Reviewer's report

Title: Seroprevalences of Measles, Mumps, Rubella, Varicella-Zoster, HAV, HBV and HCV in Emirati Medical Students

Version: 3 Date: 1 August 2012

Reviewer: Natasa Berginc

Reviewer's report:

General Comments
The manuscript reports a study on seroprevalence of antibodies against some vaccine preventable and other transmissible infections (measles, mumps, rubella, varicella-zoster, tuberculosis, HAV, HBV, HCV, HIV) in medical students at a university setting in United Arab Emirates. The information is of major importance for local and regional public health. It provides scientific evidence, which would be used for local and regional guidelines and policy formation with the aim of protection of this specific group (medical students, future health care workers) against vaccine preventable diseases. The information is also of considerable importance for the field in general. It provides scientific evidence of immunization gaps/discrepancies in a population with high vaccination coverage. Therefore it indicates the need for surveillance of seroprevalence of antibodies against vaccine preventable diseases also in populations/countries with high vaccination coverage (especially in specific groups as for example health care workers, school teachers, etc...) in order to ensure adequate protection against vaccine preventable diseases for the population.

Generally, the study was well constructed. The research questions and study objectives were well defined; the methods used were appropriate to give valid results in order to collect information and derive conclusions.

However, there are some inaccuracies in the text that have to be amended/corrected before publication (see revisions). Results and conclusions of the study answer the research questions. Anyway, in order to improve and increase the relevance of the text, I strongly encourage the authors to extend the discussion (see revisions).

I addressed some spelling and grammatical issues and proposed some stylistic solutions to improve clearness of the text, but I still recommend some language revision before publication.

I highly recommend publication of the manuscript after amendments.

Please find below my revisions and proposals for improvement of the manuscript.

(Abbreviations:
Abstract/P3/S2=Abstract/Paragraph3/Sentence2; MINP=minor issues not for publication)

Compulsory Revisions (No. 1-12)
1. Abstract/P3/S2: The % seropositivity for rubella in the Abstract, Results, Table 1 doesn’t match. Please check and correct.

2. Abstract/P3/S3: According to instructions for test performance and results interpretation available to me (QuantiFERON-TB Gold (In-Tube Method), Cellestis, Doc. No. US05990301E, January 2009), results should be reported as positive, negative or INDETERMINATE. Therefore, please replace »weakly positive (equivocal)« with »INDETERMINATE« (i.e. in the way it is stated in instructions for test performance and results interpretation available to you).

3. Background/P3/S2: I couldn’t access reference No. 8 on the web (»Page not found«). Please, make sure that basic information on UAE national vaccination program is available. Please, indicate (also in References) a publicly available reference (for example: http://www.who.int/countries/are/en/; a page with relevant links) or add some basic information in the text. It is important to the interested reader to be familiar with this background information, when reading results of the study.

4. Results/P1/S1: Please, use »NONREACTIVE« instead of »seronegative«, according to manufacturer’s instructions for interpretation of results of the tests used (HIV Ag/Ab Combo, Abbott, 4J27).

5. Results/P2/General: Please, use »NONREACTIVE«/»REACTIVE« instead of »seronegative«/»seropositive«, according to manufacturer’s instruction for interpretation of results of the tests used.

6. Results/P3/S2: Please, use »NONREACTIVE«/»REACTIVE« instead of »seronegative«/»seropositive«, according to manufacturer’s instruction for interpretation of results of the tests used.

7. Results/P4/General: The % of positive/negative/equivocal rubella serology in Abstract, Results, Table 1 doesn’t match. Please check and correct.

8. Results/P7/S2: Please, use »INDETERMINATE« instead of »weakly-positive (equivocal)«, according to manufacturer’s instruction for interpretation of results of the tests used.

9. Discussion/P1/S1: Please, reconsider the evaluation of susceptibility for measles infection in the group of students tested (you stated approximately 25%): both groups, students with negative and equivocal anti-measles IgG results, are not effectively protected against measles (28% + 18% = 46%). If you anyway decided to consider only negatives, I suggest you approximate the value up (for example to 30%). The evaluation (you stated approximately 25%) is also inaccurate with Discussion/P7.

10. Discussion/P1/S4, S5: How were students with indeterminate results of QantiFERON-TB Gold test considered? The statement may also be inaccurate with Conclusion/P1. Please indicate/clarify.

11. Discussion/P8/S3: How were students with indeterminate result of QantiFERON-TB Gold test considered? The statement may also be inaccurate with Conclusion/P1. Please indicate/clarify.
12. Conclusion/P1/S5: Please, use »INDETERMINATE« instead of »equivocal«, according to manufacturer's instruction for interpretation of results of the tests used.

