Barriers and Facilitators to Learning and Performing Cardiopulmonary Resuscitation in Neighborhoods With Low Bystander Cardiopulmonary Resuscitation Prevalence and High Rates of Cardiac Arrest in Columbus, OH

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Background—Residents who live in neighborhoods that are primarily black, Latino, or poor are more likely to have an out-of-hospital cardiac arrest, less likely to receive cardiopulmonary resuscitation (CPR), and less likely to survive. No prior studies have been conducted to understand the contributing factors that may decrease the likelihood of residents learning and performing CPR in these neighborhoods. The goal of this study was to identify barriers and facilitators to learning and performing CPR in 3 low-income, high-risk, and predominantly black neighborhoods in Columbus, OH.

Methods and Results—Community-Based Participatory Research approaches were used to develop and conduct 6 focus groups in conjunction with community partners in 3 target high-risk neighborhoods in Columbus, OH, in January to February 2011. Snowball and purposeful sampling, done by community liaisons, was used to recruit participants. Three reviewers analyzed the data in an iterative process to identify recurrent and unifying themes. Three major barriers to learning CPR were identified and included financial, informational, and motivational factors. Four major barriers were identified for performing CPR and included fear of legal consequences, emotional issues, knowledge, and situational concerns. Participants suggested that family/self-preservation, emotional, and economic factors may serve as potential facilitators in increasing the provision of bystander CPR.

Conclusions—The financial cost of CPR training, lack of information, and the fear of risking one’s own life must be addressed when designing a community-based CPR educational program. Using data from the community can facilitate improved design and implementation of CPR programs.

Key Words: cardiopulmonary resuscitation • death, sudden • heart arrest

Black and Latino adults are more likely than white adults to have an out-of-hospital cardiac arrest (OHCA) and to be found in asystole and pulseless electric activity, both poorer prognosis rhythms when compared with ventricular fibrillation/ventricular tachycardia. The neighborhood in which a person has had cardiac arrest may also dramatically affect his or her likelihood of receiving cardiopulmonary resuscitation (CPR) and ultimately surviving an OHCA. Residents who live in neighborhoods that are primarily black, Latino, or poor are more likely to have an OHCA, less likely to receive CPR, and are less likely to survive. Therefore, such neighborhoods are important targets for public health interventions to reduce disparities in bystander CPR and OHCA survival. Previous studies using novel spatial epidemiological methods and public health data sets, such as the Cardiac Arrest Registry to Enhance Survival (CARES), have been conducted to identify neighborhoods as high risk and potential targets for community-based interventions. Such high-risk neighborhoods are defined as having a high incidence of OHCA and low prevalence of bystander CPR when compared with their neighbors.

The identifying High Arrest Neighborhoods to Decrease Disparities in Survival (HANDDS) Program was created to understand the extent of racial/ethnic and geographic location disparities in the provision of CPR and OHCA survival and identify target areas for neighborhood-based CPR interventions. In Columbus, OH, the first HANDDS Program site, 3 neighborhoods were identified as being high risk, with the lowest prevalence of bystander CPR and highest incidence of OHCA. These neighborhoods comprised primarily blacks with lower socioeconomic status as compared with the rest.
WHAT IS KNOWN

- Residents who live in neighborhoods that are primarily black, Latino, or poor are more likely to have an out-of-hospital cardiac arrest, less likely to receive cardiopulmonary resuscitation (CPR), and less likely to survive.
- Previous studies, using novel spatial epidemiological methods and public health data sets, have identified neighborhoods as high risk and potential targets for community-based interventions. Such high-risk neighborhoods are defined as having a high incidence of out-of-hospital cardiac arrest and low prevalence of bystander CPR when compared with their neighbors. Once these high-risk neighborhoods are identified, the next step is to understand why residents of these neighborhoods do not receive or provide CPR.

WHAT THE STUDY ADDS

- This is the first systematic study to generate hypotheses as to why residents living in the highest risk neighborhoods are both less likely to learn and perform CPR. Qualitative methods, using focus groups, done in partnership with local community-based organizations, were used to understand the underlying causes for this disparity.
- Previous research has focused on why people do not do CPR, such as fear of doing it incorrectly, breathing into someone’s mouth, or litigation concerns. Our focus group participants cited more upstream causes that must be addressed in order to increase CPR provision in high-risk neighborhoods, such as the financial cost of CPR training, lack of information, and the fear of risking one’s own life.
- Beyond the financial, safety, and informational concerns, there are also other barriers that must be addressed if community-based CPR trainings are going to be effective in reaching this target population. Although we have begun to build a foundation for identifying what these factors are that drive people to acquire CPR as a skill, future research still needs to be conducted to better understand how this may be similar or different in other populations.

Accordingly, the goal of this study was to use qualitative methods to conduct an in-depth exploration of the barriers and facilitators to learning and performing CPR in 3 lower income, high-risk neighborhoods that were comprised of black residents in Columbus, OH.

Methods

Setting

The City of Columbus has a population of 729,369 individuals and covers 212 square miles, with 65.4% of residents classified as white, 26.4% as black, and 4.5% as Hispanic by the US Census Bureau. Approximately 95% of all medic runs within the City of Columbus are made by the single City of Columbus fire-based emergency medical services (EMS) system, which provides all advanced life support EMS with ≥1 paramedic on each fire engine and 2 paramedics on all ambulances. The EMS system responds to ≈107,000 calls annually (D.P. Keseg, MD, personal communication, September 17, 2010).

