BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (http://bmjopen.bmj.com/site/about/resources/checklist.pdf) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)  Characteristics, treatment, and in-hospital outcomes of STEMI patients in a metropolitan area of a developing country: An initial report of the extended Jakarta Acute Coronary Syndrome Registry

AUTHORS  Dharna, Surya; Andriantoro, Hananto; Purnawan, Ismi; Dakota, Iwan; Basalamah, Faris; Hartono, Beny; Rasmin, Ronally; Isnanijah, Herawati; Yamin, Muhammad; Wijaya, Ika Prasetya; Pratama, Vireza; Gunawan, Tjatur Bagus; Yuwana, Yahya Berkahanto; Suling, Frits RW; Wijaksono, AM Onny; Lasanudin, Hengkie F; Iskandarsyah, Kurniawan; Priatna, Hardja; Tedjasukmana, Pradana; Wahyumandradi, Uki; Kosasih, Adrianus; Budhiarti, Imelda A; Pribadi, Wisnoe; Wirianta, Jeffrey; Lubiantoro, Utojo; Pramesi, Rini; Widowati, Diah Retno; Aminda, Sissy K; Basalamah, M Abas; Rao, Sunil

VERSION 1 - REVIEW

REVIEWER  Sasko Kedev
University Clinic of Cardiology,
Skopje, Macedonia

REVIEW RETURNED  25-Apr-2016

GENERAL COMMENTS  Retrospective cohort study of STEMI registry as part of the developing STEMI network program. Focusing the prehospital care in the network is crucial in order to improve all the primary PCI metrics.

REVIEWER  Dr M Mitchell Lindsay
Golden Jubilee national Hospital
Clydebank
Glasgow
Scotland

REVIEW RETURNED  07-Jun-2016

GENERAL COMMENTS  The concept of ACS registries in developing countries is a vital and the importance illustrated by the authors. This is a large interesting registry which will trigger further improvements in locally delivered care. The main limitation is the incomplete nature of the data (only 26% of eligible patients were enrolled). This makes any generalisations or conclusions about change or improvements in locally delivered care impossible to derive. The authors should be congratulated on their drive to improve care but this issue needs to be addressed before publication.
The authors report the characteristics, treatment and in-hospital outcomes of STEMI patients in a metropolitan area of Indonesia (Jakarta) involving a catchment area of 11 million people. A retrospective analysis of a cohort of 1024 STEMI patients admitted in 56 centers is reported. Overall, 56% received reperfusion therapy. Those reperfused patients presented lower in-hospital mortality than non-reperfused patients. Academic centers performed primary PCI with shorter door-to-balloon times, higher use of manual thrombectomy and DES implantation than non-academic centers but with similar mortality.

Main comments:
- Given the impressive catchment area, it is surprising the low number of STEMI finally included in 56 centers taking into account that patients were consecutively included (n=1024). Please describe the inclusion period. If this is 1 year, that means that the incidence of STEMI is less than 100/million per year. Please elaborate on that. Maybe the retrospective nature of the analysis may infrareport the true incidence of STEMI.
- It is not clear how the authors define DTD and DI-DO times. I suggest follow the same definitions as per 2014 ESC/EACTS Guidelines on myocardial revascularization. DI-DO refers only to EMS or to non-primary PCI centers and should be ideally <30'. Here, the authors analyse DI-DO<180' and also include primary PCI centers. Conversely, DTB refers to primary PCI centers. And the FMCTB time may be analysed in both primary and non-primary centers. Results presentation and Figure 3, are not clear in this regard.
- The rate of non-reperfused patients arriving at primary PCI centers is very high (42%). The delay (>12h) could only explain 68% of them according to data from Table 2. Please explain the reason for that. This surely would be an area of improvement.

**GENERAL COMMENTS**

| REVIEWER | Manel Sabate  
| Hospital Clinic. Barcelona. Spain |
| REVIEW RETURNED | 11-Jul-2016 |

**VERSION 1 – AUTHOR RESPONSE**

Reviewer: 1
1. Retrospective cohort study of STEMI registry as part of the developing STEMI network program. Focusing the prehospital care in the network is crucial in order to improve all the primary PCI metrics.

Response: We thank the reviewer for the kind words of praise concerning this manuscript. This paper suggests that focusing the pre-hospital care in the network particularly in a developing country with a newly introduced STEMI network should be a major focus of care to improve the DI-DO time along with improvement of DTD time at PCI centers.

Reviewer: 2
1. The concept of ACS registries in developing countries is a vital and the importance illustrated by the authors. This is a large interesting registry which will trigger further improvements in locally...
delivered care. The main limitation is the incomplete nature of the data (only 26% of eligible patients were enrolled). This makes any generalisations or conclusions about change or improvements in locally delivered care impossible to derive. The authors should be congratulated on their drive to improve care but this issue needs to be addressed before publication.

Response: We thank the reviewer for the comments. We agree with the comment, and therefore we have put this as the main limitation of the study. The coverage described was the number of health centers participating in the registry (not patients coverage). At the time of analysis, only 26% of centers were participating in the registry. This registry was previously being done only in a single center, but since October 2014 we have expanded it to other centers. We are in the process of increasing the coverage that surely takes a longer time. Recently around 35% of centers have participated and we are trying to increase it further. On page 14, we have described the difficulties of motivating other centers to participate. Furthermore, although it is only covering 26% of centers in the region, but major secondary and tertiary hospitals which have the highest ACS cases have been participated, and therefore we are sure that it might reflect the true characteristics of the patients in the region very well. Other centers that are not participated yet are primary and secondary health care facilities with low numbers of ACS patients. We have re-phrased this issue in the limitation section.

Reviewer: 3

1. The authors report the characteristics, treatment and in-hospital outcomes of STEMI patients in a metropolitan area of Indonesia (Jakarta) involving a catchment area of 11 million people. A retrospective analysis of a cohort of 1024 STEMI patients admitted in 56 centers is reported. Overall, 56% received reperfusion therapy. Those reperfused patients presented lower in-hospital mortality than non-reperfused patients. Academic centers performed primary PCI with shorter door-to-balloon times, higher use of manual thrombectomy and DES implantation than non-academic centers but with similar mortality.

Main comments:
- Given the impressive cathment area, it is surprising the low number of STEMI finally included in 56 centers taking into account that patients were consecutively included (n=1024). Please describe the inclusion period. If this is 1 year, that means that the incidence of STEMI is less than 100/million per year. Please elaborate on that. Maybe the retrospective nature of the analysis may infrareport the true incidence of STEMI.

Response: We thank the reviewer for the comments. The STEMI network was newly introduced in the capital city (Jakarta) and it is the first system in the country that was built in 2010. Previously, there was no registry in the city, and JAC registry is the first ACS registry that was being performed only in a single center. But, since October 2014, we have tried to expand it to other centers in the region. The recruitment period of the current study was 8 months. We have added this information in the method chapter as suggested. The catchment area is 11 million, but we are still in the process of expanding the registry to other hospitals in the region and it takes a longer time. It should be differentiated between a report from a large catchment area with well-developed system of care and large catchment area with a newly introduced system of care.

2. It is not clear how the authors define DTD and DI-DO times. I suggest follow the same definitions as per 2014 ESC/EACTS Guidelines on myocardial revascularization. DI-DO refers only to EMS or to non-primary PCI centers and should be ideally <30'. Here, the authors analyse DI-DO<180' and also include primary PCI centers. Conversely, DTB refers to primary PCI centers. And the FMCTB time may be analysed in both primary and non-primary centers. Results presentation and Figure 3, are not clear in this regard.

Response: The system of care of AMI patients has different characteristics between developing and
developed countries. Therefore, the targeted DI-DO times at developed countries could not be
generalized to that of developing countries. A report from US (well-developed STEMI networking)
found that it was difficult to reach a DI-DO of <30 minutes (ref number 21). In developed countries,
patients will directly call an ambulance (through a hot line) to transfer them to the hospital, whereas in
our country, there is no specific numbers/call for the medical emergencies, and patients often
presented to the hospital directly by theirself, friends or family. We have presented the real world data
of a STEMI care in a developing country with a lot of barriers to perform a timely reperfusion therapy.
There are a lot of PCI centers in the region that cannot perform 24/7 primary PCI service, and in that
case the patient should be transferred to another PCI center. The time spent by the patient in the first
PCI center was also referred as door-in to door-out time (DI-DO). This DI-DO time at the first PCI
center will be used as the performance measures of the hospital. If FMC-to-balloon time was used in
this case, then we cannot specifically evaluate the first PCI center performance, since FMC-to-balloon
time included the time frame at the receiving centers. In this context, it is important to evaluate the DI-
DO time at the first hospital, since the cardiologist on duty is not available 24h at many PCI centers
due to limited numbers of cardiologist in the region. We have described this matter in the text.
According to our expertise, at this time, it is impossible to reach 30 minutes as the targeted DI-DO
times in our country with several barriers that were described in the text. The cut-off for prolonged DI-
DO time in this study is 180 minutes. It is based on our daily observation and it nearly reaches the
mean value of DI-DO times found in the study (186 minutes). We have rephrased the terminology of
DI-DO times in the text and added the reasons why we choose 180 minutes as the cut-off. We have
also re-designed Figure 3 for a better understanding. We thank the reviewer to highlight these issues.

3. The rate of non-reperfused patients arriving at primary PCI centers is very high (42%). The delay
(>12h) could only explain 68% of them according to data from Table 2. Please explain the reason for
that. This surely would be an area of improvement.

Response: We described the real data from a real world practice in a developing country like
Indonesia that built the STEMI network 5 years ago. There are still a lot of patients presented to PCI
center with an onset of >12h and there are also many patients that seek for medical help but then
refuse to receive reperfusion therapy due to financial problem, afraid of hospitalization, etc. We have
added these issues in the discussion chapter.

4. An awareness campaign may help improve delay of patients as demonstrated earlier ("Impact of
the "ACT NOW. SAVE A LIFE" public awareness campaign on the performance of a European STEMI

Response: We agree with this comment and we have added the reference to our reference list. We
thank the reviewer for sharing it. On page 11, we described the strategies to increase the reperfusion
rate in Jakarta, Indonesia. The Ministry of Health Republic of Indonesia will launch the national call
center (119) to improve the medical emergency service in the community. We have also added this
on page 11.

VERSION 2 – REVIEW

<table>
<thead>
<tr>
<th>REVIEWER</th>
<th>Manel Sabaté</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hospital Clinic- Barcelona, Spain</td>
</tr>
<tr>
<td>REVIEW RETURNED</td>
<td>19-Jul-2016</td>
</tr>
</tbody>
</table>

| GENERAL COMMENTS     | Most of the issues raised by this reviewer have been successfully addressed by the authors and the paper improved accordingly. My only final objection is to clearly acknowledge the main limitations of this Registry- namely, the fact that this cohort represents a |
selected population from the total number of patients suffering from a STEMI during the recruitment period. And also the retrospective nature of the study that surely introduces some bias and missing values.

VERSION 2 – AUTHOR RESPONSE

1. Most of the issues raised by this reviewer have been successfully addressed by the authors and the paper improved accordingly.

Response: We thank the reviewer for the comments.

2. My only final objection is to clearly acknowledge the main limitations of this Registry- namely, the fact that this cohort represents a selected population from the total number of patients suffering from a STEMI during the recruitment period. And also the retrospective nature of the study that surely introduces some bias and missing values.

Response: We agree with the comments and have added the issues on the limitation chapter.
Characteristics, treatment and in-hospital outcomes of patients with STEMI in a metropolitan area of a developing country: an initial report of the extended Jakarta Acute Coronary Syndrome registry


BMJ Open 2016 6:
doi: 10.1136/bmjopen-2016-012193

Updated information and services can be found at:
http://bmjopen.bmj.com/content/6/8/e012193

These include:

References
This article cites 21 articles, 9 of which you can access for free at:
http://bmjopen.bmj.com/content/6/8/e012193#BIBL

Open Access
This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Errata
An erratum has been published regarding this article. Please see next page or:
/content/6/9/e012193corr1.full.pdf

Topic Collections
Articles on similar topics can be found in the following collections
Cardiovascular medicine (822)
Health services research (1539)

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/
Correction: Characteristics, treatment and in-hospital outcomes of patients with STEMI in a metropolitan area of a developing country: an initial report of the extended Jakarta Acute Coronary Syndrome registry


Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/

BMJ Open 2016;6:e012193corr1. doi:10.1136/bmjopen-2016-012193corr1