Essential Revisions (No. 1-39)

Essential Revisions under no. 1, 4-7, 10, 11, 13, 14, 16, 17, 19, 20, 22-28, 31-34 regard proposals for reorganizations of phrases and sentences in order not to change their basic meanings, but in order to make them more accurate or/and clearer and may therefore later be regarded also as MINP.

1. Abstract/P1/S2: My proposal to modify the sentence is: OUR MAIN OBJECTIVE WAS TO PROVIDE SCIENTIFIC EVIDENCE FOR IMPLEMENTATION OF A COST-EFFECTIVE IMMUNIZATION GUIDELINE AND POLICY FOR MEDICAL SCHOOL ADMISSION.

2. Abstract/P2/S2: To avoid ambiguity about information on vaccination (and disease?) histories of participants, I propose you to rewrite the sentence, in order to emphasize that participants gave detailed information about their vaccination (and disease?) histories (self-administered questionnaires + official vaccination records, as you indicated in Methods): DATA ON VACCINATION (AND HISTORY OF INFECTIOUS DISEASES?) WERE COLLECTED FROM PARTICIPANTS.

3. Abstract/P3/S1: I believe that indication that all students tested were negative is important. Therefore I propose you to modify the sentence; naming of HIV should also be corrected: ALL STUDENTS TESTED NEGATIVE FOR INFECTION WITH HEPATITIS C VIRUS (HCV) AND HUMAN IMMUNODEFICIENCY VIRUS (HIV).

4. Abstract/P3/S2: My proposal to modify the sentence is: THE PREVALENCE OF SEROPOSITIVITY TO RUBELLA WAS 96%, TO VARICELLA-ZOSTER VIRUS (VZV) WAS 88%, TO MUMPS WAS 84%...

5. Abstract/P4/S1: My proposal to modify the sentence is: ABOUT 50% OF STUDENTS ARE SUSCEPTIBLE TO HBV AND MEASLES, THEREFORE PRE-MATRICULATION SCREENING FOR ANTIBODIES AGAINST HBV AND MEASLES IS RECOMMENDED.

6. Background/P1/S1: My proposal is to use »OF MAJOR IMPORTANCE« instead of »vital«.

7. Background/P1/S3: My proposal to modify the sentence is: IMPLEMENTATION OF COST-EFFECTIVE PROGRAMS, HOWEVER, REQUIRES SURVEILLANCE THAT IDENTIFIES IMMUNIZATION GAPS AND SUSCEPTIBILITY TO INFECTIOUS DISEASES.

8. Background/P2/S4: Please, try to reformulate this sentence in order to make it clearer.

9. Background/P3/S3: My proposal to modify the sentence is: IMMUNITY AGAINST SOME OF THIS INFECTIONS, HOWEVER, WEAN OFF IN TIME SIGNIFICANTLY AND CONTRIBUTE TO USUSTAINABLE PROTECTION IN
ADULTS. There are also other issues that contribute to unsustainable protection against vaccine preventable infections in adults but I don’t find it essential to add additional information to the text.

10. Background/P4/S2: My proposal to modify the sentence is: THE MAIN OBJECTIVE WAS TO PROVIDE SCIENTIFIC EVIDENCE FOR DEVELOPEMENT OF EFFECTIVE PRE-MATRICULATION ...

11. Methods/P2/S2, S3, S4: My proposal is to replace »years« and »years old« with »YEARS OF AGE«.

12. Methods/P3/S1: My proposal is to include also information about how many participants answered the self-administered questionnaire (for example – (provided by XX (YY%) students) – as you indicated for official immunization records »(provided by 91 (35%) students)«.

13. Methods/P4/S2: My proposal is to use »PERFORMED« instead of »included«

14. Methods/P4/S3: My proposal to modify the sentence is: ALL TESTS WERE PERFORMED AND RESULTS WERE INTERPRETED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

15. Results/P1/S1: My proposal is to use »ALL TESTED STUDENTS...« instead of »All students...«, as not all of 261 were tested for HCV and HIV as reported in Table 1.

16. Results/P1/S2: My proposal is to use: »VZV serology was available for...« instead of »Varicella-zoster titer was available in...«

17. Results/P2/S3: My proposal is to replace »years« with »YEARS OF AGE«.

18. Results/P2/S3: My proposal is to use »titers (mean±SD) of 293.4...« instead of »titers of 293.4...«

19. Results/P2/S7: My proposal is to use: »...presented official records of HBV vaccination at school...« instead of »presented official records of school HBV vaccination...«

20. Results/P4/S1: My proposal is to use: » Rubella serology...« instead of »Rubella titer...«

21. Results/P4/S3: My proposal is to use »...and 5 (3%; 3 female and 2 male students) had a titer of 9 IU/mL (equivocal).« instead of »...and 5 (3%) had a titer of 9 IU/mL (equivocal; 3 female and 2 male students).«

22. Discussion/P1/S1: My proposal is to use “…of the students tested are susceptible...” instead of “…of the students are...”

