



Published in final edited form as:

Prog Community Health Partnersh. 2016 ; 10(3): 413–423. doi:10.1353/cpr.2016.0048.

From the Bench to the Barbershop: Community Engagement to Raise Awareness about CA-MRSA and HCV

Andrea Leinberger-Jabari, MPH¹, Rhonda G. Kost, MD¹, Brianna D’Orazio, BS², Rhonda Burgess, RN³, Chamanara Khalida, MD, MPH², Amanda Tsang, MPH², Dennis Mitchell⁴, Alexander Tomasz, PhD⁵, Herminia de Lencastre, PhD⁵, Maria Pardos de la Gandara, MD, PhD⁵, Teresa H. Evering, MD MS^{1,6}, Tameir Holder, MPH², Barry S. Collier, MD¹, and Jonathan N. Tobin, PhD^{1,2}

¹Center for Clinical and Translational Science, The Rockefeller University; New York, NY

²Clinical Directors Network (CDN); New York, NY

³Advantage Care Physicians; New York, NY

⁴Denny Moe’s Superstar Barbershop/Cutting 4 a Cure; New York, NY

⁵The Laboratory of Microbiology and Infectious Diseases, The Rockefeller University, New York, NY

⁶Aaron Diamond AIDS Research Center, an affiliate of the Rockefeller University; New York, NY

Abstract

BACKGROUND—Infectious diseases, such as Hepatitis C and Community-Acquired Methicillin-resistant *Staphylococcus aureus* (CA-MRSA), are emerging health issues.

OBJECTIVES—The CA-MRSA Project (CAMP1) extended its learning collaborative to the barbershop/hair salon settings to increase awareness and prevention of CA-MRSA and Hepatitis C infections.

METHODS—Education sessions on CA-MRSA and Hepatitis C were conducted with 43 estheticians at 9 barbershop/hair salons in New York City. All completed pre-post intervention knowledge tests. Low-cost primary care referral cards were also distributed in the CA-MRSA education project.

RESULTS—Knowledge about CA-MRSA risks ($p < 0.0003$) and infection prevention measures ($p < 0.0001$), as well as Hepatitis C knowledge and prevention (both $p < 0.0001$) increased. Nine shops received referral cards ($N = 500$) and 4% of the cards ($n = 19$) were distributed to clients. No self-referrals were reported.

CONCLUSIONS—CAMP1 successfully recruited and trained a cadre of estheticians on CA-MRSA and Hepatitis C prevention increasing their health knowledge deepening our engagement with the community.

INTRODUCTION

Reducing health disparities in communities of color is a high priority and a number of creative approaches have been developed and explored.^(1–3) Religious and community organizations are effective in enrolling women in health promotion programs, but less as effective in enrolling men.^(4–6) Barbershop-based interventions have proven a more effective strategy for reaching African American men.^(2, 3, 5, 7) Historically, barbershops in African-American communities foster an atmosphere of open communication among owners, employees, and patrons.⁽⁸⁾ Barbershops have also been shown to have broad geographic reach, serving clientele across urban and suburban centers.⁽⁹⁾ Previous studies have shown the receptiveness of barbershop owners, employees, and patrons to learning more about health topics, including physical activity as a means of disease prevention, diagnosis of hypertension, and prostate cancer screening.⁽¹⁰⁾ Relatively few studies have focused on barbershop-based interventions for infectious diseases, such as HIV.^(11–14) Barbershops have the potential to play a critical role in the halt or the spread of infectious diseases including *Methicillin-resistant Staphylococcus aureus* (MRSA) and Hepatitis C virus (HCV). Therefore, it is important to insure that estheticians know and implement the proper infection control measures.^(13, 14)

Methicillin-resistant Staphylococcus aureus (MRSA), once an infectious agent found exclusively in hospital settings, has emerged in community settings such as Community Health Centers (CHCs), schools, and public transportation.^(15, 16) Estimates of the prevalence of community acquired MRSA (CA-MRSA) are inexact due to the lack of population level surveillance of this infection.^(15, 16) However, the Centers for Disease Control and Prevention (CDC) estimate that 30% of the population carries any *Staphylococcus aureus* (*S. aureus*) bacteria, and 2 in 100 people carry MRSA.⁽¹⁵⁾ MRSA infections can result in skin and soft tissue infections (SSTIs) that can cause pain, unsightly lesions, and in extreme cases death.⁽¹⁵⁾

Infection with the Hepatitis C virus (HCV) can cause serious health problems, including chronic liver disease, cancer, and death. In 75–85% of infected persons, HCV persists as a chronic infection, placing patients at significantly increased risk for liver cirrhosis, hepatocellular carcinoma, and extrahepatic complications that develop over decades following infection.⁽¹⁷⁾ HCV is the leading cause of liver cancer and the leading reason for liver transplantation in the U.S. People with HCV often experience no symptoms for decades, do not seek screening or diagnosis and only come to medical attention when disease is advanced. However, if HCV infection is detected while asymptomatic, treatment with highly effective medication can eradicate the infection and stop the progression of the disease, although often at a high cost.⁽¹⁷⁾ In addition to recommending routine HCV screening for recognized exposure risks, in 2012 the CDC released a new recommendation that all persons born between 1945 and 1965, the “birth cohort,” be tested for HCV infection as this age group is five times more likely than other adults to be infected with HCV. In fact, this group comprises more than 75% of the adults with HCV infections.^(17, 18)

Here we report two community-academic initiatives to join with estheticians to enhance education regarding MRSA and HCV infection in the community.

CA-MRSA Project: A Research and Learning Collaborative

In 2009, The Rockefeller University Center for Clinical and Translational Science (RU-CCTS) partnered with Clinical Directors Network (CDN), a national primary care practice-based research network (PBRN) headquartered in New York City, with the overall goals: 1) to conduct a translational research study aimed at understanding the characteristics of MRSA in the community, 2) develop a research and learning collaborative consisting of community-based clinicians, basic scientists, and public health professionals, and 3) develop best practices for community-engaged research. CDN and RU-CCTS successfully piloted the Community-Acquired MRSA Partnership (CAMP1), to create the initial infrastructure to assess prevalence and practices associated with identifying, diagnosing and managing CA-MRSA in CHC settings in the NY Metropolitan area. CAMP1 was also designed to collect information for the design of a prospective CA-MRSA surveillance system with nested case-control studies.⁽¹⁹⁾ Six CHCs joined CAMP1 when initiated in May 2010 and remain a part of the RU-CDN NY Metro CA-MRSA Surveillance Network.

