

# Burhansstipanov and Krebs, Lessons Learned from ARS

## Lessons Learned from Using Audience Response Systems (ARS) for Public Data Collection

Linda Burhansstipanov, MSPH, DrPH, CHES  
Native American Cancer Research

Linda U. Krebs, RN, PhD, AOCN, FAAN  
School of Nursing, University of Colorado Denver

For further information, please contact:  
Linda Burhansstipanov, MSPH, DrPH, CHES  
(Cherokee Nation of Oklahoma)  
Native American Cancer Research  
3022 South Nova Road  
Pine, CO 80470-7830  
Phone: 303-838-9359; 1-800-537-8295  
<http://www.NatAmCancer.org>

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Update of What We Have Learned (presented ARS to AACE in 2004)

- Take home message regarding NACR's Experience with ARS compared to paper data collection:
  - Data collection increased 400%
  - Saved time and "tedium" from the effort of recoding and uploading data
  - Data are more accurate (if coded well)
- Benefits are from using the ARS "well" as compared to "poor" ways to use ARS

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Types and Uses of ARS Items

- Demographics
- Pre-education (knowledge, attitudes, behavior and/or belief) items
- Opinion items
- Embedded knowledge
- Post-education knowledge items
- Session evaluation

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Using ARS Well

- Each item takes about 1 minute; need to allocate time within the meeting agenda for *all data collection*
- Limit the number of demographics to about 5 items
- Limit pre-session knowledge assessment items to about 5 *if asked at beginning of the meeting / workshop*

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Using ARS Well

- Or embed the pre-session knowledge items at the beginning of each session
- Embed post-session knowledge for natural breaks during the meeting (such as prior to lunch)
- Pre-session knowledge items omit the graphics illustrating correct response
- Post-session knowledge items display the graphics

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Using ARS Well

- Opinion items integrated within the body of the presentation (help generate discussion)
- Spontaneously add items to "control" over-bearing participant(s)

If the dying person asked you to help prepare his/her body for burial, how would you feel?

1. I am not supposed to touch dead bodies and would have to refuse	2%
2. I would have a hard time doing it, but I would do it	28%
3. I would feel it is an honor to be asked and would do my best to do things in the right way	68%
4. Don't know / not certain	2%
5. Don't want to answer	0%

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295




# Burhanstipanov and Krebs, Lessons Learned from ARS

## Use of Different ARS Softwares

### OptionPower (NACR Local)

- Easy Slide Preparation for Subsequent Reports
- Data storage long-term but difficult to organize on "list"
- Bulkier equipment if necessary to ship
- More expensive (\$100 per used keypad; annual license)




Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Use of Different ARS Softwares

### OptionPower

- Less Technical Assistance
- Little to no theft of keypads
- Master "coding" for slides
- Use of online evaluation to collapse data using the same codes




Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Use of Different ARS Softwares

### Turning Point (NACR Travel)

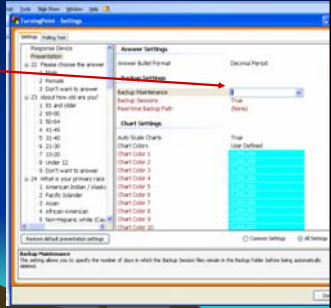
- Easy Slide Preparation for Subsequent Reports
- Small Equipment and easy to ship
- Less expensive (base station = \$500, keypad is \$51)



Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

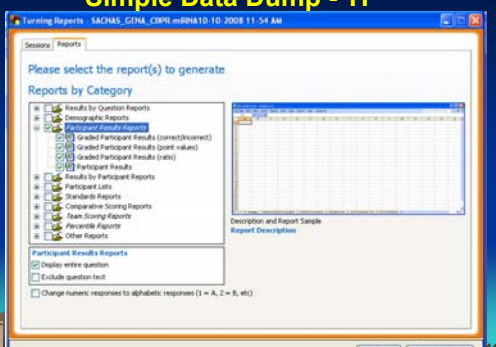
## Use of Different ARS Softwares

- Scary defaults (7 days storage of data within Turning Point)
- Can change this default to 90 days



Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Simple Data Dump - TP

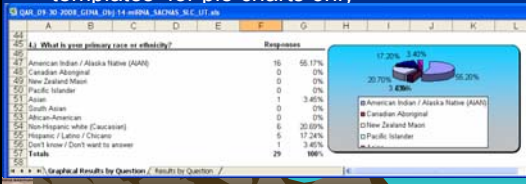


Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Use of Different ARS Softwares

### Turning Point (NACR Travel)

- Programming Components that are unable to change, such as Excel Report graphic templates for pie charts only



Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295




# Burhansstipanov and Krebs, Lessons Learned from ARS

## Use of Different ARS Softwares

### Turning Point (NACR Travel)

- Great extremes needed to avoid theft of TP keypads / clickers

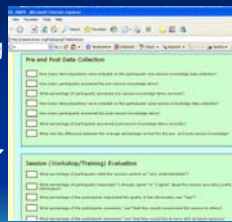


Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Use of Different ARS Softwares

### Turning Point

- Easy Access to Technical Assistance and online training sessions
- Master "coding" for slides still necessary
- Use of online evaluation to collapse data using the same codes



Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## A "Non-Keypad/ Clicker" system

- Website\* that allows participants to use cell phones to cast votes info via <http://poll4.com>
- Obviously the location needs to have cell phone accessibility
- Frequently inconsistent or non-existent in Indian Country
- Participants need to have cell phone or computer accessibility within ~24 hours

\*Thank you to Emil T. Chuck, PhD, George Mason University, Fairfax, VA, who shared this strategy during SACNAS 2008, Salt Lake City, UT

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

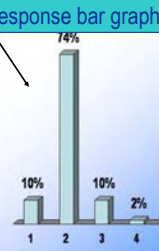
The **only** member of the NACES team who can find your personal information from the encrypted database is:

"stem" of the item also called "polling prompt"

- The Privacy Broker
- The Native Patient Advocate
- The Statistician
- Don't know / Not sure

"responses / discriminators / choices" of the item

ARS response bar graph



ARS counter

cross tab "label" n2\_Private

01250 Native American Cancer Research ARS questions

## Common Mistakes and Improving ARS Items

Linda Krebs

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

## Common Mistakes

- "Stem" of the item is too complicated

According to research conducted in April 2003, the top health priorities of these organizations rated a 10 (greatest priority) on a scale from 1 (lowest priority) to 10. In comparison, Shorty asked what "tobacco as a health issue" would rank on this scale. How did all these organizations rate this issue?

- One
- Four
- Five
- Six
- Don't know / Not sure



## Burhansstipanov and Krebs, Lessons Learned from ARS

### Common Mistakes

- “Responses” of the item are too long (but this is a good item) – affects your timing

Probabilistic record linkage refers to:

1. Probability that a record linkage can be performed given the variability in the data.
2. A computer algorithm for linking records based on simultaneous comparison of multiple data fields.
3. A method for linking records so they can easily be accessed by computer programs.
4. A technique for determining whether a patient record is complete and unique.

19

### Common Mistakes

- Although “good” items can be written with “all of the above” as a competitive response, almost *all* written by faculty to date are “give-aways”

Laughter releases chemicals into our bloodstream that have these benefits:

1. Improves learning speed
2. Reduces stress hormones
3. Boosts immunity response
4. All of the above

Option	Percentage
1	0%
2	4%
3	0%
4	96%

20

### Example of a “Good” Item

What region of Indian Country has the highest deaths from prostate cancer?

