A Qualitative Study to Identify Barriers to Local Implementation of Prehospital Termination of Resuscitation Protocols

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Background—Despite the existence of national American Heart Association guidelines and 2 termination-of-resuscitation (TOR) rules for ceasing efforts in refractory out-of-hospital cardiac arrest, many emergency medical services agencies in the United States have adopted their own local protocols. Public policies and local perceptions may serve as barriers or facilitators to implementing national TOR guidelines at the local level.

Methods and Results—Three focus groups, lasting 90 to 120 minutes, were conducted at the National Association of Emergency Medical Services Physicians meeting in January 2008. Snowball sampling was used to recruit participants. Two reviewers analyzed the data in an iterative process to identify recurrent and unifying themes. We identified 3 distinct groups whose current policies or perceptions may impede efforts to adopt national TOR guidelines: payers who incentivize transport; legislators who create state mandates for transport and allow only narrow use of do-not-resuscitate orders; and communities where cultural norms are perceived to impede termination of resuscitation. Our participants suggested that national organizations, such as the American Heart Association and American College of Emergency Physicians, may serve as potential facilitators in addressing these barriers by taking the lead in asking payers to change reimbursement structures; encouraging legislators to revise laws to reflect the best available medical evidence; and educating the public that rapid transport to the hospital cannot substitute for optimal provision of prehospital care.

Conclusion—We have identified 3 influential groups who will need to work with national organizations to overcome current policies or prevailing perceptions that may impede implementing national TOR guidelines. (Circ Cardiovasc Qual Outcomes. 2009;2:361-368.)

Key Words: heart arrest ▪ death, sudden

One hundred sixty-six thousand cases of out-of-hospital cardiac arrest (OHCA) occur each year, approximately 60% of which are treated by emergency medical services (EMS). Research has shown that, on average, 4 of 5 OHCA patients will not survive to hospital admission, and only 1 in 10 patients currently survives to hospital discharge. The EMS system of Seattle, Washington has consistently reported the best OHCA survival rates in the country, far exceeding the national average. In this system, rates of bystander CPR are quite high, and EMS providers focus on delivering early defibrillation and optimal advanced cardiac life support (ACLS) on-scene for up to 30 minutes in an effort to achieve return of spontaneous circulation (ROSC). If the patient does not respond, resuscitation efforts are ceased in the out-of-hospital setting in accordance with a local EMS termination of resuscitation (TOR) protocol. Seattle’s approach recognizes that the best way to achieve resuscitation and long-term survival is through optimal delivery of resuscitation efforts on-scene, rather than delaying treatment to rush the patient to the nearest Emergency Department.

Some physicians within the medical community have expressed apprehension that policies that permit prehospital TOR may lead EMS providers to not try as hard as they otherwise would, creating a “self-fulfilling prophecy.” However, Seattle’s experience belies this belief. Seattle’s protocol directs EMS providers to focus their efforts on the scene, rather than attempting to perform inadequate CPR in the back of a moving ambulance. Focusing on resuscitation efforts in the prehospital setting reduces the incidence and the attendant risks of high-speed transport, decreases the risk of occupational exposures to EMS providers, and reduces costs to the...
healthcare system. Decreasing the number of arrest victims with no chance of survival also decreases the opportunity costs sustained by other patients with treatable medical conditions.

To help EMS providers identify which patients will or will not benefit from further resuscitation efforts, both the International Liaison Committee on Resuscitation (ILCOR), European Resuscitation Council, and the American Heart Association (AHA) have developed guidelines for the ethical termination of unsuccessful resuscitations in the prehospital setting. In the United States, the AHA’s ACLS guidelines serve as a national guideline for the termination of resuscitation efforts in refractory OHCA. Recently, 2 TOR rules provided by Verbeek et al and Morrison et al provided validation of the existing AHA guidelines. Researchers propose that after a patient has had an appropriate resuscitation effort, if a patient does not meet 1 of 3 criteria or 5 criteria that suggest potential viability, resuscitation should be ceased in the out-of-hospital setting. These TOR rules have been validated by 3 large resuscitation study groups. Analyses applying TOR rules to more than 10,000 patients found that these rules would allow EMS providers to appropriately cease efforts in nearly half of all out-of-hospital cardiac arrests, while misclassifying less than 0.1% of survivors.

