PEER REVIEW HISTORY

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)	How health service delivery guides the allocation of major trauma patients in the intensive care units of the inclusive (Hub & Spoke) trauma system of the Emilia Romagna Region (Italy). A cross sectional study
AUTHORS	Chieregato, Arturo; Volpi, Annalisa; Gordini, Giovanni; Ventura, Chiara; Barozzi, Marco; Caspani, Maria Luisa Rita; Fabbri, Andrea; Ferrari, Anna Maria; Ferri, Enrico; Giugni, Aimone; Marino, Massimiliano; Martino, Costanza; Pizzamiglio, Mario; Ravaldini, Maurizio; Russo, Emanuele; Trabucco, Laura; Trombetti, Susanna; De Palma, Rossana

VERSION 1 - REVIEW

REVIEWER	David A. Spain Stanford University Stanford, CA
REVIEW RETURNED	13-Apr-2017

GENERAL COMMENTS	I believe there may be some important data presented but the manuscript needs significant editing for grammar. Also the data presentation is overly complex and could be simplified. For example, Table 1 is too long and difficult to decipher (is age breakdown into so many categories really required?). Also Tables 2 nd 3 could be simplified. Several abbreviations are used with defining them on first use.

REVIEWER	Mark Fitzgerald National Trauma Research Institute Alfred Health Melbourne Australia
REVIEW RETURNED	15-Apr-2017

GENERAL COMMENTS	The paper reports the distribution outcomes of a 'hub and spoke' trauma system developed in response to local societal, population density and geographical constraints. The findings are of particularly interest for Europe, East and Southern Asia. There are minor grammatical errors that need correction (e.g. 'Precipitation' as a Mechanism of Injury in Table 1). There are 2 aspects that if addressed would substantially improve the paper.

	The first relates to primary outcome. '...The aim of this study was to describe, ten years after the establishment of the Regione Emilia Romagna Trauma System, the access of patients with major trauma to the intensive care units (ICUs) in the different Trauma System and how the availability of neurosurgical facilities could had influenced this process....'. Trauma systems are driven by improvements in patient outcome. Although there is substantial clinical data tabulated, improvements in outcome is not addressed. The main issue appears to be '...Compared to the trauma model originally designed for the Emilia Romagna region, which envisaged Level II trauma centres as deputy for primary stabilization directly admitted of patients, the system seems instead to have been highly influenced by the presence of other hospitals with neurosurgical units...'. I recommend the authors further analyse the data presented to identify which patients or which units/centres are outliers - to identify issues that, if addressed, are likely to improve outcomes. Alternatively, it may be the geographical arrangement 10 years post introduction has provided the best outcomes. The second aspect relates to the extensive data presented. As inferred previously, this is far more than required to argue the primary hypothesis. The data could be analysed with regression to demonstrate how geography and secondary transfer id linked to outcome. Thank you for the opportunity to review this interesting data and discussion.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: David A. Spain
Institution and Country: Stanford University, Stanford, CA
Please state any competing interests: None declared

Please leave your comments for the authors below
I believe there may be some important data presented but the manuscript needs significant editing for grammar.
AUTHOR REPLY: Done

Also the data presentation is overly complex and could be simplified. For example, Table 1 is too long and difficult to decipher (is age breakdown into so many categories really required?). Also Tables 2 nd 3 could be simplified.
AUTHOR REPLY: The Table 1 was simplified taking out the classes of age. In our perception the table 2 and 2 can not be simplified.

Several abbreviations are used with defining them on first use.
AUTHOR REPLY: We tried to impove

Reviewer: 2
Reviewer Name: Mark Fitzgerald
Institution and Country: National Trauma Research Institute, Alfred Health, Melbourne, Australia
Please state any competing interests: None declared
Please leave your comments for the authors below

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There are minor grammatical errors that need correction (e.g. 'Precipitation' as a Mechanism of Injury in Table 1).
AUTHOR REPLY: We tried to improve

There are 2 aspects that if addressed would substantially improve the paper.
The first relates to primary outcome.
'...The aim of this study was to describe, ten years after the establishment of the Regione Emilia Romagna Trauma System, the access of patients with major trauma to the intensive care units (ICUs) in the different Trauma System and how the availability of neurosurgical facilities could had influenced this process....'.
Trauma systems are driven by improvements in patient outcome.
Although there is substantial clinical data tabulated, improvements in outcome is not addressed. The main issue appears to be '...Compared to the trauma model originally designed for the Emilia Romagna region, which envisaged Level II trauma centres as deputy for primary stabilization directly admitted of patients, the system seems instead to have been highly influenced by the presence of other hospitals with neurosurgical units...'.
I recommend the authors further analyse the data presented to identify which patients or which units/centres are outliers - to identify issues that, if addressed, are likely to improve outcomes. Alternatively, it may be the geographical arrangement 10 years post introduction has provided the best outcomes.
The second aspect relates to the extensive data presented. As inferred previously, this is far more than required to argue the primary hypothesis. The data could be analysed with regression to demonstrate how geography and secondary transfer id linked to outcome.
AUTHOR REPLY: We included a standardized analysis of data. From a statistical standpoint of view the results are not significative for difference but highly suggestive for clinicians who participated to the study. To fully respond to your question we could need some further years of data collections.
Thank you for the opportunity to review this interesting data and discussion.
AUTHOR REPLY: Thank you to you for having suggested to us to give a look to patients outcome

VERSION 2 – REVIEW

REVIEWER	David A. Spain, MD Stanford University
REVIEW RETURNED	08-Jun-2017

GENERAL COMMENTS	The authors have adequately addressed the reviewers' concerns