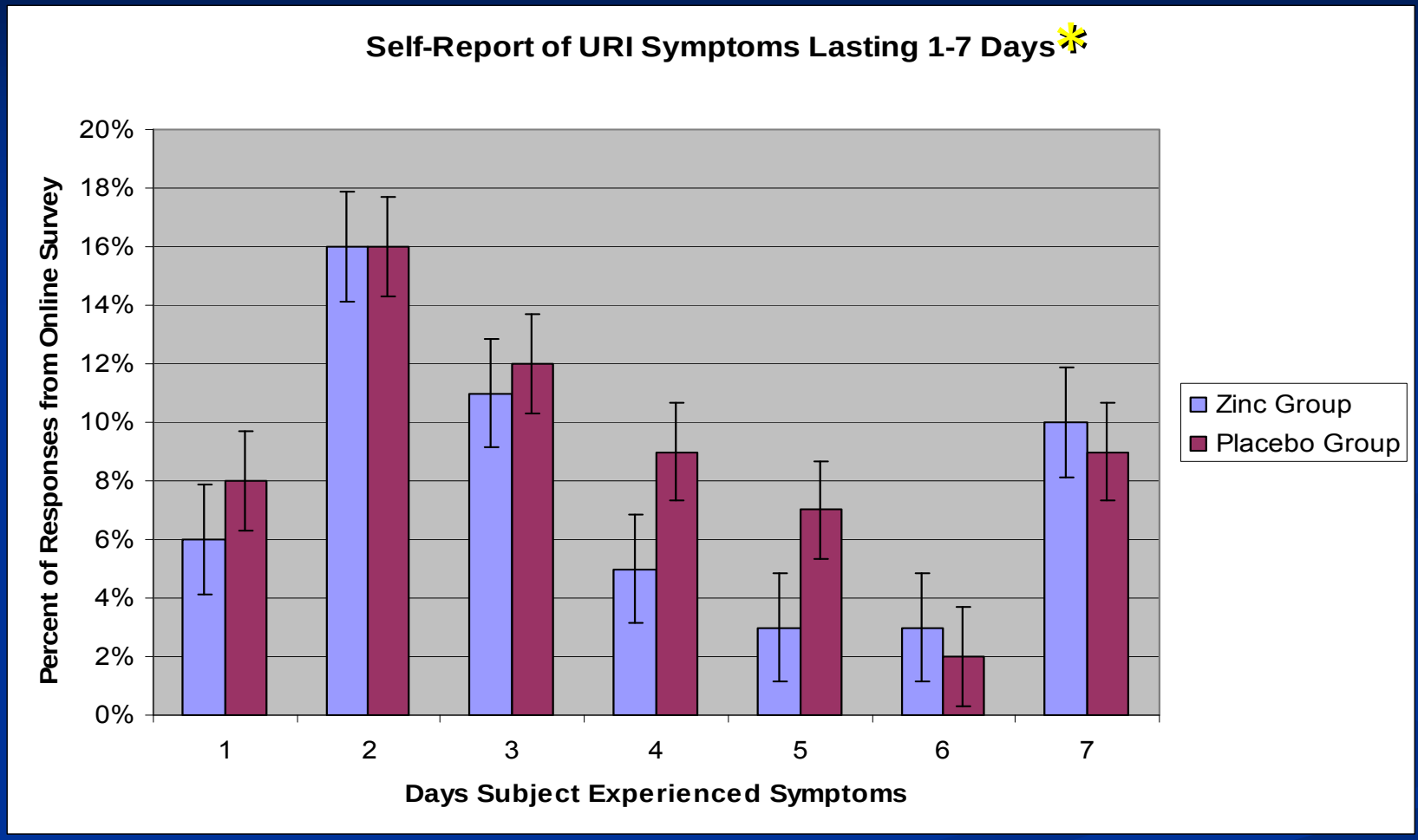
Follow-on Evaluation

- USAFA 2008 study - during cadet basic training
  - Evaluate higher level of Zinc (20 mg)
  - Cadet Cadre will monitor intake
  - Subject pool increased to allow for higher drop-out rate
  - Determine timing of optimum Zinc ingestion prior to immune challenge

Acknowledgements

- Research Mentors:
  - Dr. Don Veverka, Human Environmental Research Center
  - Major Candy Wilson, Research Nurse, 10th Medical Group
- Co-investigator: Amanda Tamosuinas
- Lab Support:
  - LtCol William Barnes
  - TSgt Joan Kelly, 10th Medical group
- Funding:
  - 10th Medical Group
  - Air Force Office of Scientific Research

Survey Data



* No statistical difference in the self-report symptoms between Zinc Group and Placebo Group