Despite the existence of international and national consensus TOR guidelines, many EMS agencies in the United States have adopted their own local or unique protocols. The estimated rate of adherence to the AHA guidelines at a local level is below 50%. Even with such compelling evidence, it is likely that local political and attitudinal barriers may hinder the adoption and implementation of protocols that enable emergency medical services providers to terminate resuscitation in cases of refractory out-of-hospital cardiac arrest.

**Methods**

**Study Design and Sample**

We conducted focus groups at the National Association of Emergency Medical Services Physicians (NAEMSP) meeting in January 2008. We chose to conduct focus groups, rather than administering a closed-ended survey, so we could gain a better in-depth understanding of how EMS systems currently handle TOR and the barriers to implementing national guidelines for TOR. Qualitative methods are oriented toward understanding, rather than measuring, phenomena. Because data collection is open-ended, research participants are free to express themselves in their own words. Through detailed in-depth analysis of the resulting data, these methods can uncover what takes place in complex health care environments. As such, they are appropriate for exploring issues that surround the local implementation of national AHA guidelines for TOR.

We conducted focus groups, rather than one-on-one interviews, to promote interactions among focus group participants and to allow participants to learn about other practice environments. Our goal was to identify barriers to implementation of national TOR guidelines, we determined that a focus group process would facilitate the comparing and contrasting of each participant’s own local issues with those of other participants.

Before the NAEMSP conference, a written communication that described the purpose of the focus groups was sent to the entire NAEMSP membership and invited their participation. From the respondents who agreed to attend our focus groups, we used a snowball sampling technique to recruit more leaders, from the EMS physicians, paramedics, EMS administrators, and nursing communities attending the conference, to participate in the focus groups. 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 was reached. Written informed consent was obtained from each participant for the audio taping of the groups. No financial incentives were offered to the focus group participants. The research protocol was approved by the University of Michigan Institutional Review Board and by NAEMSP.

Data Collection and Processing
Three focus groups were conducted at the conference, each group lasting 90 to 120 minutes. Four to 12 individuals participated in each group. The lead author on this study (C.S.) served as the moderator for all 3 focus groups, and the senior author (B.F.M.) assisted with 2 of the groups. The moderators used an interview guide (Appendix A) to elicit comments from the group related to perceived barriers and facilitators to local implementation of national TOR guidelines. This guide was created by the lead author (C.S.) and a qualitative research methodologist (J.F.), with input from the senior author (B.F.M.) and a national EMS expert. After each group interview about the general barriers to implementing TOR, the TOR rule proposed by Morrison et al was described, and feedback was obtained on the feasibility of implementing it in the participants’ communities. A transcription service was used to transcribe each focus group verbatim. Transcripts were stripped of personal identifiers.

Data Analysis
We used a qualitative content analysis 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) the development of explanations for the relations between themes. Initial or preliminary codes were created inductively from the transcripts. Two reviewers (C.S. and D.K.) read through each transcript independently and coded transcripts line by line. Through an iterative process, the 2 reviewers expanded and refined existing categories, and along with the qualitative methods expert, developed the final coding structure and definitions. Any disagreements were resolved by discussion between the coders and the qualitative methods expert. Codes were applied to the specific lines from each transcript to enable reorganization into categories (ie, financial incentives to transport) that could be attributed to a major theme (ie, payers). The 2 reviewers met to question, discuss, and document interpretations and findings. We used qualitative analysis software (NVIVO 7.0) to facilitate reorganization of data into codes, categories and themes.

Results
We created a model that organizes our findings on the barriers to local implementation of national AHA guidelines for TOR (Figure). Based on the perceptions of our focus group participants, we organized our findings into 3 stakeholder groups that affect public policy and 3 additional groups that operationalize local TOR protocol implementation. We will discuss the public policy stakeholder groups in this article.

