Acknowledgement

- Philips Foundation
- Philips East Africa
- Ministry of health
- County Government of Kiambu, Embu and Garissa
Project Overview

Aim: The Project aims to improve preparedness for recognition, diagnosis, prompt and appropriate treatment for heart attack patients in 3 counties, namely: Kiambu, Garissa and Embu

Intervention:
• Development of STEMI guidelines, training of health workers and mentorship
• Equipping of facilities with ECGs and training
• Strengthening heart attack referral systems
• Educating the public on recognition of heart attack symptoms and appropriate care
• M&E for learning and policy advocacy

Project duration: 12 months (ending Oct 2021 (need for a no-cost extension to Dec 2021))
A collaboration between Heart Attack Concern Kenya, Philips Foundation and County Government of Kiambu, Embu and Garissa

Main purpose was to set out to chart and grade the level of preparedness for ACS care according to six constructs:

a) Presence of in-house protocols of care
b) Timely diagnosis
c) Appropriate monitoring and resuscitation
d) Timely delivery of antiplatelet and reperfusion therapy
e) Escalation and de-escalation processes
f) Availability of local expertise.
Objective

To carry out a situational analysis of select county hospitals including but not limited to healthcare worker skills and knowledge and the facilities’ resources and preparedness in ACS diagnosis and management.
Level of Preparedness of County Hospitals: Methodology

**Aim:** A multi-layered and cross-sectional survey of multiple county hospitals and facilities in Embu Kiambu and Garissa skills was used to assess these six constructs

**Phase 1**
- A multi-layered and cross-sectional survey of multiple county hospitals and facilities in Embu Kiambu and Garissa skills was used to assess these six constructs

**Phase 2**
- This was accompanied by independent verification of local resources of healthcare workers

**Area of Focus**
- Availability of ECG machines in the emergency department
- Availability of thrombolytics
- Rate of dissemination of cardiac enzyme results
- Rate of dissemination of cardiac enzyme results
- Existence of a STEMI and Cardiac protocol
- Referral networks were captured in a structured questionnaire.
<table>
<thead>
<tr>
<th>Level</th>
<th>Chest pain Protocol</th>
<th>ECG Availability</th>
<th>ECG Interpretation</th>
<th>Troponin Testing</th>
<th>Aspirin Loading (300mg)</th>
<th>Anti-platelet therapy Loading</th>
<th>Lysis Protocol</th>
<th>Thrombolysis</th>
<th>Monitoring</th>
<th>Reanimation protocols</th>
<th>Defibrillator</th>
<th>Referral System</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>In Situ and staff wellversed</td>
<td>Within 10 minutes</td>
<td>Dedicated system to ensure interpretation within 10 minutes of performance. Referral processes and on-site interpretation included</td>
<td>Result within 60 minutes</td>
<td>Can be given at on arrival and within 10 minutes</td>
<td>Can be given at on arrival and within 10 minutes</td>
<td>In situ and staff wellversed</td>
<td>Available at entry point. Can be given within 20 minutes of ECG</td>
<td>ECG and hemodynamics monitoring in ER and ICU/HDU level with spare available</td>
<td>Appropriate staff mandated to complete ACLS course. At least two per shift</td>
<td>Functioning and in ER and HDU</td>
<td>In situ and staff wellversed</td>
</tr>
<tr>
<td>4</td>
<td>Within 30 minutes</td>
<td>No dedicated system. ECGs can be reported via informal network within 30 minutes</td>
<td>Result within 120 minutes</td>
<td>Available and can be given within 30 minutes</td>
<td>Available and can be given within 30 minutes</td>
<td>Available at entry point. Can be given within 60 minutes of ECG</td>
<td>ECG and hemodynamics monitoring in ER and ICU/HDU level. No spare available</td>
<td></td>
<td></td>
<td></td>
<td>Staff not well versed</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>In place. Staff not well versed</td>
<td>Within 90 minutes</td>
<td>Within 90 minutes</td>
<td>Result within six hours</td>
<td>Available and can be given within 90 minutes</td>
<td>Available and can be given within 90 minutes</td>
<td>In place. Most staff not well versed</td>
<td>Not available at entry point or cannot be given in 60 minutes</td>
<td>ECG and hemodynamics monitoring in either ER or ICU/HDU but not in both level</td>
<td>Less than 30% staff on shift able to do this</td>
<td>One in hospital</td>
<td>Informal processes exist but not formalized</td>
</tr>
<tr>
<td>2</td>
<td>Within 3 hours informally</td>
<td>Within 3 hours</td>
<td>Within 12 hours</td>
<td>Available within 3 hours</td>
<td>Available within 3 hours</td>
<td>Available within 3 hours</td>
<td>Available within 3 hours</td>
<td>Only one of the above available, but not both, within the ER or HDU level areas</td>
<td></td>
<td>Process depends on person to person referral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not in place</td>
<td>Greater than 3 hours</td>
<td>Greater than 12 hours to get the result</td>
<td>Not available</td>
<td>Not available</td>
<td>Not in place</td>
<td>Takes more than three hours to access</td>
<td>Not in place</td>
<td>Not in place</td>
<td>Not in place</td>
<td>No process demonstrated</td>
<td></td>
</tr>
</tbody>
</table>

**Level 5:**
- Chest pain Protocol: In Situ and staff well versed
- ECG Availability: Within 10 minutes
- ECG Interpretation: Dedicated system to ensure interpretation within 10 minutes of performance. Referral processes and on-site interpretation included
- Troponin Testing: Result within 60 minutes
- Aspirin Loading: Can be given at on arrival and within 10 minutes
- Anti-platelet therapy Loading: Can be given at on arrival and within 10 minutes
- Lysis Protocol: In situ and staff well versed
- Thrombolysis: Available at entry point. Can be given within 20 minutes of ECG
- Monitoring: ECG and hemodynamics monitoring in ER and ICU/HDU level with spare available
- Reanimation protocols: Appropriate staff mandated to complete ACLS course. At least two per shift
- Defibrillator: Functioning and in ER and HDU
- Referral System: In situ and staff well versed

**Level 4:**
- Chest pain Protocol: Within 30 minutes
- ECG Availability: No dedicated system. ECGs can be reported via informal network within 30 minutes
- ECG Interpretation: Result within 120 minutes
- Troponin Testing: Available and can be given within 30 minutes
- Aspirin Loading: Available and can be given within 30 minutes
- Anti-platelet therapy Loading: Available at entry point. Can be given within 60 minutes of ECG
- Lysis Protocol: ECG and hemodynamics monitoring in ER and ICU/HDU level. No spare available
- Thrombolysis: | |
- Monitoring: | |
- Reanimation protocols: | |
- Defibrillator: | |
- Referral System: | |

**Level 3:**
- Chest pain Protocol: Within 90 minutes
- ECG Availability: Within 90 minutes
- ECG Interpretation: Result within six hours
- Troponin Testing: Available and can be given within 90 minutes
- Aspirin Loading: Available and can be given within 90 minutes
- Anti-platelet therapy Loading: In place. Most staff not well versed
- Lysis Protocol: Not available at entry point or cannot be given in 60 minutes
- Thrombolysis: ECG and hemodynamics monitoring in either ER or ICU/HDU but not in both level
- Monitoring: Less than 30% staff on shift able to do this
- Reanimation protocols: One in hospital
- Defibrillator: Informal processes exist but not formalized
- Referral System: |

**Level 2:**
- Chest pain Protocol: Within 3 hours informally
- ECG Availability: Within 3 hours
- ECG Interpretation: Result within 12 hours
- Troponin Testing: Available within 3 hours
- Aspirin Loading: Available within 3 hours
- Anti-platelet therapy Loading: Available within 3 hours
- Lysis Protocol: Only one of the above available, but not both, within the ER or HDU level areas
- Thrombolysis: |
- Monitoring: |
- Reanimation protocols: |
- Defibrillator: |
- Referral System: |

**Level 1:**
- Chest pain Protocol: Not in place
- ECG Availability: Greater than 3 hours
- ECG Interpretation: Greater than 12 hours to get the result
- Troponin Testing: Not available
- Aspirin Loading: Not available
- Anti-platelet therapy Loading: Not in place
- Lysis Protocol: Takes more than three hours to access
- Thrombolysis: Not in place
- Monitoring: Not in place
- Reanimation protocols: Not in place
- Defibrillator: No process demonstrated
- Referral System: |
Level of Preparedness of County Hospitals
<table>
<thead>
<tr>
<th>County</th>
<th>Hospital</th>
<th>Chest pain Protocol</th>
<th>ECG Availability</th>
<th>ECG Interpretation</th>
<th>Troponin Testing</th>
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<th>Monitoring</th>
<th>Resuscitation protocols</th>
<th>Defibrillator</th>
<th>Referral System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garissa</td>
<td>Garissa level 5</td>
<td>Not in place</td>
<td>Within 90 minutes</td>
<td>Within 3 hours informally</td>
<td>Result within 120 minutes</td>
<td>Available and can be given within 90 minutes</td>
<td>Available and can be given within 90 minutes</td>
<td>Not in place</td>
<td>Available within 3 hours</td>
<td>ECG and hemodynamics monitoring in either ER or ICU/HDU but not in both level</td>
<td>Not in place</td>
<td>One in hospital</td>
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<td>Garissa</td>
<td>Iftin level 4</td>
<td>Not in place</td>
<td>Greater than 3 hours</td>
<td>Within 3 hours informally</td>
<td>Result within 12 hours</td>
<td>Not available</td>
<td>Not available</td>
<td>Not in place</td>
<td>Takes more than 3hrs to access</td>
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<td>Not in place</td>
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<td>No process demonstrated</td>
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<tr>
<td>Embu</td>
<td>Embu level 5</td>
<td>Not in place</td>
<td>Within 90 minutes</td>
<td>Greater than 3 hours</td>
<td>Result within six hours</td>
<td>Available and can be given within 90 minutes</td>
<td>Not available</td>
<td>Not in place</td>
<td>Takes more than 3hrs to access</td>
<td>ECG and hemodynamics monitoring in either ER or ICU/HDU but not in both level</td>
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<td>Kiambu</td>
<td>Kiambu level 5</td>
<td>Not in place</td>
<td>Within 3 hours</td>
<td>Within 3 hours informally</td>
<td>Result within six hours</td>
<td>Available and can be given within 30 minutes</td>
<td>Not available</td>
<td>Not in place</td>
<td>Takes more than three hours to access</td>
<td>Only one of the above available, but not both, within the ER or HDU level areas</td>
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<td>One in hospital</td>
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</tr>
<tr>
<td>Kiambu</td>
<td>Kihara level 4</td>
<td>Not in place</td>
<td>Within 30 minutes</td>
<td>Reported via informal network within 30 minutes</td>
<td>Result within six hours</td>
<td>Available within 3 hours</td>
<td>Not available</td>
<td>Not in place</td>
<td>Takes more than 3hrs to access</td>
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Conclusion

A structured approach to diagnosing and managing ACS patients is needed. There is urgent need for resource mobilization, training of healthcare workers, provision of ECG, provision of thrombolytics and establishment of an elaborate referral network.
Thank You