Study Design and Sample

Three spatial analytical methods were used to identify high-risk neighborhoods (defined as having a high OHCA incidence and low prevalence of bystander CPR). The analytic approach that was used to identify these census tracts is described in depth elsewhere. Briefly, data from the Columbus Fire Division cardiac arrest registry (April 2004–September 2007) and the Cardiac Arrest Registry to Enhance Survival (CARES) data set (October 2007–April 2009), an ongoing OHCA surveillance registry that collects data from EMS systems throughout the United States, were used to identify high-risk neighborhoods (defined by census tracts) in Columbus, OH. Consecutive adults (≥18 years of age) who experienced OHCA of cardiac pathogenesis and were treated by EMS were studied. Data were geocoded using ArcGIS 9.3 (Environmental Systems Research Institute [ESRI] Inc., Redlands, CA) and GeoDa software (http://geodacenter.asu.edu/), and spatial analysis methods were used to identify high-risk census tracts.

Five census tracts were identified as being high-risk. Based on existing community partnerships and consultation with community partners, 3 neighborhoods were identified to conduct a qualitative study to explore the barriers and facilitators to learning and providing bystander CPR (Figure). The North Linden, South Linden, and North Central neighborhoods had a crude annual incidence of OHCA that ranged from 0.70 to 1.17 per 1000 people. During the 6-year study period, 0% of all OHCA patients received bystander CPR. These 3 neighborhoods were comprised of residents who were primarily black (range: 36.6%–90.2%; Franklin County average: 17.9%), had a lower median household income (range: $22,333–$33,154; Franklin County average: $42,734), and had lower high school graduation prevalence (range: 64.4%–72.0%; Franklin County average: 85.7%).

Community-Based Participatory Research approaches were used to identify and partner with key community stakeholders and organizations. The study team included a community-based organization located within the identified high-risk neighborhoods (the Ohio State University Extension) and community liaisons who were familiar with the area and who helped identify key issues of relevance to each neighborhood and develop focus group questions. Qualitative methods were used to conduct 6 focus groups, each lasting 90 to 120 minutes, in January and February 2011. Prior studies have used closed-ended surveys to measure the reasons why bystanders fail to provide CPR. Our qualitative approach with focus groups aims to provide a more in-depth understanding of the phenomena of lower CPR prevalence in these target neighborhoods. Qualitative methods were oriented toward understanding rather than simply measuring phenomena. Because data collection was open ended, research participants were free to express themselves in their own words. Through detailed, in-depth analyses of the resulting data, these methods can uncover what may drive complex decisions such as choosing to learn or perform bystander CPR. As such, they are appropriate for exploring issues of disparities in bystander CPR provision in these high-risk neighborhoods.
Focus groups were conducted in lieu of one-on-one interviews to promote interactions among focus group participants and to gain insights from the dynamics and interactions among focus group participants. Community liaisons recruited focus group participants using a mixture of convenience, purposeful, and snowball sampling techniques. Because we were targeting a population that traditionally is difficult to reach for participation in research studies, we chose to use 3 common types of qualitative sampling techniques to ensure the composition of our focus groups and that the views of target neighborhood residents were well represented. Flyers advertising the focus groups were placed in businesses (eg, grocery stores, restaurants, public libraries) located in the targeted neighborhoods. Based on prior successful recruitment techniques, community liaisons conducted on-site recruitment at a local grocery store and the public library located in the target neighborhoods (convenience sample). Six radio advertisements were played during the 2-month study period on a local radio station commonly listened to by residents of our 3 target neighborhoods. We recruited residents of the 3 target neighborhoods so that we could have a focus group that was comprised of residents from the same neighborhood (purposeful sample). Two focus groups were conducted in each of the 3 neighborhoods (total of 6 focus groups). From the respondents who agreed to attend the focus groups, we asked them to recommend others who also live in the target neighborhoods and assist us in recruiting for future focus groups (snowball sample). Snowball sampling is a commonly used qualitative sampling technique that identifies study participants, who then recruit other potential focus group members to participate in the study. We continued to recruit participants in the focus groups until our target sample size and saturation of themes were reached. The coding team reached consensus that there was a saturation of themes achieved during the data analysis. Saturation of themes in qualitative research refers to the point in which new information is no longer being gathered from the focus groups. Written informed consent was obtained from each participant for the audiotaping of the focus groups. The focus group participants were each given a $10 gift card for their participation. The research protocol was approved by the Ohio State University Institutional Review Board.

Data Collection and Processing

Six focus groups were conducted during the study period, with 6 to 8 individuals participating in each group. To ensure consistency, 1 investigator (C.B.) served as the moderator for all 6 focus groups, and the primary author (C.S.) assisted with 2 of the groups. The moderators used an interview guide (Appendix A in the online-only Data Supplement), developed by the study team, to elicit comments from focus group participants related to (1) perceived barriers to learning and performing bystander CPR, (2) familiarity with CPR, and (3) facilitators to learning and teaching CPR in high-risk neighborhoods. A video demonstrating hands-only CPR was shown to the participants. All focus groups were audiotaped. A transcription service was used to transcribe each focus group verbatim. Transcripts were stripped of personal identifiers. Participants were also asked to complete a brief survey of sociodemographic characteristics and their familiarity with CPR before the start of the focus group.