The demographics of the focus group participants are included in Table 1. The majority were physicians (79.1%), served as EMS Directors (66.7%), and were from a wide variety of practice settings and locations. Almost one third of the EMS systems represented by participants do not currently have any TOR protocols for their EMS systems. The focus group participants were highly engaged and very well-versed on the issues of TOR in the local and national setting. Participants in all 3 focus groups were frequently surprised by the differences between local TOR protocols at the individual

![Figure. Model for barriers to local implementation of national TOR guidelines. Key public policy stakeholder groups are highlighted within the black box.](http://circoutcomes.ahajournals.org/issue)
EMS system level but also expressed verbal and nonverbal cues to acknowledge the similarities between the EMS systems. Throughout all three focus groups, the participants felt that the focus group process was useful in better understanding the issues surrounding TOR.

Our analysis identified 3 groups that may present barriers to the local implementation of TOR protocols: payers, legislators, and the community (Table 2). Quotations are provided in the text that elucidate and support each theme.

**Payers**

*Financial Incentives to Transport*

According to focus group participants, the current reimbursement structure supported by payers incentivizes EMS agencies to transport everyone, regardless of the low likelihood of survival or the inappropriateness of transport. One physician described the influence of such policies on EMS practice:

“One private service that I’ve worked with does not do field termination because they only get paid for transports.”

The federal reimbursement structure created by Medicare, which is modeled by private insurers as well, provides higher payments for the transport of patients to the emergency department as compared to ceasing resuscitation efforts in the out-of-hospital setting. This may financially “penalize” EMS agencies that provide maximal medical care in the out-of-hospital setting, but do not transport patients unless there is ROSC.

**Costs and Reimbursement**

EMS agencies are not reimbursed by payers for new technological advancements that research has shown can improve the morbidity and mortality associated with OHCA (ie, hypothermia). Because reimbursement is tied directly to the transport of a patient, EMS agencies are paid much less for TOR in the out-of-hospital setting as compared to patients who are transported to the hospital, regardless of the care delivered in the prehospital setting. An example from an East Coast EMS Medical Director shows that actual costs to the EMS agency are well below what is currently reimbursed by Medicare for a cardiac arrest that is not transported to the hospital:

“If you work them where they lay and leave them [terminate arrest in the field], you are expending a tremendous amount of money on... auto pulse band $100, easy IO [intraosseous line] $100, rescue pod $100. I mean that’s $300 per call and I have 300 of those a year.”

The perception within the focus groups was that this may actually incentivize some EMS agencies to transport unsuccessful OHCA to the hospital that could have had resuscitation efforts ceased in the prehospital setting.

Another major barrier cited by the focus group participants was the lack of information available on the costs of OHCA to the American healthcare system. More than half of the medical directors in the focus groups did not know how much they were reimbursed per patient because this information was very difficult to obtain and not readily available.

**Legislators**

*State Mandates for Prehospital Care*

There are variations in state laws that affect the local implementation of national guidelines for TOR. Because of the way EMS systems have been created and funded in the United States, they function independently based on local ordinances within state and county laws. According to participants, in 1 Southwest state, all patients in cardiac arrest must be transported via lights and sirens regardless of their chance of survival. In a Midwestern state, liability protection is only given to EMS agencies when they travel with their lights and sirens on. As a result, all cardiac arrests in that state were transported at high speed, potentially endangering pedestrians and the lives of the paramedics.

‘‘[In Midwestern state] We certainly have the legislature getting involved in making protocols sometimes because of special interest groups... The legislature got into the business of actually making EMS protocol. We have a mechanism for this in our
Many of the focus groups participants expressed their frustration in attempting to adopt scene-based protocols for out-of-hospital triage, treatment, and transport that are ultimately superseded by their legislators.

**Do-Not-Resuscitate Orders**

State and local legislators have complicated the validity of existing do-not-resuscitate (DNR)/do-not-intubate (DNI) orders by requiring varying levels of documentation before they can be honored by EMS providers. As a result, EMS providers have reported large variations in the validity and use of these DNR/DNI orders because of these local laws. In most systems, verbal orders by family members or medical providers that a patient’s wish is to be DNR/DNI are not considered “valid” unless there is state-issued “proof” of the patient’s DNR/DNI status. The requirements varied tremendously as to what was considered valid. For example,

“[In East Coast state] if you are in a nursing home, you do not need a state durable DNR. All you need is a physician order, and it can be on a prescription.”

“[In a Southwest state] it is totally different. They actually passed a law in the last legislative session that a paramedic can only recognize a state [issued] out-of-hospital DNR. He cannot recognize any other document.”