23. Discussion/P3/S1: My proposal to modify the sentence is: ACCORDING TO A REPORT FORM 1994 FROM THE UNIVERSITY OF SYDNEY...

24. Discussion/P5/S1: My proposal to modify the sentence is: “…received 3 doses of vaccine (at 0, 2 and 6 months of age)”

25. Discussion/P5/S2: My proposal to modify the sentence is: “… were vaccinated with 3 doses of vaccine by the year 2000.”
26. Discussion/P5/S3: My proposal is to use: “...are expected they received...” instead of “...are expected to receive...”

27. Discussion/P6/S1: My proposal to modify the sentence is: “In the UAE vaccine against measles was introduced...”

28. Discussion/P6/S2: My proposal is to use: “...9 months of age.” instead of “...9 months.”

29. Discussion/P6/S4: My proposal to modify the sentence is: SINCE 1986 THE SECOND DOSE OF MMR WAS INTRODUCED AT 15 MONTHS OF AGE; THE SECOND DOSE OF MMR AT SCHOOL ENTRY WAS THEN RESERVED ONLY FOR CHILDREN WHO MISSED THE DOSE AT 15 MONTHS OF AGE.


31. Discussion/P6/S6: My proposal is to use: “...are expected they received...” instead of “...are expected to receive...”

32. Discussion/P7/S4: My proposal to modify the sentence is: “50% of students tested are susceptible...”

33. Discussion/P7/S5: My proposal to modify the sentence is: FURTHERMORE, RESULTS PROVE THAT QUANTIFERON TB TEST SHOULD BE INCLUDED IN ADMISSION SCREENING...

34. Conclusion/P1/S1: My proposal to modify the sentence is: SIGNIFICANT NUMBERS OF STUDENTS ARE SUSCEPTIBLE TO HBV AND MEASLES, THEREFORE PRE-MATRICULATION SCREENING FOR ANTIBODIES AGAINST HBV AND MEASLES IS RECOMMENDED.

35. Reference/5: Please check if information regarding this reference is correct.

As stated in the manuscript: Shinazato T, Tateyama M, Higa F, Owan T, Sakugawa H, Uehara K, e tal. Prevention against Measles at a University Hospital; Measurement of Antibody Titer and Vaccination among Medical Staff and Students. Infect Control 2002, 17: 281-284.

I couldn’t find this reference in databases available to me. But I found a reference as stated below: Takashi Shinazato: "Prevention against Measles at A University Hospital : Measurement of Antibody Titer and Vaccination among Medical Staff and Students" Japanese society of environmental infections. Vol.17, No.3. 281-284 (2002).

The only difference between the two references seems to be the name of the journal where this information was published. Please amend if necessary.

36. Reference/8: Please see: Compulsory Revisions, Background/P3/S2.

37. Table 1:
Title: »seroprevalence« instead of »seroprevalences« / “...and results of
QuantiFERON...” instead of “...and QantiFERON...” (MINP)

Column 1:

Please, name the column: for example: »RESULTS«/»INTERPRETATION OF RESULTS«

Descriptions of results (positive/equivocal/negative): according to manufacturer’s instructions on how to interpret results, different interpretation is required for different transmissible infections studied in this study: positive-equivocal-negative/reactive-nonreactive/positive-indeterminate-negative. This should be evident from the table and corresponding notes. Please reorganize descriptions of results.

An example could be: leave POSITIVE/EQUIVOCAL/NEGATIVE in the 1st column of the table; then use marks/numbering:

Example for HAV, row 2: column 1: POSITIVE8 column 5(HAV):21%8
Comment under the table: 8 Interpretation of test result is »reactive«
Row 4: column 1: NEGATIVE9 column 5: 79%9
Comment under the table: 9 Interpretation of test result is »nonreactive«.
Continue with HBV, HCV, HIV (8 reactive/9 nonreactive) and QuantiFERON-TB (indeterminate).

Column 2: RUBELLA: numbers do not match in sections Abstract, Results and Table 1. Please check and correct in all sections.

Column 4: MUMPS: numbers do not match in sections Results and Table1. Please check and correct in all sections.

Column 7, row 3: HCV: As interpretation of results for this test, according to comments under the table (4), is reactive and nonreactive only, row 3 (equivocal) should not contain numerical values (as you correctly did with HAV and HBV).

Column 8: VZV: numbers do not match in sections Results and Table1 (7% negatives instead of 12% negatives). Please check and correct in all sections.

Column 9: HIV:

Row 3: As interpretation of results for this test, according to manufacturer’s instruction for results interpretation, is reactive and nonreactive only, row 3 (equivocal) should not contain numerical values (as you correctly did with HAV and HBV).

Row 2: the symbol % is missing, unless you decide to account the general suggestion below.