In 2011, CAMP1 was expanded to assess CA-MRSA prevalence and risk factors, conduct chart reviews, and collect and analyze clinical specimens (n=129), thus establishing an infrastructure to conduct community engaged translational research.⁽¹⁹⁾ Data collected included patient demographics and risks, MRSA lesion location and characteristics, and patient clinical status, including lesion healing and infection recurrence over a 3 month follow up period. Clinical, microbiological, and molecular epidemiologic results have been reported elsewhere.^(19, 20) Notably, sixteen percent (16%) of SSTI wounds (21/129) were located on highly visible areas of the body (scalp, face, neck, and hand).

METHODS

This study was approved by the Institutional Review Boards at The Rockefeller University and Clinical Directors Network.

Partnership Development and Formation

The CAMP Steering Committee was comprised of the medical directors and clinicians from the six New York CHCs, members of the Laboratory of Microbiology of Infectious Diseases (Tomasz Lab) at The Rockefeller University, the PI of the RU-CCTS, and the Co-Directors of the Community Engagement Core of the RU-CCTS, one of whom is the President/CEO of the CDN.(Figure 1) The CAMP CHCs are Federally Qualified Health Centers (FQHCs) and other community-based safety net practices in neighborhoods adjacent to the NY Metro Hospital Acquired-MRSA (HA-MRSA) Surveillance Network, which was established by Alexander Tomasz, PhD at The Rockefeller University, to examine the molecular epidemiology of HA-MRSA.⁽²¹⁾ Clinicians from each CHC participated in the selection of the research questions, the design and implementation of studies integrated into practice workflow, and in disseminating research findings to their peers, patients, and communities.

The CAMP Steering Committee meets monthly, in-person, to collaboratively solve scientific or operations issues, discuss project updates, review preliminary research findings, and write publications and additional research grant proposals. All members of the Steering

Committee are encouraged to bring new research proposals to the group for discussion. Steering committee members are active participants in dissemination at conferences and as co-authors.

Upon discussion of the initial study findings, one of the participating community-based clinicians (RB) on the Steering Committee proposed the opportunity for identification of lesions by barbers and other esthetic care workers, and the potential occupational risks to esthetic care professionals and their customers should MRSA lesions go unrecognized. This clinician offered to introduce the Steering Committee to a local community health advocate who owns and operates a barbershop near her CHC to discuss potential collaboration.

The barbershop health advocate (DM) is a well-known and respected barber and small business leader in Harlem NY. As a businessman with 30 years of experience in the industry, he established a health advocacy and outreach organization through which he has organized events in the community aimed at educating the public about important health issues. Project staff attended one such event during the early stages of the partnership to learn more about his approach to community education. He has created a network of barbers/estheticians who are interested in learning more about health promotion. Through a series of meetings between the barbershop health advocate, CDN, RU-CCTS research staff, and CHC clinicians, the group further refined the project hypothesis. The Steering Committee suggested developing a pilot study aimed at engaging the lay community, specifically the esthetic care professionals working in the same communities within the CAMP Surveillance Network.

The aims of this research project were to assess: 1) the feasibility of identifying, recruiting, and engaging barbershop owners and staff in communicable diseases health education, 2) the effectiveness of on-site education of barbers regarding their knowledge of infections and infection-prevention methods, and 3) whether referral of barbershop customers suspected of having MRSA by estheticians to health care facilities results in medical follow-up.

1. Barbershop Identification and Recruitment

The initial phase of the project focused on outreach targeting barbershops and unisex beauty salons within pre-defined catchment areas of each of the CHCs. Three neighborhoods in New York City (Harlem, the Bronx, Brooklyn) were selected for the pilot study based on the presence of many shops in the geographic area, the willingness of a CHC to act as a referral site, and study participant recruitment success rate of the CHC during CAMP1. The study team first conducted an online geo-survey of all esthetic care businesses within one-half mile (10-city-block) radius of three CHCs participating in CAMP1. (Figure 2) The geo-survey was based on business type and location, and was conducted virtually via Google Maps as well as visually by a neighborhood environmental assessment. Four target businesses were identified: (1) barbershops, (2) unisex beauty salons, (3) nail salons, and (4) other related establishments (hair braiding, eyebrow threading, waxing, cosmetic counters). The study team worked with the barber health advocate by telephone and visiting door-to-door to recruit additional barbershops sites in NYC. Barbershops that participated in the CA-MRSA pilot were subsequently re-contacted and invited to participate in education sessions about

HCV. Five of the nine barbershops that participated in the CA-MRSA barbershop pilot also agreed to participate in the HCV pilot.

2. Educational curriculum development and implementation

The study team worked with medical content experts, clinicians, the barbershop health advocate and several of his colleagues to develop accurate, culturally and linguistically-appropriate materials to educate the participating barbers in an engaging way. CDC-developed patient education materials and New York State Guidelines for disinfection of barbershop equipment were embedded in the curriculum.^(15, 22, 23) The educational materials were designed to be portable and interactive, and to communicate basic information about MRSA and HCV infection prevention in plain language for a low health literacy audience. Education sessions, which typically lasted one hour, were delivered to the barbers and estheticians on-site, at a time coordinated with the shop owner that was most convenient for the staff. Content was delivered via didactic instruction by research staff (CK, BDO, AT, RK, ALJ) followed by an informational video, question and answer periods, and an interactive role playing exercise.

Pre-post design and data analysis

Prior to the education session, each barber/esthetician completed a brief, written pre-session knowledge test. Questions on the test were based on industry standard infection control and prevention checklists and CDC lay-language fact sheets about MRSA or HCV.^(17, 22, 23) Participants again completed the same written test after attending the session and once more two months after the education session. Answers to the tests were not distributed until after the second follow up test.