Some focus group participants noted that some states recognize medical jewelry that indicates a patient’s wish to be DNR. Some problems were identified with the use of medical jewelry, including a lack of physician awareness of this practice, patients not wearing the jewelry, and EMS providers’ failure to look for the jewelry or recognize its message in the heat of resuscitation efforts.

“We surveyed all the primary care doctors [in east coast city] and none of them even knew we had a bracelet and out of hospital DNR order. So, where are those patients going to get it?”

“I don’t know if we have any good data on it, but I’ll tell you a good portion of those DNR bracelets I have signed for are out there, they’re sitting on the refrigerator, they’re sitting on the bedside table, they’re sitting in the folder that came with all the paperwork. They’re not on the patient, so they’re legally not valid.”

**Community Members**

**Public Expectations About Survivability After OHCA**

According to one EMS medical director who primarily works in an urban area:

“Citizens choose their mortality by where they live.”

As cities grow and people move farther from downtown areas, the migration of city dwellers to more rural areas has created a shift in the public’s expectation of rural EMS system performance. Focus group participants perceived that community expectations for service (ie, response times) remain the same when people move out of cities into more rural areas. These expectations may be physically impossible in regions where response and transport intervals are long. An EMS physician, who works in a rural environment, stated the difficulties encountered with community member expectations:

“The hard part is the people who are moving in from the urban environment that are used to having the urban environment response . . . all of a sudden they are in our valley and it is ‘what do you mean you won’t be there in two minutes with your paramedics?’”

Focus group participants commented that community members may expect that an individual experiencing cardiac arrest, hours away from definitive medical care, has the same odds of survival as someone who lives 500 yards from the nearest fire station. Many of the focus group participants reported that their decisions to terminate or continue OHCA resuscitations in the out-of-hospital setting were based on the family members’ expectations for survival, rather than an empirical standard.

**Cultural Norms**

Cultural norms and expectations surrounding the end-of-life care become important when adopting guidelines for TOR outside the hospital. An EMS physician who worked on an Indian reservation remarked on the difficulties faced when attempting to terminate an arrest in the out-of-hospital setting:

“A barrier in the Nation, if a person does pass on in a house, that house is considered cursed, so no one can live there until someone blesses it . . . that’s often why they don’t want us to terminate [an arrest] because that means everyone has to move out.”

Family members’ reluctance to allow resuscitation efforts to be terminated affects both the use and reversibility of DNR orders. Multiple focus group participants said that family members have the ability to reverse a patient’s DNR order at the time of the cardiac arrest. Our participants expressed that the public’s expectation for the survival of OHCA are not realistic and that family members routinely wanted “everything done,” despite clear DNR orders from the patient. Conversely, 2 focus groups participants were able to honor a verbal DNR order from family members even when no written DNR order was available.

**Facilitators to Creating a Standard TOR Protocol**

Participants said that they look to national organizations such as the American Heart Association, American College of Emergency Physicians, National Highway Traffic Safety Association, and the National Association of EMS Physicians as the most important facilitators in overcoming barriers related to payers, legislators, and community members. On the national level, these organizations could work with legislators to change the legal and financial structures that currently favor transport over TOR, do not reimburse EMS systems for expensive new technological advancements, and have created highly variable DNR processes across states. On a local level, EMS agencies and hospitals, with the support of
national organizations, could be empowered to advocate for the removal of state mandates for the transport of cardiac arrest patients. At the community level, these national organizations can continue to emphasize the importance of prompt activation of 911 and the provision of bystander CPR, while presenting realistic expectations of cardiac arrest survivability.

Discussion

Although national guidelines for the termination of resuscitation exist and have a substantial body of evidence to support their use,27–34 adoption of these national guidelines into local TOR protocols has been slow and haphazard.35 Recent research by 3 different resuscitation study groups2,17,18 has identified criteria for TOR in refractory OHCA. The application of these criteria accurately predict, in the prehospital setting, that patients have no realistic hope of survival regardless of whether or not they are transported to the hospital. The TOR rules proposed by Verbeek et al19 and Morrison et al17 can be used by basic life support providers who are equipped with an automated external defibrillator. It allows for application in a variety of practice environments with variations in provider training. This research further strengthens the existing AHA guidelines; however, before these guidelines can be adopted nationwide, barriers to their local implementation must be overcome. Our qualitative study identified 3 key groups that will determine the success or failure of this effort: payers, legislators, and community members.