1. Alaska
2. Pacific Coast
3. Southwest
4. Northern Plains
5. East
6. Don't know / Not sure

Option	Percentage
1	0%
2	0%
3	0%
4	25%
5	0%
6	75%

21

### Common Mistakes

- What does it mean by “throw off your timing?”
  - Typically average 1 minute per ARS item
- Need to schedule time in the agenda for data collection
  - Beginning of program for demographics and pre-session knowledge and/or KABB
  - Before lunch for post-test of morning items
  - End of the day for post-session + workshop evaluation items

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

22

### Goals of the Pre-Session Knowledge Items

- Focus on content specified in the objective (i.e., not trivial information)
- Clearly written stem that is ideally 1-2 lines in length at 32 point font (challenging to do)
- Responses are of similar length (e.g., response that is longer than the others is usually the answer)
- All items have the same number of responses (e.g., 5)

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

23

### Goals of the Pre-Session Knowledge Items

- Includes knowledge that most of the participants are unlikely to know until after they have taken part in your session
- Limits or does not use
  - “All are true EXCEPT” in the stem
  - “All of the above” as a response
- Have only one correct answer

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

24



## Burhansstipanov and Krebs, Lessons Learned from ARS

### Goals of the Pre-Session Knowledge Items

- ☞ “Don’t know / Not Sure (DK / NS) as last (e.g., 5<sup>th</sup>) response
- ☞ Reduces pressure that many participants, particularly from the community feel about multiple choice
- ☞ Track how many go from DK/NS to correct answer

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

25

### Limitations of the ARS

- ☞ You cannot use an open-ended question
- ☞ You are limited to a total of 10 responses for a multiple choice question. We suggest each question be limited to 5.
- ☞ The questions need to be short and direct.
- ☞ Only one answer is correct.
- ☞ Interface with different computers/systems

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

26

### Appropriate Use of “Give-Away” Items

- ☞ Use “Give-away” items
- ☞ Have about 90% correct response on pre-workshop knowledge items
- ☞ Advantage is to help community elders feel more at ease in pressing the keypads
- ☞ Important to omit the “give-away” items from data analysis

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

27

### Summary of Cautions for “Good / Effective” ARS Knowledge Pre- and Post-Session Items

- ☞ Should be directly related to the objectives for the session (and not about extraneous or trivial information).
- ☞ Should focus on information that the participants are unlikely to know before you present

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

28

### Summary of Cautions for “Good / Effective” ARS Knowledge Pre- and Post-Session Items

- ☞ If ~90% of the participants answer the item correctly *before* the content is presented, what was the purpose of taking their time to discuss what they already knew?
- ☞ Questions with “all of the above” *tend* to be “give-away” items

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

29

### Reports from Different ARS Systems

Linda Burhansstipanov

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

30



## Burhansstipanov and Krebs, Lessons Learned from ARS

### Both ARS Systems' Report Functions

- Note: there are multiple types of Reports generated from OptionPower® and TP
- Instructor Grade Report
- Question Analysis Report
- Roster Summary Report
- Simple Data Dumps
- Student Feedback Report

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

31

### Both ARS Systems' Report Functions

- Advantages
- Generates Excel spreadsheet within minutes
- Can get enough information from even QAR to write up descriptive Report for funders
- SDD to SAS, SPSS, SUDAAN, etc.
- IGR helps clarify other things that may affect data collection and analysis

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

32

### OptionPower® Report Manager

- Disadvantages
- Listing of the Reports is inconsistent
  - Occasionally the most recent report stored at the top of the list rather than the bottom – no idea why. Ahem
- Cross-tab functions within OptionPower® is limited
- Uneasiness in deleting databases (Ed did this better than LB)

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

33

### Suggestions About ARS Reports

- Make up a Directory to store all of your ARS Reports
- Depending on how you are using the software, you may want to:
  - Sort (or code) by topic
  - Sort by type of report
  - Combination of both of the above

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

34

### Suggestions About ARS Reports

- Name all reports using a similar format:
- Begin with the type of Report (e.g., SDD, QAR, IGR)
- Date of the Data Collection
- Topic
- Location
- Example:  
SDD\_01-26-07\_Smoke&Mirrors\_OHSU.exl

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

35

### Suggestions About ARS Reports

- Export the data at the same time that you do your Reports (especially important with TP)
- Avoid omitting the time of the session within OptionPower® (*while implementing the session* – affects the IGR and SDD Reports)
- Explain what happens to affect data collection within the Excel spreadsheet
- QAR – LB changes page set-up (demo)

Native American Cancer Research <http://www.NatAmCancer.org> 1-800-537-8295

36