3. Referral Card System

To evaluate patterns of referral to care and test the feasibility of barbershops/hair salons as a linkage to care, printed cards were developed and distributed to each shop that completed a CA-MRSA session. (Figure 3) The card provided a place for the esthetician to write the location of the client's skin lesion and listed the location(s) of CHCs where the client could go to receive further diagnostic evaluation. The barbers were instructed to give the card to any client who they identified as having a possible SSTI. Cards were coded by neighborhood and indexed at each shop. Each of the participating CHCs agreed to collect the referral cards to determine the rate of referral via the capture-recapture method.⁽²⁴⁾ The capture-recapture data collected from the referral card process was used to estimate card distribution rate, referral completion rate, and MRSA diagnosis rate.

Statistical Methods and Data Management

For both MRSA and HCV sessions, test scores for baseline (T0), immediately after the session (T1), and 8 weeks after the session (T2) were collected and compared to estimate gain and retention of knowledge presented. Test scores were compared using paired (repeated measures) t-tests, with an overall alpha (2-tailed) of 0.05 considered statistically significant. Data from the pre-post questionnaires and tracking of referral cards distribution were collected and managed using a Research Electronic Data Capture (REDCap) database

hosted at The Rockefeller University.⁽²⁵⁾ Data were analyzed using SAS® statistical software version 9.4 (SAS Institute Inc., Cary, NC, USA).

RESULTS

CA-MRSA

To reach the project recruitment goal of 9 barbershops, the research staff visited 57 shops. Eleven shops (19.3%) initially agreed to participate; 9/11 barbershops completed the CA-MRSA education sessions (81.8%), with a total of 43 barbers completing the sessions (Table 1). Basic demographic data on the estheticians are included in Table 2. Over half (55%) were located in Harlem. Approximately one-half of the barbers/estheticians said they had been working in the industry for 5 years or less. 63% of participants reported their race and more than one-half were of African American descent; the majority of participants reported that English was their primary language (67%). Table 3 contains the test scores for the baseline pre-test (T0) and two follow up time periods (T1 and T2) for the MRSA interventions. There was an increase in test scores from baseline to follow up for both the MRSA infection prevention ($p<0.0003$) and the MRSA knowledge items ($p<0.0001$). Knowledge about MRSA skin infections dramatically increased between the pre-test and immediately following the education session ($p<0.0001$), and this gain of knowledge was sustained at the second time point ($p<0.0001$). Figure 4 displays the percent correct test score distributions for the pre and two subsequent post-tests for CA-MRSA infection prevention and MRSA knowledge, respectively.

Referral Card System: 500 cards were provided to 43 barbers/estheticians in 9 barbershops. They reported distributing only 19 cards (4%) over a 6 week period, and none of these cards was presented to one of the participating CHCs (Table 5).

Hepatitis C

Five barbershops agreed to participate in the Hepatitis C education sessions. Basic demographic data on the barbers/estheticians participating in the Hepatitis C sessions are included in Table 2. Approximately one third (34%) of barbers/estheticians had 5 or fewer years' experience in the industry. The majority reported being of African-American descent (60%), and almost half were female (43%). All were located in Harlem (100%). Pre-post knowledge assessments were collected from all participating barbers/estheticians before and directly after the education sessions. There was an increase in tests scores after the education sessions for knowledge of both general information, including infection prevention ($p<0.0001$) and HCV ($p<0.0001$) and the increased knowledge was sustained through the second time point ($p<0.0005$), shown in Table 4 and Figure 5.

DISCUSSION

Our study demonstrates that estheticians are interested in receiving additional training on health education topics, such as serious chronic bacterial and viral infections, that they perceive are of direct relevance to their customers and staff. We delivered a targeted educational intervention to provide information on CA-MRSA and HCV to estheticians that improved their knowledge of these diseases and the measures needed to prevent

transmission. This knowledge was sustained for a period of at least two months after the sessions occurred.

There are several limitations to our pilot study. The team visited 57 shops and 11 agreed to participate based on the expressed interest of the shop owners and estheticians. During the recruitment phase for the CA-MRSA study, research staff approached shop owners/managers to discuss the study. This often occurred when the shop was open and serving customers, which made having detailed conversations about study participation difficult. The research staff wanted to ensure that shop owners/managers were appropriately aware of the study requirements and therefore in some cases it took multiple visits or phone calls to properly describe the study to the shop owner/manager before they could agree to participate. As a result, a number of shops may have been lost to contact before being fully informed of the study. Once a shop agreed to participate, the research team relied on the personal recommendation of the shop owners/managers to identify additional establishments that would likely be interested in participating. Without a more extensive survey of barbershop characteristics, it is difficult to assess the potential extent of selection bias in the shops and workers participating in our study. Future efforts are needed to identify strategies to reach a broader range of shops, understand the characteristics of those willing to participate and those who are not, and assess the feasibility of adding a wider range of health topics.

Time was an important factor for completing education sessions for the shops that participated. Education sessions typically lasted one hour, which proved to be too much time away from clientele for some. Two of the selected shops did not complete the training due to time constraints (e.g. – could not find a mutually agreeable time to complete the sessions, not enough estheticians available for a session). In participating shops, the shop owner or manager was instrumental in ensuring that the training was implemented with the staff by ensuring there were minimal disruptions during the session and providing adequate space to conduct the training (i.e. – conducting the session while the shop was closed to customers, gathering in a space away from customers).

A total of 19 (4%) referral cards were distributed by the estheticians during the CA-MRSA project. Without information as to the true incidence of CA-MRSA among customers, we cannot judge the accuracy of the referral rate. It was disappointing that none of the 19 referral cards distributed to customers were returned to a participating CHC. We do not know whether clients were successfully referred but forgot to present the card to the CHC, or sought appropriate medical attention at another medical site. We were unable to follow up with all of the estheticians to determine what factors may have prevented them from distributing more cards. Those with whom we did follow up reported not seeing many lesions that they thought were suspicious or not having enough time. Future research will focus on developing better methods to track referrals.