In a time of scarce healthcare resources, national TOR guidelines cannot be implemented locally until payers change their reimbursement structure to be transparent and policy-neutral. When a refractory cardiac arrest victim is transported to the emergency department, physicians, nurses, and technicians crowd into a resuscitation room for 20 to 30 minutes, to the emergency department, physicians, nurses, and technicians crowd into a resuscitation room for 20 to 30 minutes, compromising the care of other emergency department patients without benefiting the cardiac arrest victim. And in the end, the insurance company must not only pay the EMS fee, but the hospital and physician charges associated with a futile resuscitation effort. If payers (ie, Medicare) move toward a system that reimburses EMS agencies for appropriate care provided in the most appropriate setting, this may improve the use of ambulances without endangering the lives of bystanders and the driving public.10 An ideal reimbursement structure would be based on the amount of time spent caring for the patient, not just time spent transporting.36; and the use of appropriate technologies that improve outcomes.36,37 EMS agencies should also be reimbursed for determining objective signs of death, thereby avoiding futile resuscitation efforts and potentially hazardous high-speed transports.38

There is now a large evidence base for implementing national TOR guidelines at the local level based on the work of 3 separate resuscitation groups.2,17,18 National organizations and local EMS agencies now need to work directly with legislators to address current local and national laws that have mandated EMS care for OHCA. Changing the widely variable laws that govern EMS systems will require the cooperation of state and federal agencies.26 For example, our research has shown that some communities mandate transport of all OHCA patients to the hospital, whether or not there is any likelihood of benefit. As a result, implementing local TOR protocols may reduce unnecessary transports and enhance healthcare resource use by allowing hospitals to focus scarce resources on patients with treatable medical conditions.

Health policies in the United States are largely made on a state-by-state basis. Legislators will need to address the variability of state laws on DNR validity and use.39,40 Standardizing DNR orders on the national level by creating a registry of patients’ DNR wishes could have several benefits if implemented with careful thought and foresight.41,42 A national registry could incorporate the state models such as Oregon, that have been successful at making DNR orders accessible to EMS providers.43,44 This will increase the likelihood that a patient’s DNR wishes are respected, even in the setting of out-of-the hospital cardiac arrest.45 Improving physician knowledge of the DNR process46 should also reduce the burden on family members who are asked to make these decisions under stress or when they are unsure of their family member’s wishes.47 Most importantly, such a policy should reduce the number of patients with DNR/DNI orders who are subjected to the trauma of CPR because a “valid” piece of paper or jewelry was not readily available.48

Expectations for survival from OHCA must be addressed before national TOR guidelines are publicly accepted. The results of 1 study indicated that the public expects that half of patients with OHCA will survive an arrest.49 Another study of medical resuscitations portrayed in current television and film media showed that 67% of actors survived their arrest.50 In actuality, the median survival rate in the United States is closer to 7%.4 The sharp dichotomy between public expectation and the reality of OHCA survivability may contribute to the resistance felt by EMS providers when they attempt to terminate a futile resuscitation effort in the out-of-hospital setting. Public education campaigns that promote the importance of bystander CPR and prompt EMS care should emphasize that the goal is to resuscitate the victim on scene and achieve a return of spontaneous circulation, so they have the best possible chance of survival.

There are limitations to this study. This was an exploratory, pilot study to begin to understand the barriers to implementation of TOR at the local level. We had a small number of participants (n = 24) in the 3 focus groups. However, the individuals we interviewed practice in a wide variety of environments (suburban, rural, urban) and represented different levels of training and expertise (EMS provider, nurse, medical director). Attendees came from all 4 regions of the country with very different state legal environments. The experiences and concerns expressed by our participants were remarkably similar despite the disparate EMS systems they come from. Participants provided key insights into barriers to implementation of national guidelines, but a larger study may discover additional detail and variation. All 3 focus groups
suggested that the structured discussion in a qualitative study design allowed for the exploration of the intricacies of TOR protocols-development and implementation. It is possible that our data are biased toward a physician viewpoint, as the majority of our participants were EMS physicians who serve as the medical director for their systems. However, these viewpoints are vital to understand the issues, as EMS medical directors have the power to implement or oppose local protocols based on national guidelines. There may also be some selectivity bias in the sample, as the focus group participants were all attendees of a National EMS Physicians Association conference. These participants may be more up-to-date on the newest EMS research and therefore may be more inclined to support evidence-based practice. However, this is also a strength of the focus groups, as many of our participants are thought leaders in national EMS leadership positions. Their participation may have provided even greater insight into the national scope of TOR issues.

