

Upcoming Sampling Questions

1. Options for the CATI Phase:

- End CATI phase (59% RR and 8,016 Rs)
- Field follow-up of nonrespondents
- Release more sample

2. Options for the Neuroimaging/Biomarker Study:

- Stay with planned sample of 100 and a 7-day clinic visit
- Increase sample by decreasing the duration of the clinic visit
- Increase the duration of the study by adding more groups on the end

3. Options for the Blood Specimen Phase:

- Stay with expected 1,545 specimens
- Attempt to reach original target of 2,092 specimens
- Attempt to collect specimens from all 8,016 CATI Rs

1. Options for National Survey Sample Size

1. End CATI phase now (59% RR and 8,016 Rs)
Current sample slim for testing some hypotheses.
Low participation rates leaves possibility of response bias.
(But response bias addressed by sampling weights)
2. Field follow-up of nonrespondents
Increases the “effective response rate” but not the sample size or power.
Expensive
3. Release more sample
Increases the sample size and power but not the response rate.
Less costly

Adequacy of the Sample

Deployable Non-Deployed

	Percent Syndromic		Effective Sample Size	
	Assumed	CATI	Target	Achieved
	Male	5%	3%	111
Female	10%	6%	200	226
Age < 49	5%	3%	111	892
Age >= 49	10%	6%	200	417
White	5%	3%	111	1,009
Non-White	15%	6%	298	177
Active Duty	5%	4%	111	493
Reservists	10%	4%	200	380

* Significant at $\alpha=0.05$

Deployed to Northern KTO During Air War

	Percent Syndromic		Effective Sample Size	
	Assumed	CATI	Target	Achieved
	Male	20%	16%	496
Female	25%	21%	601	554
Age < 49	20%	15%	496	1,635
Age >= 49	25%	21%	601	1,253
White	20%	14%	496	1,674
Non-White	30%	20%	688	1,145
Active Duty	20%	16%	496	1,809
Reservists	25%	17%	601	822

* Significant at $\alpha=0.05$

Deployed to Southern KTO During Air War

	Percent Syndromic		Effective Sample Size	
	Assumed	CATI	Target	Achieved
	Male	15%	12%	496
Female	20%	14%	601	179
Age < 49	15%	13%	496	1,149
Age >= 49	20%	12%	601	568
White	15%	10%	496	1,964
Non-white	25%	18%	688	287
Active Duty	15%	12%	496	799
Reservists	20%	13%	601	350

* Significant at $\alpha=0.05$

Special Strata

	Percent Syndromic		Effective Sample Size	
	Assumed	CATI	Target	Achieved
	Dep Air Crews	20%	2%	46
DND Air Crews	5%	0%	46	280
Dep Aircraft Main.	20%	6%	46	528
DND Aircraft Main.	5%	4%	46	61
Dep Army Special Forces	20%	19%	46	61
DND Army Special Forces	5%	2%	46	47
Camp Doha	20%	16%	496	278
Dep not at Camp Doha	15%	13%	496	1,091

* Significant at $\alpha=0.05$

2. Sampling Plan for the NI Study

- Original Primary Objective:
 - Test the external validity of the findings in the Seabees Study (augmented by findings of other GW neuroimaging studies, e.g., white matter)
 - Try to nail down the nature of the GW illness.
 - If Seabees model is validated, use the findings to:
 - develop a diagnostic test to implement in a model GW clinic
 - suggest treatments
 - select homogeneous groups for clinical trials of treatment.

Sampling Plan for the NI Study

- Optimal sample size must:
 - Represent the most important clinical groups
 - Include enough tests to avoid missing the true pathology if it is different from the Seabees findings (hedge your bets).
 - Include enough subjects per group to ensure power ($N \geq 20$)
- Independent subjects or monozygotic twin pairs?
- How many groups?
 - Factor syndromes 1-4 and controls
 - Subsyndromic (maximum factor score 1.0 – 1.5)
 - Kansas not Factor group
 - CDC only
 - Comparative conditions (e.g., CFS, FM, MCS, MDD, PD)
- Stratify by other conditions within groups?
 - Depression, PTSD
 - Risk factors for nerve agent, pesticide or PB exposure
- One study or, if positive findings, add successive groups & controls
 - New Siemens 3T MRI scanner coming to Dallas VA in 2011.

Independent Subjects or Monozygotic Twin Pairs?

- Monozygotic twins minimize variance due to genetic differences.
- Design examples:

Group	Independent	MZ Twins	
		A	B
1	20	20	20
2	20	20	20
3	20	20	20
4	20	20	20
Controls	20		
Total N	100	160	
		80 illness-discordant pairs	
		(We have 96 MZ twin pairs)	

3. Sample Size for the Blood/DNA Study

- Original Objective:
 - To attempt to replicate the association of the PON1 paraoxonase polymorphism (and BChE) with GW case definitions (an *a priori* “candidate gene” approach).
- Original Plan:
 - In the National Survey, during the CATI interview identify all meeting the Factor or Kansas case definitions and random samples of “subsyndromic” and non-syndromic (N=2,092 or 9,700)
 - With current sample of only 8,016, we project a 1,545 blood samples.

3. Options for the Blood/DNA Study

1. Stay with expected 1,545 specimens
2. Attempt to reach original target of 2,092 specimens
3. Attempt to collect specimens from all 8,016 CATI Rs

Blood Study Sample Size

Assuming 100% participation

	Current		Alternative	
	Cases	Controls	Cases	Controls
Deployed	1,581	1,137	1,581	5,138
Non-Depl	159	331	159	1,288
Total	1,740	1,468	1,740	6,427

Assuming 50% participation

Deployed	790	570	790	2,569
Non-Depl	80	165	80	644
Total	870	735	870	3,213