The CA-MRSA curriculum developed and tested in this project is currently being packaged for broader dissemination. Upon discussion with the estheticians directly after the education sessions, many indicated they would be interested in participating in more education sessions like this. We conclude that the barbershop setting may represent an opportunity to

provide important health information on infection transmission and control. This approach, modeled on “academic detailing,” has the potential to engage esthetic care workers who in turn, reach people who may not otherwise access health care.⁽²⁶⁾ The established trust relationship between estheticians and their customers, and the broad representation of communities in the shops make them valuable sites for the transfer of important health-related information.

Acknowledgments

The authors would like to thank members of the Community Acquired MRSA Project (CAMP) from Community Health Centers, Clinical Directors Network (CDN), and The Rockefeller University. We also thank the Rockefeller University Action Committee for Community Engaged Research (ACCER) members; Dr. Peter Holt and Maija Neville-Williams, MPH for their guidance on this project. We especially thank the barbers and estheticians for their participation and valuable contributions to this project.

Funding:

Supported in part by grant # UL1 TR000043 from the National Center for Advancing Translational Sciences (NCATS), National Institutes of Health (NIH) Clinical and Translational Science Award (CTSA) program to B. S. Collier (principal investigator [PI]), as well as a pilot grant award to J. N. Tobin (PI) and Rhonda Burgess (Co-PI) from grant #UL1 TR000043 and by a 2011 CTSA Administrative Supplement Award to J. N. Tobin (PI). Additional support was provided by U.S. Public Health Service award 2 RO1 AI457838-15 to A. Tomasz (PI), and AHRQ grant 1 P30-HS-021667 to J. N. Tobin (PI).

References

1. McLeroy KR, Clark NM, Simons-Morton BG, Forster J, Connell CM, Altman D, Zimmerman MA. Creating capacity: establishing a health education research agenda for special populations. *Health Educ Q.* 1995 Aug; 22(3):390–405. [PubMed: 7591791]
2. Linnan LA, Reiter PL, Duffy C, Hales D, Ward DS, Viera AJ. Assessing and promoting physical activity in African American barbershops: results of the FITStop pilot study. *Am J Mens Health.* 2011 Jan; 5(1):38–46. [PubMed: 20413387]
3. Linnan LA, Dangelo H, Harrington CB. A Literature Synthesis of Health Promotion Research in Salons and Barbershops. *American Journal of Preventative Medicine.* 47(1):77–85.
4. Wilson TE, Fraser-White M, Feldman J, Homel P, Wright S, King G, Coll B, Banks S, Davis-King D, Price M, Browne R. Hair Salon Stylists as Breast Cancer Prevention Lay Health Advisors for African American and Afro-Caribbean Women. *Journal of Healthcare for the Poor and Underserved.* 2008; 19:216–26.
5. Victor RG, Ravenell JE, Freeman A, Leonard D, Bhat DG, Shafiq M, Knowles P, Storm JS, Adhikri E, Bibbins-Domingo K, Coxon PG, Pletcher MJ, Hannan P, Haley RW. Effectiveness of a barber-based intervention for improving hypertension control in black men: the BARBER-1 study: a cluster randomized trial. *Arch Intern Med.* 2011 Feb 28; 171(4):342–50. [PubMed: 20975012]
6. Linnan LA, Harrington CB, Bangdiwala K, Evenson K. Comparing Recruitment Methods to Enrolling Organizations into a Community-Based Intervention Trial: Results from the NC BEAUTY and Health Project. *Journal of Clinical Trials.* 2012; 2(3):1–5.
7. Releford BJ, Frencher SK, Yancey AK. Health Promotion In Barbershops: Balancing Outreach Research In African American Communities. *Ethnicity and Disease.* 2010; 20:185–88. [PubMed: 20503901]
8. Alexander BK. Fading, Twisting, and Weaving: An Interpretive Ethnography of the Black Barbershop as Cultural Space. *Qualitative Inquiry.* 2003; 9(1):105–28.
9. Wood PB, Brunson RK. Geographies of Resilient Social Networks: the Role of African American Barbershops. *Urban Geography.* 2011; 32(2):228–43.
10. Kotchen JM, Shakoor-Abdullah B, Walker WE, Chelius TH, Hoffmann RG, Kotchen TA. Hypertension Control and Access to Medical Care in the Inner City. *American Journal of Public Health.* 1998 Nov; 88(11):1696–99. [PubMed: 9807539]