In 2006, the Institute of Medicine proposed that a lead governmental agency convene an expert panel to create a national set of model EMS guidelines for care.26 Before that happens, it may be useful to conduct qualitative studies such as this one to gain a better understanding of complex issues involved in guideline implementation. In addition, more cost–benefit research should be conducted to examine how shifting the focus of OHCA to the out-of-hospital setting may affect healthcare spending and utilization. Finally, research should be conducted to examine the feasibility of creating a national DNR/DNI system for EMS providers and emergency departments.

Terminating efforts in the setting of refractory OHCA is a complex emotionally-charged issue that has major legal and financial implications for America’s healthcare system. Two resuscitation rules that further strengthen the AHA’s guidelines for the termination of resuscitation in refractory OHCA16,17 have now been validated across multiple sites and can be used in a variety of practice environments by both basic and advanced life support providers equipped with an automated external defibrillator. Incorporating these 2 rules within the structure of the ACLS guidelines may eliminate the “gray” areas that exist in the current AHA guidelines for the cessation of unsuccessful resuscitations. Our focus groups offer an opportunity to open a national dialogue on the barriers and facilitators to local implementation of these national TOR guidelines. Addressing these concerns may foster an environment that optimizes prehospital care delivery and enhances overall rates of survival from OHCA.

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Disclosures

None.

References


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Appendix A: Interview Guide

Introduction: We are conducting focus groups with members of the EMS community to understand what the current process is for out of hospital cardiac arrest resuscitation. I’ll be asking you open-ended questions. There are no right answers. You are the expert about your thoughts and experiences, and I’m here to learn from what you have to say. This is a chance for you to talk in depth, and I encourage you to tell me as much as you can and use examples, because that is the kind of data that is the most useful for us in answering our research question. The focus group will last approximately 90 minutes.

1. Opening
   a. Tell us your name, where are you from, (get demographic info from registration form given in beginning)

2. Introductory
   a. (In bullet point format) What are the clinical characteristics of a patient who will have an unsuccessful resuscitation?

3. Transition
   a. Can you remember your own patient experience in which you knew that continuing resuscitation was not useful? (ask for detailed description)
   b. What goes through your mind when you are doing a resuscitation that is not going to be successful?
      i. Any feelings?
      ii. Any thoughts on what else you could be doing?
      iii. Are you approaching that patient different clinically or with the expenditure of effort?
   c. How are decisions made to terminate a resuscitation in the field or in the ED?

4. Key
   a. In our opinion, how difficult would it be to come up with a termination of resuscitation protocol for your entire community/state/nationwide? (compare and contrast based upon experiences/comments of participants)
   b. Jot down on this notecard, what the three most important barriers and the three most important facilitators to implementation of a national termination of resuscitation policy. (write down and then share with the group in flipchart form)
      i. Probes for barriers (consensus rule that all can agree upon, a rule that is generalizable to different geographic areas, financial, legal issues, non-standardized training for EMT’s and paramedics)
      ii. Probes for facilitators (standard training throughout the country for all EMT’s and paramedics, possibility for spending more time and resources on those patients who have increased chance of survival)
   c. Here is a rule that has been validated by two different registries, encompassing over 10,000 patients throughout Canada and the U.S. What are your thoughts on the criteria mentioned in this rule?
   d. Do you see this being able to be implemented in your area?
   e. How would you go about implementing this rule?
      i. What would you do?
      ii. Where would you start?
      iii. Who are your primary stakeholders?
      iv. What will make it more acceptable on the community level?
5. Ending
   a. What are the three most important barriers/facilitators to you?
   b. (Moderator will summarize the barriers/facilitators and action items of the
      participants). Is this an adequate summary?
   c. Have we missed anything?