Author's response to reviews

Title: Sero-prevalence of rubella and associated factors among pregnant women attending antenatal care in Mwanza, Tanzania

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Author's response to reviews: see over
Please see response to reviewer’s comments below for the manuscript titled “Sero-prevalence of rubella and associated factors among pregnant women attending antenatal care in Mwanza, Tanzania”

<table>
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<td>1. Most of the pregnant women admitted to this study were in their 2nd or 3rd trimester. Is there a possibility that they may got rubella infection just before or at early stages of their pregnancies? Ideally, having more individuals in their 1st is better for reaching more precise conclusion. Having said that, for the data collected in this work, it is worth to report the follow-up of these women after delivery (to check if the infants were not infected with rubella. It will be also interesting to report the pregnancy outcome for the women who was tested positive for IgM antibodies.</td>
<td>With all due respect we agree with the comment. There is possibility that these women got rubella infection just before or at early stages of their pregnancies. Because there was no data in this area or in Tanzania this study was designed as crosectional study to provide baseline information to understand the magnitude of the problem in this particular group. As suggested follow up study involving pregnant women, child bearing age and adolescents will give more information and outcome of rubella infection in this setting. Due to this reason the woman with positive IgM was not followed. This has been stated as limitation of the study</td>
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<td>2. It is well know that the concentration of antibodies may drop below the recommended levels by increasing age. Do the authors recommend testing the women, who were immune in their 1st pregnancy, during the 2nd or 3rd ones? This need to be clarified.</td>
<td>Agree with the comment. This study was crosectional among pregnant women so from the design and results this recommendation cannot be made from the study</td>
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<td>3. With this high percentage of immunity, I found it difficult for the communities, as well as for the authorities, to accept the introduction of rubella vaccine. Emphasis on the possible outcomes on the negative cases should be clear in the manuscript.</td>
<td>With all due respect we agree with the comment but since there was no any documentation regarding rubella in this setting this study provides the baseline information about serostatus of rubella and associated factors in pregnant women only. We agree that follow up studies investigating the outcome of rubella infection in pregnant women and studies involving subjects in different age groups will give a clear picture which will guide the authorities to make decision regarding the introduction of rubella vaccine. If the authorities accept introduction of vaccine further studies should focus on evaluating the vaccine induced immunity</td>
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and naturally acquired immunity

| 4 | Figure 1 is not referred to in the text and is difficult to understand. Please clarify. | Revised, and the figure has been included |

Reviewer: Ching –Chiang Lin

General | This article described the sero-prevalence of rubella and its associated factors among pregnant women in Tanzania. The results show the prevalence of rubella IgG is about 92.6% and increases with age. However, the whole structure of manuscript is not well done. | Thanks the manuscript has been revised based on your recommendations |

1 | First paragraph in BACKGROUND, The authors’ description “…more than 100,000 children are born with CRS each year”. The authors need to check it again, because most of the developed countries have launched 2 doses of MMR. The CRS should be low. | Revised. We aimed to say in ‘developing’ countries and not ‘developed’ countries. |

2 | In data collection METHOD, the authors should provide the cut-off values of the IgG and IgM antibodies test. | Revised; cut off points have been provided |

3 | First paragraph of RESULTS, the description about demographic Characteristics of table 1 is not complete. | Revised: Important findings have been described in the text to show the reader how to interpret the results. We afraid to repeat the results as text |

4 | Second paragraph of RESULTS, the authors need to state all the statistical results in table 2, including Gravidity, Trimester, and Gestational age. | Revised as recommended |

5 | Second paragraph line 8 of RESULTS, the sentence “…as the age increases by one year, the risk of contracting rubella increases by 12%”. There is a ten-year interval between group 15-24 and 25-34. So the description is not correct. | With all due respect: We used 10 year interval category (15-24; 25-34; 35-44) just to describe recruited participants in table1. On logistic regression statistical analysis in table2 we measured the risk of contracting rubella by unit year increase. We used age as a continuous variable. This is more meaningful than using group. So the risk is compared between two consecutive ages, for example aged 15 and 16, 16 and 17,24 and 25,25 and 26,26, and 27 and so forth. So the risk increment is for one year. For 10 year increment it will be 120%(10 times) |

6 | The presentation and statistics in | For table 2 we used the statistician and |
Table 2 need to be checked by an expert in statistics. Furthermore, the authors need to state which variables they adjusted for.

This is the explanation. For maternal age, gravidity and gestation age we used them as the continuous variables and calculate the OR and 95% CI based on a unit increment of each factor. The residence, occupation and trimester were categorised, and we used urban residence, employed and trimester1 as the reference category in calculating the OR and 95% CI for risk estimation. Using predictor variables in continuous form brings precise information on risk estimation than converting them into categories. The adjusted OR and 95% CI obtained from logistic regression analysis, were adjusted for maternal age, residence, occupation, gravidity and gestation age.

7 There was n’t any description about figure 1 in your manuscript. The author can use this figures to know the infection rate of women in pregnant ages.

Revised: and include in the text

8 In DISCUSSION, authors should explain and discuss their significant finding (ex. trimester) and compare the results of sero-prevalence of rubella with other countries with or without vaccination campaign.

Discussed and compared: Other studies cited:
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<td>9</td>
<td>First paragraph of DISCUSSION, Children have two doses of vaccines at birth and preschool in most developed countries. So the authors’ description—“in many developed countries, most children acquire the infection at the age 5-14 years” is not the fact. Agree with reviewer comment the sentence was contradicting so was deleted.</td>
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<td>10</td>
<td>In CONCLUSION. The authors stated that screening of rubella infection during antenatal care and postnatal immunization of women at risk should be considered in Tanzania as the main strategy to minimize CRS. Postnatal immunization can’t prevent primiparous women from CRS. The author needs to review the policies in other countries and make an appropriate suggestion of strategy. For example, some of the developing countries started their vaccine programs by giving one dose of rubella vaccine for junior high school students to prevent CRS. Revised as suggested new recommendation has been given.</td>
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<td>11</td>
<td>First paragraph in BACKGROUND, People get immunity from natural infection or vaccination. The situation is different. So, the author should describe the sero-positivity of rubella in a country with or without vaccination program separately. Revised: The background give the range and is mainly from developing countries where there is no immunization programme.</td>
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<td>12</td>
<td>The data of the 2nd and 3rd trimester is different in table 2 and 3. Revised</td>
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Reviewer: Yavuz Uyar

1 Introduction and discussion sections should be extended by the authors. Especially, the risk factors and results should be discussed in the Revised
discussion. And also, neighbor countries’ results and their political approaches to rubella issues should be added, evaluate and discussed. What is the immunization approach of Tanzania about rubella, past – today -future?

| 19 | The authors have been found one IgM positive result. Is the result is confirmed by same or other methods (neutralization, avidity, PCR, etc..)? The positivity is important for pregnancy. The positivity should be discussed in the ms. What is her last status for positivity? IgG? avidity? PCR? | The result was confirmed by AXSYM anti-rubella IgM test |
| 20 | As a result, the manuscript has been evaluated and the article should be rewritten | The whole manuscript has been revised based on three reviewers recommendations |

Regards

Stephen E. Mshana

On behalf of authors