11. Taylor TN, Joseph M, Henry KD, Pinto AR, Agbetor F, Camilien B, Williams KM, Browe RC, White M, Gousse Y, Brown H, Taylor RD, Wilson TE. Perceptions of HIV Risk and Explanations of Sexual Risk Behavior Offered by Heterosexual Black Male Barbershop Patrons in Brooklyn, NY. *Journal Health Disparities Research and Practice*. 2014; 7(6):1–25.
12. Brawner BM, Baker JL, Stewart J, Davis ZM, Cederbaum J, Jemmott LS. The Black Man's Country Club: Assessing the Feasibility of an HIV Risk-Reduction Program for Young Heterosexual African American Men in Barbershops. *Family and Community Health*. 2013; 36(2): 109–18. [PubMed: 23455681]
13. Bawany FI, Muhammad SK, Shoaib AB, Naeem M, Kazi AN, Shehzad AM. Knowledge and practices of barbers regarding HIV transmission in Karachi: A cross-sectional study. *Journal of Community Health*. 2014; 39(5):951–5. [PubMed: 24504994]
14. Wazir MS, Mehmood S, Ahmed A, Jadoon HR. Awareness among barbers about health hazards associated with their profession. *J Ayub Med Coll Abbottabad*. 2008; 20(2):35–8. [PubMed: 19385454]
15. [cited 2015] Methicillin-resistant *Staphylococcus aureus* (MRSA) Infections: General Information About MRSA in the Community [Internet]. Available from: <http://www.cdc.gov/mrsa/community/index.html>
16. Farley JE. Epidemiology, clinical manifestations, and treatment options for skin and soft tissue infection caused by community-acquired methicillin-resistant *Staphylococcus aureus*. *J Am Acad Nurse Pract*. 2008 Feb; 20(2):85–92. [PubMed: 18271763]
17. Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. *MMWR*. 1998; 47(RR-19)
18. Centers for Disease Control and Prevention. Recommendations for the Identification of Chronic Hepatitis C Virus Infection Among Persons Born During 1945–1965. *MMWR*. 2012; 61(4)
19. Pardos de la Gandara M, Raygoza Garay JA, Mwangi M, Tobin JN, Tsang A, Khalida C, D'Orazio B, Kost RG, Leinberger-Jabari A, Coffran C, Evering TH, Collier BS, Balachandra S, Urban T, Parola C, Salvato S, Jenks N, Wu D, Burgess R, Chung M, de Lencastre H, Tomasz A. Molecular Types of MRSA and MSSA Strains Causing Skin and Soft Tissue Infections and Nasal Colonization – Identified in Community Health Centers in New York City. *Journal of Clinical Microbiology*. 2015 JCM-00591.
20. Balachandra S, Pardos de la Gandara M, Salvato S, Urban T, Parola C, Khalida C, Kost RG, Evering TH, Pastagia M, D'Orazio BM, Tomasz A, de Lencastre H, Tobin JN. Recurrent Furunculosis Caused by a Community-Acquired *Staphylococcus aureus* Strain Belonging to the USA300 Clone. *Microbial Drug Resistance*. 2015; 21(2):237–43. [PubMed: 25668150]
21. Roberts RB, de Lencastre A, Eisner W, Severina EP, Shopsin B, Kreiswirth BN, Tomasz A. Molecular Epidemiology of Methicillin-Resistant *Staphylococcus aureus* in 12 New York Hospitals. *Journal of Infectious Diseases*. 178(1):164–71.
22. New York State General Business law Article 27: Appearance Enhancement, Title 19 NYCRR, Part 160. Jan.2014
23. [cited 2015] Infection Prevention checklist for outpatient settings: [Internet]. 2011. Available from: <http://www.cdc.gov/HAI/settings/outpatient/checklist/outpatient-care-checklist.html>
24. Mastro TD, Kitayapom D, Weniger BG, Vanichseni S, Laosunthom V, Uneklabh T, Uneklabh C, Choopanya K, Limpkarnjanarat K. Estimating the Number of HIV-Infected Injection Drug Users in Bangkok: A Capture-Recapture Method. *American Journal of Public Health*. 1994; 84(7):1094–99. [PubMed: 8017531]
25. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*. 2009; 42:377–81. [PubMed: 18929686]
26. Soumerai SB, Avorn J. Principles of educational outreach ('Academic Detailing') to improve clinical decision making. *JAMA*. 1990; 263(4):549–556. [PubMed: 2104640]