Data Analysis

A qualitative content analysis was used with a 5-stage iterative process to analyze each transcript: (1) development of a coding schedule, (2) coding of the data, (3) description of the main categories, (4) linking of categories into major themes, and (5) development of explanations for the relations among themes. Initial or preliminary codes were created inductively from the transcripts. Two reviewers (C.S., and R.K.) read through each transcript independently and coded all transcripts line by line. The 2 reviewers then met to discuss the transcripts in order to expand and refine existing categories in an iterative manner. With the full study team, the final coding structure and definitions were defined. No intercoder agreement statistics were calculated, but disagreements were resolved by consensus by the full study team. Codes were applied to the specific lines from each transcript to enable reorganization into categories (eg, material goods), which could then be attributed to a major theme (eg, economic incentives). The 2 reviewers met to question, discuss, and document interpretations and findings. Two types of audit processes were used to ensure that the content was validated. First, respondent validation was conducted: At the end of the first 3 focus groups, and then again at the end of the coding of the final 3 focus groups, the codebook was distributed to the entire research team (including the community liaisons) for input and validation. Second, multiple coders also independently coded each transcript and then met together to discuss major themes. Qualitative analysis software (NVivo 9.0, QSR International, Doncaster, Victoria, Australia) was used to facilitate reorganization of data into codes, categories, and themes.

Results

Demographics of the focus group participants are included in Table 1. The majority of the participants were ≥20 years of age (82%), female (85%), and black (83%). Approximately half of the participants were residents of the 3 high-risk neighborhoods (49%). Fifty-six percent of the participants had completed at least some college. Two thirds of the participants had an annual household income of <$20,000.

Table 2 illustrates the focus group participants’ reported familiarity with CPR. The majority of the participants indicated that they were familiar with CPR before the focus group (88%), and more than half had taken a formal CPR course at least once in their lifetime (68%). Of those who had taken a previous CPR course, only 43% had taken the course within the previous 3 years.

Our analyses identified 3 key barriers to learning CPR (financial, lack of information, and motivation [Table 3]), 4 main barriers to performing CPR (consequences, emotions, knowledge, and environment [Table 4]), and 3 possible facilitators to learning and teaching CPR (knowledge/self-preservation, emotional factors, and economic incentives [Table 5]).
Barriers to Learning CPR

Financial Factors

An important concern for focus group participants was the cost of taking a formal CPR course. Most participants believed the cost associated with a CPR course was the biggest barrier to learning CPR.

“Yeah, ain’t that crazy? Because I want to save a life you’re going to charge me. You should give us that type of knowledge for free . . . I mean there are certain civic responsibilities we have as citizens that should be free, and I think that this is one of them. I mean, it’s not a hindrance to anybody. I don’t know why all this knowledge that costs, when it’s basic to help out one another.”

Participants mentioned that no CPR courses were held near where they lived. Because many residents in these neighborhoods do not own a personal vehicle, finding transportation to and from a CPR course was thought to be costly, time consuming (sometimes requiring multiple buses), and potentially unsafe (depending on the time of day the course was held).

“For me, accessibility is always the biggest issue. There are a lot of services that are available but you

Table 1. Focus Group Participant Characteristics

<table>
<thead>
<tr>
<th>Age, y (n=37)</th>
<th>No. of Participants (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>2 (5)</td>
</tr>
<tr>
<td>20–29</td>
<td>1 (3)</td>
</tr>
<tr>
<td>30–39</td>
<td>8 (22)</td>
</tr>
<tr>
<td>40–49</td>
<td>9 (24)</td>
</tr>
<tr>
<td>50–59</td>
<td>10 (27)</td>
</tr>
<tr>
<td>60+</td>
<td>7 (19)</td>
</tr>
<tr>
<td>Sex (n=39)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Female</td>
<td>33 (85)</td>
</tr>
<tr>
<td>Neighborhood (n=41)</td>
<td></td>
</tr>
<tr>
<td>North Central</td>
<td>4 (7)</td>
</tr>
<tr>
<td>North Linden</td>
<td>21 (50)</td>
</tr>
<tr>
<td>South Linden</td>
<td>3 (32)</td>
</tr>
<tr>
<td>Other</td>
<td>13 (51)</td>
</tr>
<tr>
<td>Race/ethnicity (n=41)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>34 (83)</td>
</tr>
<tr>
<td>White</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Educational attainment (highest level) (n=41)</td>
<td></td>
</tr>
<tr>
<td>Some high school</td>
<td>7 (18)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>11 (27)</td>
</tr>
<tr>
<td>Some college</td>
<td>11 (27)</td>
</tr>
<tr>
<td>Completed college</td>
<td>6 (14)</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>6 (14)</td>
</tr>
<tr>
<td>Annual household income, $/y (n=41)</td>
<td></td>
</tr>
<tr>
<td>&lt;10,000</td>
<td>22 (54)</td>
</tr>
<tr>
<td>10,000–20,000</td>
<td>5 (12)</td>
</tr>
<tr>
<td>20,000–30,000</td>
<td>4 (10)</td>
</tr>
<tr>
<td>30,000–50,000</td>
<td>5 (12)</td>
</tr>
<tr>
<td>50,000–100,000</td>
<td>2 (5)</td>
</tr>
<tr>
<td>100,000–200,000</td>
<td>2 (5)</td>
</tr>
<tr>
<td>&gt;200,000</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Profession (n=31)</td>
<td></td>
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<tr>
<td>Business/marketing</td>
<td>4 (13)</td>
</tr>
<tr>
<td>Housewife</td>
<td>4 (13)</td>
</tr>
<tr>
<td>Housekeeping/janitorial</td>
<td>2 (6)</td>
</tr>
<tr>
<td>Nurse</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Receptionist</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Retired</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Other</td>
<td>10 (32)</td>
</tr>
</tbody>
</table>

