Clinical question.

In communities where processes/guidelines are being implemented (P), does the use of any specific factors (I), compared with no such use (C), improve outcomes (eg. success of implementation) (O)?

Is this question addressing an intervention/therapy, prognosis or diagnosis? Intervention

State if this is a proposed new topic or revision of existing worksheet: new topic

Conflict of interest specific to this question

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? No

Search strategy (including electronic databases searched).

PubMed (“guideline(s) implementation”[textword]) AND (“community”[textword] or “communities”[textword]) AND (“CPR”[textword] or 
“Resuscitation”[textword] or “cardiopulmonary resuscitation”[textword] or “stroke”[textword]).

PubMed (“Heart Arrest”[Mesh] or “Resuscitation”[Mesh] or “emergency”[textword]) AND (“community guideline”[textword] or “community 
guidelines”[textword]) AND (“implementation”[textword]).

PubMed (“Heart Arrest”[Mesh] or “Resuscitation”[Mesh] or “emergency”[textword]) AND (“community guideline”[textword] or “community 
guidelines”[textword]) AND (“adherence”[textword]).

PubMed (“Heart Arrest”[Mesh] or “Resuscitation”[Mesh] or “emergency”[textword]) AND (“community guideline”[textword] or “community 
guidelines”[textword]) AND (“guideline”[textword]) AND (“success”[textword]).

Cochrane library (guideline implementation ):ti,ab,kw AND (community):ti,ab,kw

Cochrane library (resuscitation guidelines):ti,ab,kw AND (community ):ti,ab,kw

Cochrane library (CPR guidelines ):ti,ab,kw AND (community):ti,ab,kw

Cochrane library (stroke guidelines ):ti,ab,kw AND (community):ti,ab,kw

The years covered by the search: all years till 2009 October 06th for each database.

State inclusion and exclusion criteria

Inclusion Criteria
- Peer-reviewed manuscripts, primary focus were general population, prospective, retrospective studies, and case series included. Articles must 
have direct data of guideline/process implementation in community related to ACLS, BLS, cardiopulmonary resuscitation, heart arrest, stroke, or 
process/intervention in emergency healthcare.

Exclusion Criteria
- Abstract only reports, editorial or comment/discussion articles, case studies, survey, consensus, statement or summary articles.

Number of articles/sources meeting criteria for further review:

A combined 469 articles were identified in the initial search. This number was reduced by elimination of non-relevant articles.

Ten articles were found to meet the inclusion/exclusion criteria.

No relevant articles close to CPR, BLS, or cardiac arrest was found.
### Summary of evidence

#### Evidence Supporting Clinical Question

<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Evidence Quality:**
- **Good**
- **Fair**
- **Poor**

**Level of Evidence Codes:**
- A = Return of spontaneous circulation
- B = Survival of event
- C = Survival to hospital discharge
- D = Intact neurological survival
- E = Other endpoint

**Evidence Citations:**
- Ornstein (2004) 523
- Soumerai (1998) 1358
- Wright (2008) 80
- Khot (2007) 67
- Wojner-Alexandrov (2005) 1512
- Ellrod (2007) 106
- Read (2006) 638
- de Villiers (2007) 1833
- Han (2003) 793
- Jackson (2004) 1794

**Notes:**
- Italics = Animal studies
## Evidence Neutral to Clinical question

<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 2 3 4 5

### Level of evidence

- A = Return of spontaneous circulation
- B = Survival of event
- C = Survival to hospital discharge
- D = Intact neurological survival
- E = Other endpoint

Italics = *Animal studies*

## Evidence Opposing Clinical Question

<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 2 3 4 5

### Level of evidence

- A = Return of spontaneous circulation
- B = Survival of event
- C = Survival to hospital discharge
- D = Intact neurological survival
- E = Other endpoint

Italics = *Animal studies*
REVIEWER'S FINAL COMMENTS AND ASSESSMENT OF BENEFIT / RISK:

There is no relevant study closely related to “the levels of success” of CPR or resuscitation guideline implementation in communities with a specific intervention or factor versus without it. Current data lack of evident studies or trials focusing on the levels of success of community guideline implementation for CPR and its influence factors.

The ten studies listed above hardly meet all key points in this clinical question of (1) with an intervention versus with no such use, (2) in community population, and (3) success of guideline implementation. Problems of weak relevance or poor evidence in those studies included single-hospital-based or hospital-based, not in community population (Ellrodt, 2007, 106; Khot, 2007, 67; Read, 2006, 638; Wright, 2008, 80), or without control groups (de Villiers, 2007, 1833; Han, 2003, 793). Besides, most of them are not related to cardiopulmonary resuscitation (CPR) or cardiac arrest in communities. Two studies (de Villiers, 2007, 1833; Khot, 2007, 67) are related to shortened cardiac catheterization time, four (Ellrodt, 2007, 106; Khot, 2007, 67; Ornstein, 2004, 523; Soumerai, 1998, 1358) are related to heart failure or cardiovascular disease, five (Ellrodt, 2007, 106; Jackson, 2004, 1794; Ornstein, 2004, 523; Read, 2006, 638; Wojner-Alexandrov, 2005, 1512) are related to stroke management or prevention, one (Han, 2003, 793) is related to pediatric shock, and four (Ellrodt, 2007, 106; Khot, 2007, 67; Read, 2006, 638; Wright, 2008, 80) are related to inhospital guideline implementation.

Four studies may somewhat touch on this question. The study by Soumerai 1998 (community RCT) indicated working with opinion leaders and providing performance feedback can accelerate adoption of some beneficial AMI therapies. Secular changes in knowledge and hospital protocols may extinguish outdated practices. The study by Ornstein 2004 (community RCT) showed primary care practices that use electronic medical records and receive regular performance reports can improve their adherence to clinical practice guidelines for diagnoses of hypertension and blood pressure control. The study by Wojner-Alexandrov 2005 (before-and-after community study) showed a multiple level education program including paramedic, hospital, and community education would improve the implementation of stroke guideline. The study by Jackson 2004 (community study using concurrent controls) indicated educational program to general practitioners increase prescriptions of warfarin for stroke prevention in patients with AF in community.

The use of factors compared with no such use to decide, improve or enhance the success of guideline implementation in communities is hardly well studied, even in the fields of interest among CPR, public access defibrillation (PAD), BLS or ALS.

Acknowledgements: nil

Citation List

1. de Villiers JS 2007


Level of evidence: 4
Quality: Fair, supporting
Comments: a study in community, but no control groups (no comparison), showing that an intervention of a multidisciplinary prehospital diagnosis and transfer pathway resulted in D2B time within the recommended period of 90 minutes.

2. Ellrodt G 2007

Level of evidence: 3
Quality: Fair, supporting
Comments: a single-hospital based study, using retrospective controls. It showed multidisciplinary rounds (MDR), a patient-focused communication system integrating care delivered by multiple providers using concurrent feedback, redundancy, and rapid cycle improvement at Berkshire Medical Center, is a clinical quality-improvement implementation system that has driven sustained high-level performance in the American Heart Association’s GWTGs (Get With The Guidelines). MDR has improved coordination of care, been flexible, and facilitated rapid and sustained process improvement. Improvement in evidence-based cardiovascular processes for CAD, stroke and heart failure have been associated with improved in hospital AMI mortality and decreased overall community cardiovascular, AMI, stroke and heart failure mortality. MDR can be used by multiple organizations to drive care improvement.

3. Han YY 2003

Level of evidence: 4
Quality: Fair, supporting
Comments: retrospective case series analysis. It indicated early and aggressive resuscitation of pediatric-neonatal septic shock guideline by community physicians is associated with improved outcome.

4. Jackson SL 2004

Level of evidence: 2
Quality: Poor, supporting
Comments: Case-Control study, using concurrent controls without randomization. It indicated educational program increase prescriptions of warfarin for stroke prevention in patients with AF.

5. Khot UN 2007

Level of evidence: 3
Quality: Fair, supporting
Comments: retrospective controls (before-and-after study). Only measure the improvement in a hospital, not really in communities. However, it indicated the potential to facilitate and enhance the outcome (better D2B time) of implementation (emergency department physician activation of the catheterization laboratory) while extending this into the suitable hospitals in communities.

6. Ornstein S 2004

Level of evidence: 1
Quality: Fair, supporting
Comments: a community RCT study, with small number of practices. It indicated primary care practices that use electronic medical records and receive regular performance reports can improve their adherence to clinical practice guidelines for cardiovascular disease and stroke prevention (diagnoses of hypertension and blood pressure control).
7. Read SJ 2006


Level of evidence: 3
Quality: Fair, supporting
Comments: a hospital-based study in four regional hospitals, using before and after comparison, with small number of cases. It indicated stroke care pathways appear to improve the process of care.

8. Soumerai SB 1998


Level of evidence: 1
Quality: Fair, supporting
Comments: a community RCT study. It indicated working with opinion leaders and providing performance feedback can accelerate adoption of some beneficial AMI therapies. Secular changes in knowledge and hospital protocols may extinguish outdated practices. However, it is more difficult to increase use of effective but riskier treatments for frail elderly patients.

9. Wojner-Alexandrov AW 2005


Level of evidence: 3
Quality: Fair, supporting
Comments: a community study using retrospective controls (before-and-after study). It indicated a multiple level educational program including paramedic, hospital, and community education would improve the implementation of stroke guideline.

10. Wright SW 2008


Level of evidence: 2
Quality: Fair, supporting
Comments: only measure the initial impact in a hospital, using asthma as an example, not really in communities. Using concurrent controls for asthma example. High-level departmental support with dedicated personnel is necessary for the success of such a system. Internet site development for product storage has proven valuable.