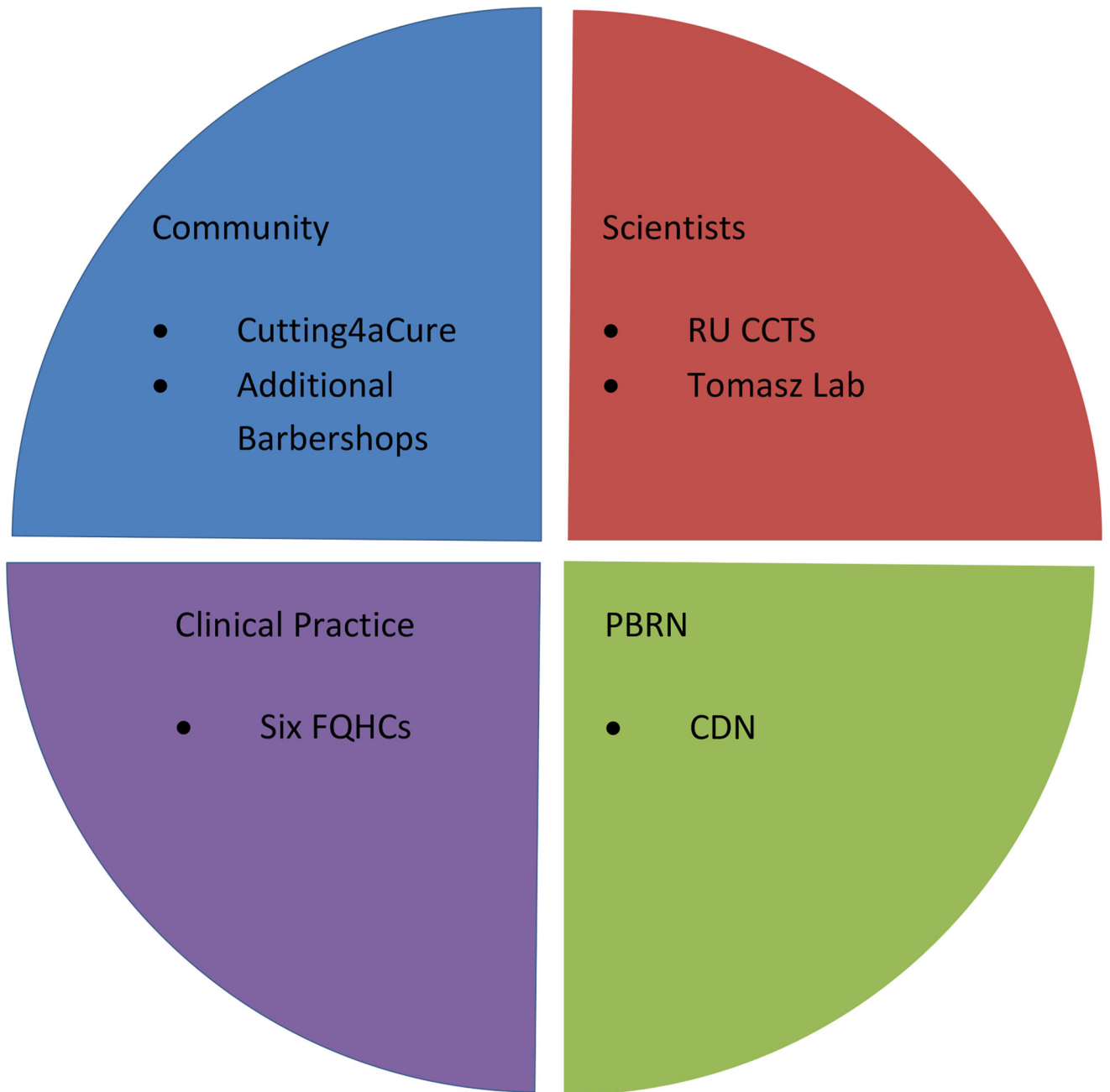


Figure 1.
CAMP Barbershop Infrastructure

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

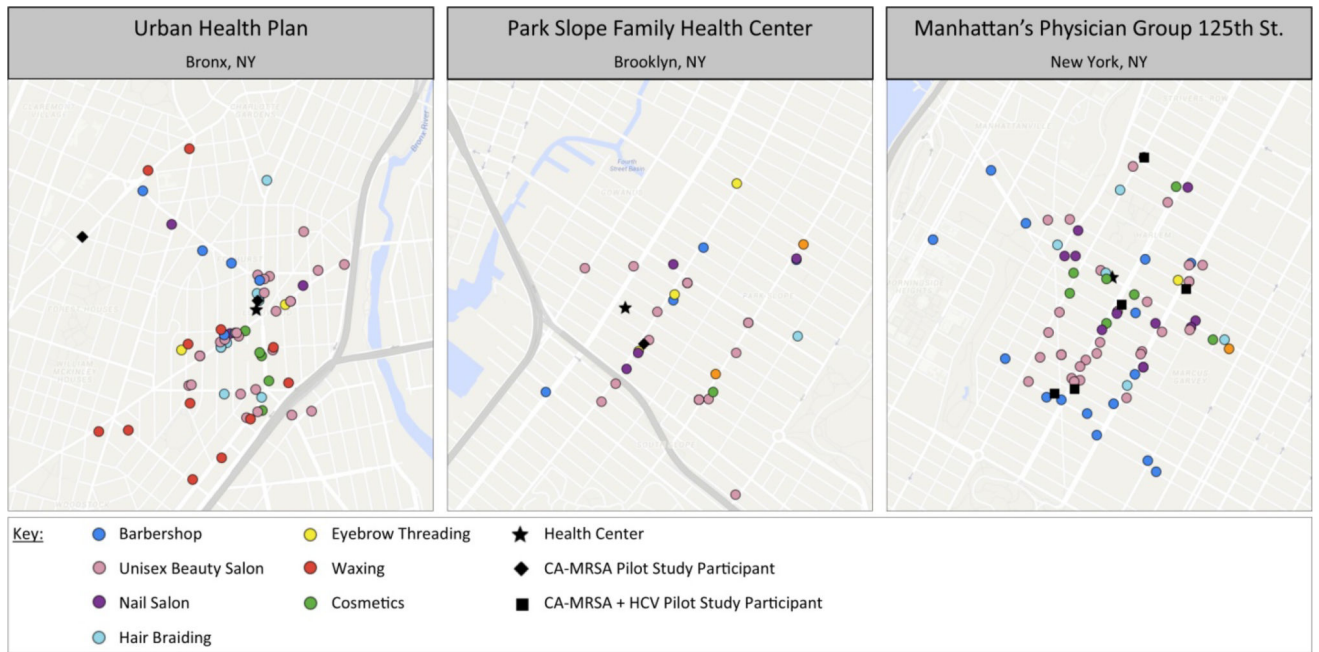


Figure 2.
Barbershops/salons in CHC catchment areas: Google Maps Geosurvey

Front

Health Referral Card

You have received this card because your barber or hair stylist has identified a possible skin infection on your: (circle one)

SCALP FACE NECK OTHER (specify: _____)


and suggests you consult a physician or other licensed health care provider.


For more information, please call Chamanara Khalida, MD, MPH at Clinical Directors Network at **212-382-0699** ext. **236**. To schedule an appointment, call your physician's office or Park Slope Family Health Center at 718-832-5980, or visit their office (220 13th Street, Brooklyn, NY 11215). Please be sure to provide this card to your physician.

Signed: _____ Date: _____

Business Name: _____

Medical providers: Please return this card to Dr. Chamanara Khalida at Clinical Directors Network (CDN), 5 West 37th Street, New York, NY 10018, by **June 20, 2013**.
Phone: 212-382-0699 **Fax:** 212-382-0669
Email: CKhalida@CDNetwork.org





Back

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Symptoms:
 In the community, most MRSA infections are skin infections that may appear as pustules or boils which often are red, swollen, painful, or have pus or other drainage. They often first look like spider bites or bumps that are red, swollen, and painful. These skin infections commonly occur at sites of visible skin trauma, such as cuts and abrasions, and areas of the body covered by hair (e.g., back of neck, groin, buttock, armpit, beard area of men).

The key to preventing MRSA infections is for everyone to practice good hygiene:

1. Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand rub.
2. Keep cuts and scrapes clean and covered with a bandage until healed.
3. Avoid contact with other people's wounds or bandages.
4. Avoid sharing personal items such as towels or razors.

Treatment of MRSA Infections:
 Treatment for MRSA skin infections may include having a healthcare professional drain the infection and, in some cases, prescribe an antibiotic. **Do not** attempt to treat an MRSA skin infection by yourself; doing so could worsen or spread it to others. This includes popping, draining, or using disinfectants on the area. If you think you might have an infection, cover the affected skin, wash your hands, and contact your healthcare provider.

For more information, see www.cdc.gov/mrsa
 or contact your health care provider.