Table 2. Familiarity of Focus Group Participants With CPR

<table>
<thead>
<tr>
<th>Familiar with CPR before focus group (n=41)</th>
<th>No. of Participants (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>36 (88)</td>
</tr>
<tr>
<td>No</td>
<td>5 (12)</td>
</tr>
<tr>
<td>Ever taken a formal CPR course (n=41)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28 (68)</td>
</tr>
<tr>
<td>No</td>
<td>13 (32)</td>
</tr>
<tr>
<td>Time since CPR course, y (n=28)*</td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>2 (7)</td>
</tr>
<tr>
<td>1–3</td>
<td>10 (36)</td>
</tr>
<tr>
<td>4–7</td>
<td>3 (11)</td>
</tr>
<tr>
<td>8–14</td>
<td>4 (14)</td>
</tr>
<tr>
<td>15+</td>
<td>5 (18)</td>
</tr>
<tr>
<td>No answer</td>
<td>4 (14)</td>
</tr>
</tbody>
</table>

Table 3. Key Barriers to Learning CPR in High-Risk Neighborhoods in Columbus, OH

<table>
<thead>
<tr>
<th>Major Themes</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>1. Cost (class and materials)</td>
</tr>
<tr>
<td>Information</td>
<td>1. Lack of understanding about what a cardiac arrest is and how CPR can save a life</td>
</tr>
<tr>
<td>Motivational</td>
<td>1. Personal health concerns</td>
</tr>
</tbody>
</table>

CPR indicates cardiopulmonary resuscitation.
Table 4. Key Barriers to Performing CPR in High-Risk Neighborhoods in Columbus, OH

<table>
<thead>
<tr>
<th>Major Themes</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of legal consequences</td>
<td>1. Fear of lawsuit</td>
</tr>
<tr>
<td></td>
<td>2. Misunderstanding of Good Samaritan laws</td>
</tr>
<tr>
<td></td>
<td>3. Age of cardiac arrest victim (adult performing mouth-to-mouth on child)</td>
</tr>
<tr>
<td>Emotional disconnection from community</td>
<td>1. Lack of community cohesion</td>
</tr>
<tr>
<td></td>
<td>2. Questioning if other residents would stop to assist</td>
</tr>
<tr>
<td>Knowledge</td>
<td>1. Unsure of how and when to perform CPR</td>
</tr>
<tr>
<td></td>
<td>2. Confusion from frequent CPR guideline changes</td>
</tr>
<tr>
<td></td>
<td>3. Fear of doing it incorrectly</td>
</tr>
<tr>
<td>Risk to personal health</td>
<td>1. Administering mouth to mouth to a stranger</td>
</tr>
<tr>
<td></td>
<td>2. Unsafe setting</td>
</tr>
</tbody>
</table>

CPR indicates cardiopulmonary resuscitation.

really can’t get to them, and you may not have the means in order to get to them.”

In addition, participants believed that paying someone to care for their children during the CPR course was an additional financial barrier because two thirds of the focus group participants made <$20,000 per year.

Informational Factors
There was consensus among the focus group participants that many community members did not know what a cardiac arrest was or the importance of CPR in saving a life.

“I don’t look at this community, or any community, you know, being stereotyped as okay, they’re not going to do CPR; they’re not going to help. Of course, I see the reality in everything that’s been said, but most of the time, it’s the lack of knowledge or the lack of education. The lack of education, knowing about CPR, is why you might not do it.”

Multiple participants also mentioned that they used the Internet to obtain information about CPR; however, they believed that many of their neighborhood residents did not have access to computers or other technology (eg, smartphones) that would allow them to obtain this information online. Participants stated that many times there was a lack of advertising about upcoming CPR trainings, most of which were not held in their community and were difficult to access. One person stated,

“Well, another thing is if, you know, there was more classes where people would be more aware of what to do, they won’t be as afraid to try and save somebody.”

Finally, language was also perceived as a potential barrier because focus group participants did not believe that there were many CPR resources available for people who did not speak English as their primary language.

Motivational Factors
Focus group participants reflected that certain factors might be associated with neighborhood residents not learning CPR. Personal health issues, such as difficulty with mobility, fear of hurting oneself, or not being able to adequately provide chest compressions, could be perceived as motivators for older people to not learn CPR. Respondents emphasized that programs have to explicitly find ways to motivate people to come. In addition, many CPR courses were expensive, so there may actually be a financial disincentive to learn CPR:

“What I find is a lot of times is you don’t get people to show up unless there is some motivator. There’s got to be an incentive or they just don’t come. The interest just remains low.”

There was also the perception that in the face of multiple competing priorities, learning CPR was not a high priority when people were already struggling to make ends meet on a day-to-day basis. If CPR was not a job, educational, or driver’s license requirement, participants believed that people would not be motivated to learn.