General suggestion: instead of using symbol % with all numbers, indicate use of symbol % only in column 1: for example Positive (%) / Equivocal (%) / Negative (%).

Comments under the table:

No. of comment: 1, 2, 3, 6: my proposal is to use: “result” instead of “titer”. (MINP)
No. of comment: 5: my proposal is to delete the 2nd sentence (this information is already explained in the text of section Results), and to add sentence “Results were available for 181(69%) of 261 students.” (information is more relevant to read the table).

38. Legends and figures

Fig. 1: »seroprevalence« instead of »seroprevalences« / »VZV« instead of »VZ« (MINP)

Fig. 3: the symbol % is missing on x scale of the graph (Measles) for “equivocal” and “seropositive”.

Fig. 4: please amend the legend according to manufacturer’s instructions for results interpretation of QantiFERON test (“indeterminate” instead of “equivocal”).

39. In order to improve the text and increase the relevance of the manuscript, I strongly encourage the authors to exploit the results of the study some more in order to extend the debate in the discussion. Some issues to think about could be: (1) HBV (I encourage the authors to extend Discussion after P5): possible rational for the difference in seroprevalence against HBV in both groups of students (vaccinated at birth, vaccinated at school), is there evidence of similar observations (literature)...;(2) measles (I encourage the authors to extend Discussion after P6): possible rational for relatively low protection against measles regardless a high vaccination coverage rate (information about vaccines used, evidence of incomplete vaccination...), is there evidence of similar observations (literature), discussion of results presented in Fig.3...; (3) consider if relations: national vaccination program/national burden of diseases/this study are relevant: why were investigated infections included in the study (VZV – high seroprevalence – vaccination/naturally acquired; HAV – low seroprevalence - is the burden of HAV infections increasing, should vaccination of specific groups be introduced; HCV; HIV), why weren’t some other vaccine preventable diseases included in the study (pertussis)...
»For serological testing« instead of »for serological studies« (I believe that, speaking of methods, a more technical expression is better.).
5. Abstract/P4/S2: »due to high« instead of »due to the high«.
6. Abstract/P4/S3: »prior to contacts« instead of »prior to their contacts«.
7. Background/P2/S1: »infectious body fluids« instead of »blood and infectious body fluids« (I believe that, as blood is also an infectious body fluid, there is no need to expose it.).
8. Background/P2/S2: »Even higher« instead of »higher«.
9. Background/P3/S1: »United Arab Emirates were..«/ »to adopt the WHO EPI...« instead of »United Arab Emirates was...«/ »to adopt WHO EPI...«.
10. Background/P4/S1: »serological immunity status against vaccine...« instead of »the status of serological immunities against vaccine...«.
11. Methods/P1/S2: »Among 379 matriculated...« instead of »Among the 379 matriculated...«.
12. Methods/P1/S3: »...(158 (61%) female)« instead of »...(158 female, or 61%)«.
13. Methods/P2/S1: »Age was available for 177...« instead of »Age was available in 177...«.
14. Methods/P3/S2: my proposal is to use the plural form: »immunization records« instead of »immunization record«.
15. Methods/Serology and laboratory testing: as serology was part of the laboratory testing my proposal is to reformulate the subtitle to: »Laboratory testing«
16. Methods/P5/ my proposal is to move P5 after P3 and before P4.
17. Results/General: my proposal is to omit subtitles (HBV, HAV, Rubella, Measles, Mumps, TB) or alternatively, subtitle all infections studied (also HCV, HIV, VZV).
18. Results/P1/S3: my proposal is to ad (Table 1, Fig. 1) to the end of the sentence.
19. Results/P2/General: my proposal is to replace signs #, #, <,> with lower or equal/ higher or equal/lower/higher and younger/older respectively in the text.
20. Results/P2/S1: my proposal is to reformulate to »...available in 181 (69%) of 261 students...«.
21. Results/P2/S1: my proposal is to ad (Table 1, Fig. 1) to the end of the sentence.
22. Results/P2/S7: my proposal is to ad (Fig. 2) to the end of the sentence.
23. Results/P3/S2: my proposal is to ad (Table 1, Fig. 1) to the end of the sentence.
24. Results/P4/General: my proposal is to replace signs #, #, <,> with lower or
equal/ higher or equal/lower/higher respectively in the text.

25. Results/P4/S2: my proposal is to ad (Fig. 1) to the end of the sentence.
26. Results/P6/S2: my proposal is to ad (Fig. 1) to the end of the sentence.

27. Discussion/P1/S1: my proposal is to replace symbols (~) with “approximately”
29. Discussion/P3/S2: “students” instead of “student”
30. Discussion/P3/S3: my proposal is: “…risk of exposure to HBV, HCV and HIV is substantial.” instead of “…risk of exposure to HBV, HCV and HIV are substantial.”
31. Discussion/P5/S3: my proposal is to replace symbols #, > with appropriated words.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.