Figure 3.
 Referral Card

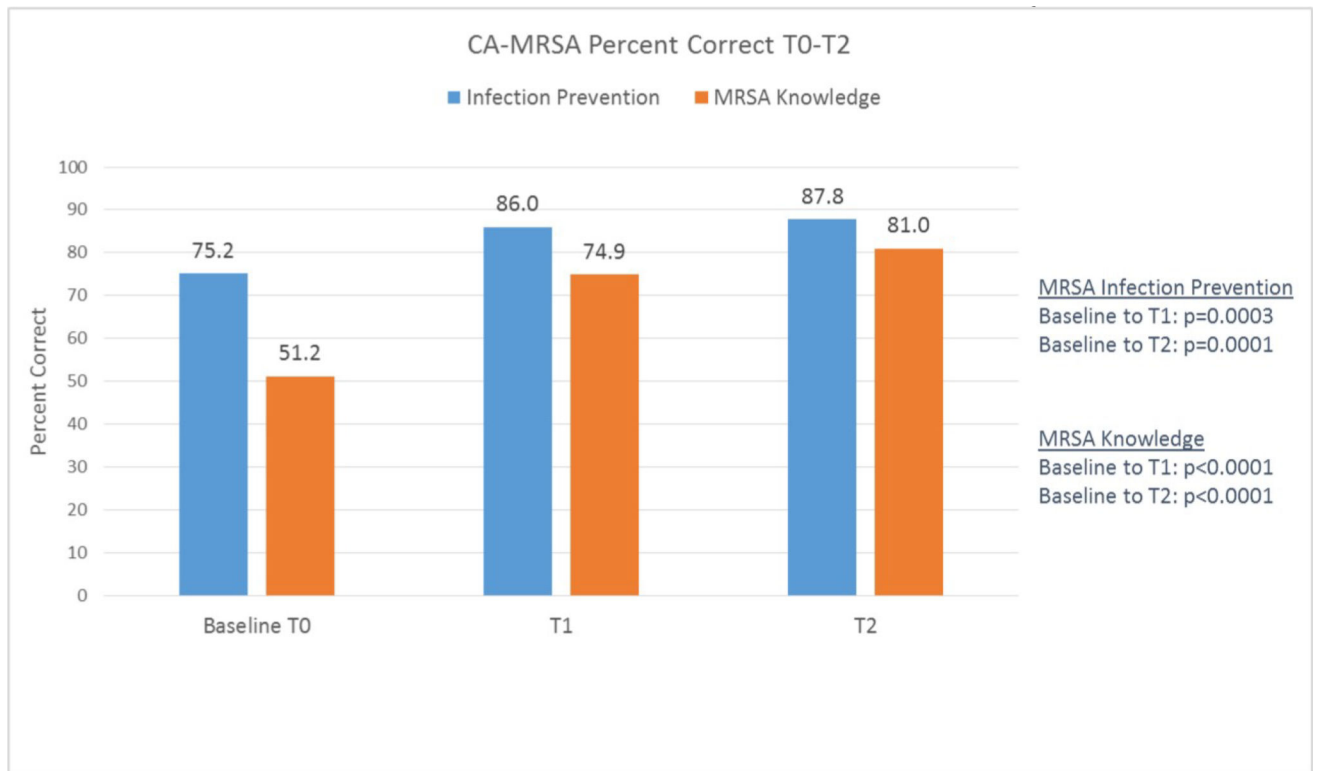


Figure 4.
 CA-MRSA Pre-Post Infection Prevention and Knowledge Scores (% Correct)

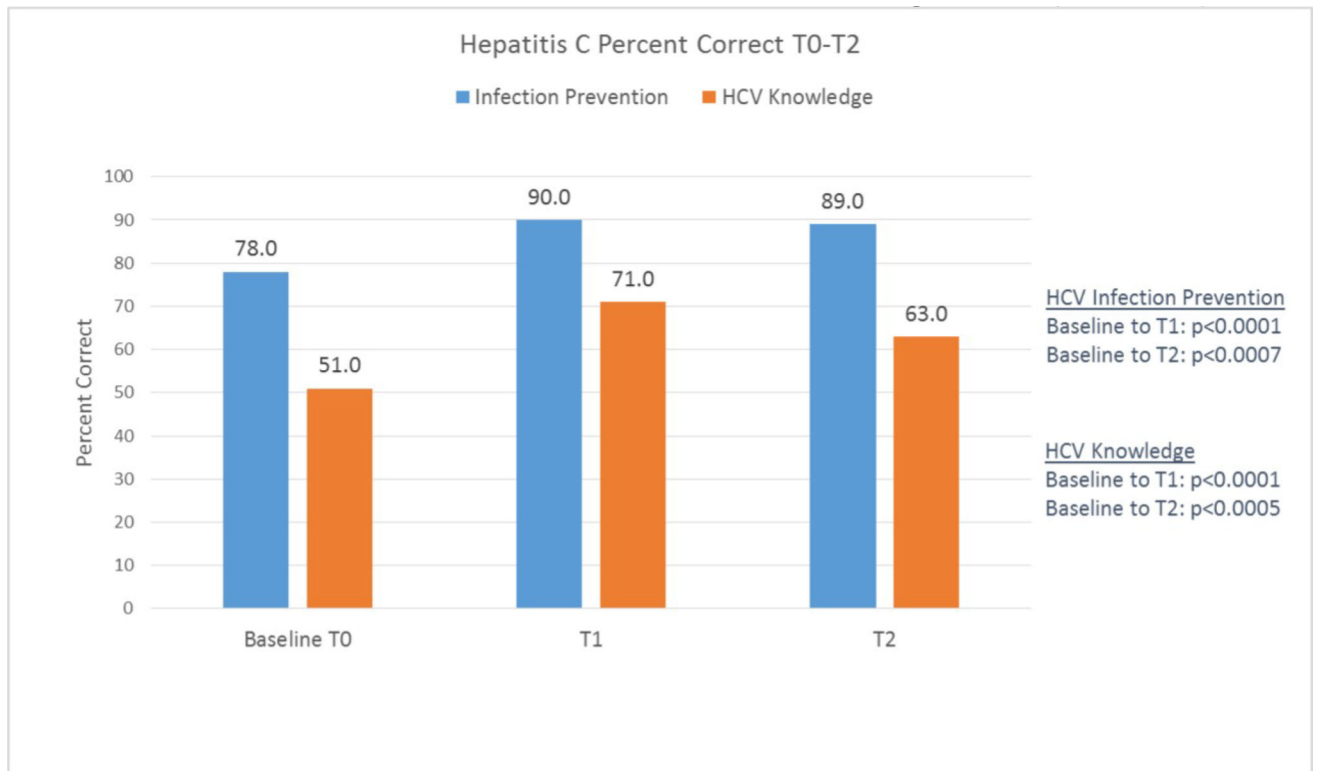


Figure 5.
Hepatitis C Pre-Post Infection Prevention and Knowledge Scores (% Correct)