Barriers to Performing CPR
Fear of Legal Consequences
Focus group participants were fearful of being sued if they performed CPR and had little knowledge of Good Samaritan laws and how those would apply in certain situations (eg, mouth-to-mouth CPR on child). Multiple participants in each of the 6 focus groups were afraid of the legal consequences associated with someone doing CPR. For example, 2 participants in a group stated the potential consequences of not performing CPR if a person was trained,

(Participant No. 1) “Now, there is a reverse to that. If somebody is in trouble and you have your certification and you don’t stop to help them.”

(Participant No. 2) “Then you can be arrested.”

(Participant No. 1) “You can get in some trouble. That might be a deterrent, too, why people don’t take the classes and learn how to do CPR, because they don’t want to be liable.”

There was also the perception that doing CPR incorrectly could kill the person who has had cardiac arrest and that then the person doing CPR would be blamed for the death:

Table 5. Key Facilitators to Learning and Teaching CPR in High-Risk Neighborhoods in Columbus, OH

<table>
<thead>
<tr>
<th>Major Themes</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family/self-preservation</td>
<td>1. Save a life of family member (especially children)</td>
</tr>
<tr>
<td></td>
<td>2. Save one’s own life by learning and teaching others</td>
</tr>
<tr>
<td></td>
<td>3. Tie into basic first aid to assist in traumatic arrest situation</td>
</tr>
<tr>
<td>Combined CPR and first aid training attributable to violence in community</td>
<td>1. Cardiac arrest more likely to be traumatic than cardiac</td>
</tr>
<tr>
<td></td>
<td>2. Build social capital and potentially lower violent crime in the community</td>
</tr>
<tr>
<td>Economic incentives</td>
<td>1. Material goods (gift cards, food)</td>
</tr>
<tr>
<td></td>
<td>2. Certification card</td>
</tr>
<tr>
<td></td>
<td>3. Job skill</td>
</tr>
<tr>
<td></td>
<td>4. No fees to learn CPR</td>
</tr>
<tr>
<td></td>
<td>5. Academic credit</td>
</tr>
</tbody>
</table>

CPR indicates cardiopulmonary resuscitation.
“Another reason a lot of people don’t do CPR on somebody—because that’s fear of a lawsuit. I mean, if you kill somebody, they can blame it on you for not doing it right.”

Participants were also afraid of possible consequences of hurting someone by pressing too hard and possibly puncturing a lung. This fear may be an important barrier to doing CPR.

“What kind of liability does the lay person have if they see someone collapsed and they try to do CPR on them, and say they do crack a rib and puncture a lung? Jimbo ain’t going to be able to sue me, is he?”

There was also concern about the age of the victim, particularly if a child or infant sustained an arrest. Participants felt that others could perceive this situation as a person potentially trying to inappropriately touch a child.

**Emotional Disconnect From Community**

In general, focus group participants stated that they did not know many of their neighbors and had concerns about how well the community was connected. Participants even questioned whether a neighborhood resident would stop to assist a person in a time of need. For example, 1 woman stated,

“You’re not going to see nobody perform CPR out here. When someone witness[es] something, they’ll pull out their cell phone and take pictures. They may put it on YouTube or Facebook, but they’re not going to perform CPR.”

Another participant echoed these feelings and identified a possible solution.

“This is the ‘me’ generation now, not a ‘we’ generation. If we can reverse that, if we can reverse the generation from a ‘me’ generation back to a ‘we’ generation, then more people will know CPR, more people will want to learn CPR, and more lives will be saved.”

**Knowledge**

Focus group participants voiced some main knowledge barriers to performing CPR. These included lack of knowledge about how and when to perform CPR and rapidly changing CPR guidelines, leading to confusion and fear of doing CPR incorrectly. One participant commented on the confusion associated with rapidly changing CPR guidelines,

“And I think, with the frequent changes—I think that’s the biggest thing I heard from the community, why they are always changing things, you know. Why can’t they keep it the same? Because you teach them one way two years and then the next year it’s changed to something different. So, the last class I taught, they were like well, why are they changing it from ABC to CBA? They’ve been doing ABC forever, you know. So now it’s CBA so now they’re confused, you know, of what to do.”

Although only a minority of focus group participants had actually performed CPR, there was a consensus that people would feel panicked if they had to do CPR on a person. Even participants who had been trained in CPR voiced concerns about the ability to act in the setting of a cardiac arrest because of fears of performing CPR incorrectly.

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**Emotional Disconnect From Community**

In general, focus group participants stated that they did not know many of their neighbors and had concerns about how well the community was connected. Participants even questioned whether a neighborhood resident would stop to assist a person in a time of need. For example, 1 woman stated,

“You’re not going to see nobody perform CPR out here. When someone witness[es] something, they’ll pull out their cell phone and take pictures. They may put it on YouTube or Facebook, but they’re not going to perform CPR.”

Another participant echoed these feelings and identified a possible solution.

“This is the ‘me’ generation now, not a ‘we’ generation. If we can reverse that, if we can reverse the generation from a ‘me’ generation back to a ‘we’ generation, then more people will know CPR, more people will want to learn CPR, and more lives will be saved.”

**Knowledge**

Focus group participants voiced some main knowledge barriers to performing CPR. These included lack of knowledge about how and when to perform CPR and rapidly changing CPR guidelines, leading to confusion and fear of doing CPR incorrectly. One participant commented on the confusion associated with rapidly changing CPR guidelines,

“And I think, with the frequent changes—I think that’s the biggest thing I heard from the community, why they are always changing things, you know. Why can’t they keep it the same? Because you teach them one way two years and then the next year it’s changed to something different. So, the last class I taught, they were like well, why are they changing it from ABC to CBA? They’ve been doing ABC forever, you know. So now it’s CBA so now they’re confused, you know, of what to do.”

Although only a minority of focus group participants had actually performed CPR, there was a consensus that people would feel panicked if they had to do CPR on a person. Even participants who had been trained in CPR voiced concerns about the ability to act in the setting of a cardiac arrest because of fears of performing CPR incorrectly.

“My grandmother collapsed in her home and my uncle works for Ohio State, and he’s ACLS certified trained. But he froze because it was his mom, you know what I mean? So even if you do have the training, I pray to God I never have to use mine, and in the 13 years I’ve done my job, I’ve never had to use it. But I’m always on pins and needles, but you never know. It’s scary.”

Participants believed that such uncertainties, combined with fear of legal consequences to performing CPR, could be detrimental and undermine a bystander’s desire to perform CPR.

**Risk to Personal Health**

Focus group members described how important personal health was in their decision to not perform CPR. One of the most common barriers was the fear of breathing into a stranger’s mouth:

“But it is a gross factor, you know. If you still had to do the, you know, mouth to mouth, you know, how this airborne illnesses and you know, not everybody wants to place their mouth on another person.”

There was also a potential to risk one’s own personal safety to help someone else. This quote illustrates the residents’ fears that stopping to help someone on the street could potentially place them in an unsafe situation (eg, being robbed or shot). One neighborhood resident stated,

“I mean, I don’t know if it’s relevant in other neighborhoods, but in this one, I’ve walked down the street and seen people laying in the alley and I’m like, are you ours? How do I know if I need to go forward? I’d be looking around to see who might set me up.”

**Incentives to Learning and Performing CPR**

**Family/Self-Preservation**

The focus group participants believed residents would be more inclined to learn and perform CPR if they could see how it would be directly beneficial to their own family and friends. One woman in the group stated that this was a duty of parents and adults to protect the welfare of their children and other loved ones:

“Let’s now focus on your family, your peeps, your kids, your grandkids, your mom, your dad, your grandma, your grandfather. Those are the type of people you are going to bend over backwards and going to try to save. Those are the type of people you are going to do more than call 911.”

Another mother spoke about her personal experience teaching her children to perform CPR as a means of self-preservation,

“Well, me being a ten-year dialysis patient, I’ve taught my girls to do CPR, and my oldest girl—she’ll be sixteen this year, when she was about seven, she had to perform CPR on me because I was at work and I came home early, and I just got real, real dizzy and I just passed out. So by her knowing what I taught her, she saved my life.”
Combined CPR and First Aid Training Attributable to Violence in Community

Participants stated that tying CPR training into a person’s ability to save a life or being more prepared could be important reasons for a neighborhood resident to learn CPR. Combining CPR and first aid training would be beneficial in their neighborhoods because of the high crime rate and incidence of cardiac arrest attributable to violent crimes.

“Cardiac arrest doesn’t just happen with heart attacks; cardiac arrest happens with people being wounded; people losing blood and that kind of thing. Because there is fairly high-level of trauma in that part of town. It [CPR training] might have a little more appeal.”

In addition, by bringing people together in a neighborhood to learn CPR, a secondary benefit could be building social capital and potentially lowering violent crime in their communities.

“Learning CPR in this community, is crucial because I’m going to give you real talk. We have a lot of homicides and taking these CPR—learning CPR, that’s one way of lowering the 105 homicides that we had in this city last year.”

Economic Incentives

Focus group participants felt strongly that economic incentives, such as providing refreshments, child care, certification cards, and free CPR courses, would all facilitate high-risk neighborhood residents’ desire to learn and perform CPR.

“I just know this from experience, it’s hard to motivate people without incentives, so . . . like I said, depending on the population that you’re serving, and probably the population that need it the most, there would have to be some kind of incentive, be it food, whatever, to get people to even show up. I think in some of the upper echelon communities, I don’t think it would be that big of a deal to get people to show up. But then, again, [our culture] is just driven by things.”

Another participant echoed this statement,

“If we go pick up people, feed them, give them a free class, watch their kids, they might take the [CPR] class.”

In addition, obtaining personal gain through CPR training in the form of academic credit and job skills was also felt to be an important facilitator to learning and teaching CPR:

“When I was in high school, no matter how well I did in health, whether it was sex education or dissecting a frog, I had to take CPR and pass it in order to get a passing grade.”

Discussion

This is the first study to identify barriers and facilitators to learning and performing CPR in high-risk neighborhoods that comprised primarily black and lower median household income residents. Previous research has focused on why people do not do CPR, such as fear of doing it incorrectly,27,38 breathing into someone’s mouth,20,39 or litigation concerns.40,41 Our focus group participants identified barriers that are more upstream to even performing CPR, the reasons why people living in high-risk neighborhoods may not choose to even learn this life-saving procedure. The financial cost of CPR training, lack of information, and the fear of risking one’s own life were common barriers for learning and performing CPR and must be addressed in order to increase CPR provision in these neighborhoods.

Financial concerns were a factor in people learning CPR, as well as in motivating them to attend a CPR educational class. More than half of our participants had a self-reported household income of <$20,000 per year. With competing demands such as housing, food, and transportation, the cost for CPR training is not feasible for many of our focus group participants. As a result, there was strong sentiment from the groups that CPR education should be made available at no cost in order to increase the numbers of people who are trained in CPR. Incentives were also perceived to be important facilitators for having people in high-risk neighborhoods learn CPR. Participants believed that free transportation to and from the training (eg, bus tokens, etc), child care, food, and gift cards would motivate people to attend a CPR class. In addition, combining the CPR education with educational credit, marketing it as a potential job skill, and combining this with driver’s license requirements were all identified as possible ways to increase CPR education in these neighborhoods.

Another major theme identified by our focus group participants as a reason for low performance of CPR was the lack of information available about the signs of an OHCA, value of CPR, and fear of performing CPR incorrectly. Multiple focus group participants stated that there was a general lack of knowledge about CPR and OHCA in their neighborhoods. This is consistent with a prior study that identified important gaps in people’s ability to recognize an OHCA event.42 The American Heart Association changed its guidelines for bystander CPR to hands only in 200843; however, the majority of focus group participants were unfamiliar with this change. Although the participants stated that hands-only CPR would allay some of the common fears of breathing into one’s mouth, fear of infection, or being perceived as doing something inappropriate (eg, man breathing into mouth of woman or child), there was confusion and distrust associated with rapid guideline changes. As a result, the groups stressed the importance of using local media (eg, church-based radio stations, neighborhood-based newspapers, news broadcasts, etc) to reach their residents and explain the rationale behind the guideline changes. Participants indicated that having leaders from within the community advocating for and disseminating this information would increase the likelihood of actually reaching the target populations and overcome the skepticism surrounding guideline changes. Tying these trainings to saving the life of one’s own family and friends and making the training personal would be an important method for motivating people to attend a training.

Finally, there was a major theme of risking one’s own life to save another’s in our focus groups. Many of the participants expressed their fears of intervening or stopping to help someone because of the concerns about risking their own
lives. This distrust of one another and safety concerns have been seen in other areas of community-based education surrounding gang violence and crime as well. Although many people voiced the desire to help others, there was a suspicion that the person could be faking it so that they could rob or even kill the person who was trying to assist. Consistent with prior literature, this lack of trust in one another, although understandable in high-crime neighborhoods, can further contribute to a neighborhood environment that promotes a failure to help one’s own neighbors.

The underlying theme of violence needs to be explored in detail. It may be that in high-crime areas, personal safety may be a complex topic that should be addressed with people who are learning CPR. In addition, participants indicated that many of the cardiac arrest victims they were most likely to encounter were more likely to have had a cardiac arrest because of trauma than medical issues. As a result, they recommended that more people in their neighborhoods would be motivated to attend CPR training if it were done in conjunction with basic first aid. Incorporating both types of training into a 1-hour educational session would be a huge draw to the community because violence and traumatic injuries were more applicable to the day-to-day lives of high-risk neighborhood residents than simply just cardiac arrest of medical pathogenesis.

A core concept we discovered through our research was a heightened awareness of the underlying pressures and concerns that high-risk neighborhood residents have when choosing to learn and perform bystander CPR. Beyond the financial, safety, and informational concerns, there are also other barriers that must be addressed if community-based CPR trainings are going to be effective in reaching this target population. Although we have begun to build a foundation for identifying what these factors are that drive people to acquire CPR as a skill, future research still needs to be conducted to better understand how this may be similar or different in other populations.

There are some limitations to this study. First, this was an exploratory, qualitative study to help understand barriers and facilitators to learning and performing bystander CPR in high-risk neighborhoods. There were 2 purposes to the study: to generate hypotheses that could be tested quantitatively in future studies, as well as building the foundation for a theoretical framework in which we begin to understand why certain target populations do not learn and perform CPR, with the eventual goal of creating community-based interventions that can specifically address common barriers. Given that little prior research has been conducted in this area, we felt that qualitative methods would be an important first step in developing a better understanding of this phenomenon. In addition, future research needs to be conducted in other target populations to assess whether the hypotheses generated by this study, as well as the foundational work for the theoretical framework, are applicable.

Second, we had a small number of participants. However, the individuals we interviewed were from the target areas (North Linden, South Linden, and North Central), primarily black, and the majority had household incomes <$20,000 per year. It is, of course, possible that additional focus groups would elicit newer information; however, the team also felt that a saturation of themes was obtained in the process of analyzing the 6 focus groups. In addition, 68% of the participants had participated in a formal CPR training course in the past. This may mean that our study sample is potentially more knowledgeable about CPR than the general public. Although the participants provided key insights into barriers and facilitators to learning and performing CPR, a larger study with participants who have less experience with CPR might discover additional detail and variation. Third, there may also be some selection bias in the sample, as the focus group participants were all recruited from the area by community liaisons who lived and worked in the neighborhoods. In addition, we chose to use 3 sampling techniques to ensure that our focus groups comprised residents from the target neighborhoods. There is a possible sampling bias; however, because we were most interested in reaching a target population living in the highest risk neighborhoods that are traditionally difficult to reach with standard CPR training, this was actually a strength of the study. Future research needs to be conducted to examine how the barriers and facilitators to learning and performing CPR elucidated in this research may be similar or different in both nonminority populations and other groups (eg, limited English proficiency, lower income neighborhoods in other cities). Groups were also recruited by community liaisons who lived in the area as to allow participants to feel more comfortable disclosing their thoughts on why bystander CPR prevalence was low in their neighborhoods.

Research shows that a person who has had a cardiac arrest in a primarily low-income black neighborhood is 2 times less likely to receive bystander CPR. This is the first systematic study to generate hypotheses as to why residents living in the highest risk neighborhoods are less likely to learn and perform CPR. Qualitative methods, using focus groups, done in partnership with local community-based organizations, were used to understand the underlying causes for this disparity. Future research needs to be conducted to evaluate implementation of community-based CPR trainings designed to overcome these important barriers, in conjunction with residents from the highest risk neighborhoods. These findings will have major policy implications as we move beyond the description of health disparities to finding solutions that will help us design effective programs to decrease health disparities in the provision of bystander CPR.

Sources of Funding
This study was funded by the University of Michigan Robert Wood Johnson Health and Society Scholars Program.

Disclosures
Dr Sasson is supported, in part, by awards from the Emergency Medicine Foundation and American Heart Association. Dr Haukoos is supported, in part, by an Independent Scientist Award (K02 HS017526) from the Agency for Healthcare Research and Quality (AHRQ) and an Investigator-Initiated Grant (R01 AI106057) from the National Institutes of Health. Dr Heisler is supported, in part, by the Veterans’ Administration DM-QUERI grant, Robert Wood Johnson Clinical Scholars Program, and from the National Institute of Diabetes and Digestive and Kidney Diseases (P30DK092926). The other authors report no conflicts.
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Barriers and Facilitators to Learning and Performing Cardiopulmonary Resuscitation in Neighborhoods With Low Bystander Cardiopulmonary Resuscitation Prevalence and High Rates of Cardiac Arrest in Columbus, OH
Comilla Sasson, Jason S. Haukoos, Cindy Bond, Marilyn Rabe, Susan H. Colbert, Renee King, Michael Sayre and Michele Heisler

_Circ Cardiovasc Qual Outcomes_. 2013;6:550-558; originally published online September 10, 2013;
doi: 10.1161/CIRCOUIMES.111.000097

_Circulation: Cardiovascular Quality and Outcomes_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 1941-7705. Online ISSN: 1941-7713

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Supplemental Material

Interview Guide (Appendix)

Thank you for agreeing to participate in this focus group today. This study is being done with The Ohio State University and University of Michigan. We are trying to understand how many people are trained in cardiopulmonary resuscitation or CPR and how to get more people interested in learning about CPR. CPR includes pressing hard and fast on the center of the chest of someone who has suddenly collapsed in cardiac arrest. Based upon what we learn in this study, we will work closely with your community to increase the awareness of the lifesaving value of CPR. The focus group and interview will take between 60 minutes-2 hours depending on the discussion. If at any time you feel uncomfortable or do want to answer a question, it is ok to do so. Your name will not be identified in any reports or presentations. Remember, you may refuse to answer any questions that you do not want to answer.

1. Opening
   a. Tell us your name and where you are from.

2. Introductory (10 minutes total)
   a. Have you ever seen someone fall down and stop breathing? Think about that. What did you do when that happened? What did you see your neighbors or other people in your community do when that happened?

3. Transition (Approx 10 min total for this section)
   a. Give me some more information about what cardiopulmonary resuscitation (CPR) is and what is it that CPR is doing?
   b. Have you or anyone else in your community ever seen someone do CPR? (probe: If so, who and what were the circumstances)?
   c. Tell me what you remember about CPR? Whether you have done it or seen someone else do CPR. (probe: If so, why did you decide to perform CPR? If you did not do CPR, why did you not perform CPR?)
   d. Describe the circumstance or the characteristics of the person who you performed CPR on? [probe for differences between in own neighborhood and other places and based on race or other characteristics]

4. Key (Approx 80 min total)
   a. What would be the obstacles that would make people in your community not do CPR? What might make it easier for people in your community to do CPR?
   b. What is your understanding of hands only CPR? (If no one has heard of it, go straight to DVD and play hands only CPR)
   c. How did you hear about this?
   d. (Bring out CPR Anytime kit) Has anyone ever seen or used one of these? (Play the first 8 minutes of the CPR Anytime kit)
   e. Now that you have seen hands only CPR, would this affect your likelihood of doing CPR? Why or why not?
f. (Then have group practice on manikin). What do you make of this kit? (Probe: how do you feel about the people in the video? How does this training video make you feel? Would you feel comfortable performing CPR after this training?)

g. What would make you more likely to take this home and teach your family members?

h. What would make someone in your community decide to take CPR training?

i. How can we best work together to get the message and trainings out to your communities (write things down on a flipchart)?

j. What do you see as the priority areas for your neighborhood right now? Do you see CPR training as being a high enough priority for this to be implemented in your area? Why and why not?

5. Ending

a. What else have we not covered? Have we missed anything?

Thank you for your time on this very important project. We will be giving out gift cards as a token of our appreciation of your time. If you have any questions or would like to stay involved in this project, please let us know. Thank you once again.