

Recruitment methods employed
in the
National Lung Screening Trial (NLST)

Pamela Marcus, PhD
Division of Cancer Prevention
National Cancer Institute

NLST

NLST: The basics

- Sponsored by the US National Cancer Institute (NCI)
- Joint venture of NCI's Division of Cancer Prevention and the American College of Radiology Imaging Network (ACRIN)
- RCT of lung cancer screening
 - Low radiation dose helical computed tomography versus single-view chest x-ray
 - Endpoint: lung cancer mortality
- Participants invited to receive 3 screens at annual intervals

NLST: Participants

- 53,454 participants; 33 screening centers
 - Enrollment: 2002-2004
 - Screening: 2002-2007
- Primary enrollment criteria
 - Ages 55-74 years
 - 30 pack-years of cigarette smoking history
 - Current and former (quit within 15 yrs)
- Randomization
 - Half received CT
 - Half received chest x-ray

Recruitment challenges in NLST

- NLST required enrollment of over 50,000 participants
- 33 screening centers; each responsible for choosing its own recruitment methods
- Recruitment of smokers (thought to be less compliant)

Measuring success of recruitment
methods

Screening center participation

- Participating centers: 22 of the 33
 - All (10) LSS centers
 - 12 (of 22) ACRIN centers
- Participating centers enrolled almost 90% of participants

Data collection instrument

- Three-part questionnaire completed by the screening center coordinator
 - Subjectively assess the degree to which each specific method was used
 - Report, for each method:
 - Number of inquires generated
 - Number of participants enrolled
 - Exact or approximate cost
 - For direct mail, asked also to report exact or approximate number of pieces mailed
 - Lessons learned

Qualitative measures

- Primary method of assessment was qualitative
 - Each screening center coordinator was asked to assign +’s or –’s to indicate the degree to which a method was used
 - +++ (extensive use); ++; +; - (tried but abandoned); blank (never tried)
- Three broad categories of recruitment
 - Direct mail (11 subcategories)
 - Community outreach (11 subcategories)
 - Mass media (8 subcategories)

Direct mail

- Mass mailings
 - Lists of names/addresses
 - Mail to large numbers of potential participants
 - Mail to many more than needed due to expected low response rate (interest and eligibility)

Community outreach

- Common approaches:
 - In-person seminars
 - Often conducted under the auspices of a religious or health organization
 - “Word-of-mouth” approach
 - Referrals by NLST participants
 - Health fairs

Mass media

- Newspapers
- TV
- Radio
- Internet sites
- Advertising in public places
- Newsletters

Quantitative methods

- Quantitative methods could not be used to assess recruitment success trial-wide
 - No standardized, trial-wide evaluation system
 - Most centers did not keep detailed data on source of each participant

- Quantitative data was available for a subset of centers
 - Direct mail – 12 centers
 - Community outreach – 7 centers
 - Mass media – 9 centers

Quantitative methods

- Direct mail
 - Response rate (# inquiries generated/# letters mailed)
 - Enrollment yield (# enrolled/# letters mailed)

- Direct mail, community outreach, mass media
 - Number enrolled
 - Cost per enrollee

Qualitative measures - results

Direct mail

- Utilized successfully by every screening center in varying degrees
- Most widely-used sources:
 - Commercial mailing lists – 18 centers (16 '+++')
 - American Cancer Society lists (4 '+++'; 6 '++')
 - Department of Motor Vehicles lists (4 '+++')

Community outreach

- Successful methods used
 - Referrals by NLST participants/word of mouth (17 of 22 centers; 3 '+++'; 6 '++')
 - Enrollment seminars (6 '+++')
- Useful in recruiting Hispanic and African-American participants
 - Enrollment seminars (1 '+++'), church-based (1 '+++')

Mass media

- Some form of mass media used by 8 of the 10 screening centers
- Very successful for ACRIN
 - Newspapers (9 '+++'; 1 '++')
 - Radio (5 '+++'; 7 '++')
 - TV (5 '+++'; 2 '++')

Quantitative measures - results

Direct mail (12 centers)

- Response rate: 0.3%-2.4%
- Enrollment rate: 0.2%-3.7%
- Cost per enrollee:
 - Range: \$6-\$325
 - Mean: \$117
- Enrollment: 19,000 participants

Community outreach
(7 centers)

- Cost per enrollee:
 - Range: free - \$25
 - Mean: \$21
- Enrollment: 1,000 participants

Mass media
(9 centers)

- Cost per enrollee:
 - Range: free - \$1,953
 - Mean: \$335
- Enrollment: 4,200 participants

Limitations and strengths

Limitations

- Most results are not quantitative
 - Subjective impressions
- Meanings of '+' and '-' ratings may differ across centers
- Quantitative results available only for a subset of centers

Strengths

- Provides information on successful (and not so successful) strategies for recruitment of large numbers of trial participants
- Results are probably generalizable to other studies of primary and secondary prevention of chronic diseases among smokers

Thank you