Table 1

Initial Barbershop Recruitment, Esthetician Participation, and Follow Up

Location	Recruitment and participation of Barbershop/salons						Participation of Estheticians		
	# of Barbershop /Salons Visited	# Barbershop /Salons whose owners agreed to participate	# Shops hosting CA-MRSA Education Sessions	# Shops hosting HCV Education Sessions	# Barbers Completed Session	# Barbers Completed Follow-up	# Barbers Completed Session	# Barbers Completed Follow-up	# Barbers Completed Follow-up
Bronx, NY	23	5	3	-	13	11	-	-	-
Harlem, NY	19	5	5	5	24	18	23	23	23
Brooklyn, NY	6	1	1	-	6	5	-	-	-
Total	57	11 (19%)	9 (82%)	5	43	34 (79%)	23	23	23

Table 2

Characteristics of Participating Estheticians CA-MRSA Hepatitis C

	CA-MRSA		Hepatitis C	
	N	%	N	%
Age (y), mean (range)	38.9	(19 – 66)	43.0	(20–59)
<u>Shop Location</u>				
Bronx	13	30	-	-
Brooklyn	6	14	-	-
Manhattan	24	56	23	100
<u>Occupation</u>				
Barber	26	60	14	61
Beautician	3	7	2	9
Cleaner	1	2	-	-
Hair Stylist	9	21	3	13
Manager	1	2	-	-
Seller	1	2	-	-
Cosmetologist	-	-	2	9
Manicurist	-	-	1	4
Missing	2	5	1	4
<u>Ownership</u>				
Owner	6	14	5	22
Partial Owner	2	5		
Chair Renter	26	60	12	52
Other	7	16	2	9
Missing	2	5		
<u>Years in Industry</u>				
<5 or (not reported)	21	49	8	35
5–9	5	12	2	9
10–14	6	14	4	17
15–19	6	14	3	13
20–24	2	5	2	9
25–30	3	7	3	13
>30	-	-	1	4
<u>Gender</u>				
Female	17	40	10	43
Male	25	58	13	56
<u>Race</u>				
American Indian or Alaska Native	1	2	-	-
Black or African American	17	40	14	61
White	1	2	-	-

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

	CA-MRSA		Hepatitis C	
	N	%	N	%
Native Hawaiian or other Pacific Islander	1	2	-	-
More than one race	4	9	2	9
Prefer not to answer	16	37	3	13
Missing	3	7	4	17
<i>Ethnicity</i>				
Hispanic or Latino	16	37	1	4
Not Hispanic or Latino	9	21	13	57
Prefer not to answer	4	9	6	26
Missing	14	33	3	13
<i>English is First Language</i>				
Yes	29	67	19	83
<i>First Language Other Than English</i>				
Creole	4	9	3	13
Spanish	9	21	-	-
Missing	-	-	1	4

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Intervention Outcomes: CA-MRSA

Module	Performance			Pre - Post Test Comparison		
	Baseline ^ϕ	Follow-Up (T1) [‡]	Follow-Up (T2) [§]	Baseline to T1	T1 to T2	Baseline to T2
	Mean (SD)					
<i>MRSA - Infection Prevention (IP)</i> ^a						
Raw Score	7.5 (1.7)	8.6 (1.1)	8.8 (1.0)	4.0 (0.0003)	0.4 (0.6811)	4.4 (0.0001)
Percent Correct	75.2 (17.0)	86.0 (11.5)	87.7 (10.2)			
<i>MRSA Knowledge</i> ^b						
Raw Score	4.6 (2.1)	6.7 (1.7)	7.3 (1.5)	6.6 (<0.0001)	0.9 (0.3625)	5.2 (<0.0001)
Percent Correct	51.2 (23.6)	74.9 (18.7)	81.0 (16.3)			

^ϕPre-intervention, N = 42.

[‡]Conducted 1 month post-intervention, N = 42.

[§]Conducted 8 weeks post-intervention, N = 34.

[€]Paired t-test conducted on raw scores.

^aTotal amount of items = 10.

^bTotal amount of items = 9.

Table 4

Intervention Outcomes: Hepatitis C ^ψ

Module	Performance			Pre - Post Test Comparison		
	Baseline ^φ	Follow-Up (T1) [¶]	Follow-Up (T2) [§]	Baseline to T1	T1 to T2	Baseline to T2
	Mean (SD)			T Value (p) [€]		
<i>Hepatitis C - Infection Prevention (IP)</i> ^a						
Raw Score	7.8 (1.4)	9.0 (1.2)	8.9 (1.3)	5.3 (0 < 0.0001) ^c	0.1 (0.9028)	4.3 (0.0007)
Percent Correct	-	-	-	-	-	-
<i>Hepatitis C - Knowledge</i> ^b						
Raw Score	5.7 (2.1)	7.9 (1.5)	6.9 (1.4)	5.1 (0 < 0.0001)	-1.9 (0.0704)	4.3 (0.0005)
Percent Correct	51.4 (18.7)	71.4 (13.3)	62.7 (12.5)	-	-	-

^ψ Content of Hepatitis C survey, structurally distinct from MRSA survey.

^φ Pre intervention, N = 23.

[¶] Conducted 1 month post-intervention, N = 22.

[§] Conducted 8 weeks post-intervention, N = 19.

[€] Paired t-test conducted on raw scores.

^a Total amount of items = 4. Responses presented on a 10 point scale.

^b Total amount of items = 11.

^c Outlier present among distribution of differences between groups (baseline and T1)

Table 5

Geographic Distribution of Referral Cards for CA-MRSA Pilot

Geographic Area	# Referral cards given to businesses	# Referral cards distributed to clients	# Referrals (calls to CDN)	# Reports (visits to CHC)
Bronx	70	0	0	0
Bronx	50	15	0	0
Bronx	40	0	0	0
Harlem	100	1	0	0
Harlem	60	0	0	0
Harlem	70	0	0	0
Harlem	30	0	0	0
Harlem	40	0	0	0
Park Slope	40	2	0	0
Total	500	19	0	0
% of Total		4%	0%	0%

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript