Author’s response to reviews

Title: Open access intrapartum CTG database

Authors:

Vaclav Chudacek (chudacv@fel.cvut.cz)
Jiri Spilka (jirka.spilka@gmail.com)
Miroslav Bursa (miroslav.bursa@fel.cvut.cz)
Petr Janku (pjanku@fnbrno.cz)
Lukas Hruban (Lukas.Hruban@gmail.com)
Michal Huptych (MichalHuptych@seznam.cz)
Lenka Lhotska (lhotska@fel.cvut.cz)

Version: 2
Date: 25 October 2013

Author’s response to reviews: see over
First of all we would like to thank all reviewers for their constructive comments. In general one major comment appeared across all the reviews – the fact that the data were not easily accessible for people without access to Matlab, or those not willing to use the physionet format.

To mend this problem we have developed a CTGViewerLite application (http://bio.felk.cvut.cz/ctg/software/CTGViewerLite/installation.html) that allows easy access and view of the data and export them to comma separated value (*.csv) format.

Responses to the reviewers’ comments follow RC (Reviewer’s comment); AA (author’s answer):

Reviewer 3: Niranjana Krupa
RC: Try and include all the inclusion and exclusion criteria in a table or a chart. This will definitely help the reader to get a clear picture of it. At the moment the information given is lengthy and is all over the place.
AA: We believe that this comment is answered by Figure 1 which is included with the manuscript. This figure clearly presents the exclusion of data from the initial dataset.

RC: Organize the content with the help of sections and sub-sections (use numbers like 2.1, 2.2.1 and so on)
AA: The numbering of (sub-)sections is handled by the (BMC) template we have used.

RC: A user interface to manage CTG recordings and the clinical information would definitely help the user.
AA: Yes, since all reviewers mentioned that, we have prepared interface tool (CTGViewerLite - download at http://bio.felk.cvut.cz/ctg/software/CTGViewerLite/installation.html) that allows browsing the signals with clinical information. Also, to enable easy transformation to any other data-format, possibility to export selected data to *.csv format is included.

RC: Various Minor Essential Revisions
AA: Thanks for your careful reading, all mentioned problems were corrected.

Reviewer 2: João Bernardes
RC: A very limited preliminary initiative of open-access to CTG files in .TXT format has been previously provided by other authors some years ago, but has been discontinued (Costa Santos C, et al; An interactive web site for research on fetal heart rate monitoring. Obstet Gynecol 2000; 95:309-11.).
AA: We were not aware of this work. We have included this reference in the footnote to the appropriate section (since it is discontinued).

RC: I was not able to fully assess if the user interface is easy to interact with...
AA: Yes, since all reviewers mentioned that, we have prepared interface tool (CTGViewerLite) that allows browsing the signals with clinical information. Also, to enable easy transformation to any other data-format, possibility to export selected data to *.csv format is included.

RC: I understand and accept the authors’ inclusion criteria, but, personally, I would be more “inclusive”, with the inclusion criteria, not excluding some tracings (e.g. with gestational ages < 37 weeks), as I think that all of them may be useful for researchers, provided they have the needed quality and information. In such a more “inclusive” way a wider choice opportunity would be given to the potential users, who finally may freely be able to select the available tracings according to their own criteria.
AA: The size and inclusiveness of the database was a topic of many discussions on our side also. Since our motivation is to have one database on which (exactly the same one) all future experiments will be performed and compared, we have decided to limit the database to the mature fetuses. We are working on preparation of new, enhanced, version, where we will take your comments into consideration.

RC: The database should specify the used equipment, as different equipment was used. Even subtle differences in the acquisition of CTG signals may influence the results of CTG analysis.
AA: Section of the text specifying the exact types of the devices was enhanced. It now reads:

The CTGs were recorded using STAN S21 and S31 (Neoventa Medical, Mölndal, Sweden) and Avalon FM40 and FM50 (Philips Healthcare, Andover, MA). All CTG signals were stored in an electronic form in the OB TraceVue system (Philips) in a proprietary format and converted into text format using proprietary software provided by Philips.

RC: Moreover, it would be important to be reassured that the potential users of the database may be able to get all the other information described by the authors in their manuscript, namely other specific information on signal loss, time to delivery, signal acquisition mode (US or FECG)...
AA: All additional information is included in the *.hea file, description of which is presented on the web page (http://bio.felk.cvut.cz/ctg/CTU_UHB_database/tempValuesAll.txt). Additionally it is also possible to convert the database to *.csv via the CTGViewerLite. Information on signal loss is easily computable directly from the signal (equidistant sampling and NaNs at positions of missing data).

RC: The information provided in Table I about the database presented by Bernardes et al. (referenced as nº 36) needs to be corrected, as the CTG signals used by them were not only acquired with US (in the antepartum period) but also with FECG (in all intrapartum cases).
AA: Thank you, the table was changed accordingly. Additionally Table I was re-reviewed again and corrected to limit any other inexactness.

Reviewer 1: Janusz Jezewski

RC: From the future database end user point of view some information for interpretation of categorical data is missing - e.g. “Sex”: does number 1 correspond to male or female? Etc....
AA: Yes, thank you, for pointing this out, we will add „template” *.hea file to the physionet site describing the project. The file will be added to the database page – for now it is accessible at: http://bio.felk.cvut.cz/ctg/CTU_UHB_database/tempValuesAll.txt

RC: In Table 1, in row „Siira et al. 2005”, column „time to delivery” is a mark of reference (4) for which the footnote is missing. The same situation occurs in row „Jezewski et al. 2010”, column „# total cases”.
AA: We have re-reviewed the whole Table I and corrected all typos/inaccuracies also with respect to your further points.

RC: In Table 6 – the number of cases for which the Apgar score in 5th minute was pathological is higher in the set {pH>7.25}, than in set {pH>7.15} – even though the first one is a subset of the second.
AA: Revised and corrected.

RC: You could consider providing data files additionally in EDF format. It is convenient for users as there are some freeware viewers available, and thus – one is not required to install WFDB toolbox, not even to use Matlab environment.
AA: We have decided to provide CTGViewerLite a tool written in Python that allows browsing the data and also enables user to convert data to *.csv format. Also we provide Matlab file (http://bio.felk.cvut.cz/ctg/software/CTGViewerLite/installation.html) that allows reading data without WFDB toolbox.

RC: Figure 2 could be more clear if plotted without zero-values in FHR signal. In current form the concentration of vertical lines hinders the assessment of signal shape. A simple Matlab formula aFhr( aFhr<30 ) = NaN should work, making the marker of second-stage of labor more visible as well.
AA: The Figure 2 was changed accordingly.

RC: On page 4 two our papers (namely: [25] Jezewski et al. and [26] Czabanski et al.) are cited as being based on the same database. In fact these were two different databases, gathered from different hospitals...
AA: We have added the last paper (Czabanski2013) to the table, and left the others in the text.

RC: The autocorrelation function is discussed in more details in another paper, which in my opinion is more easily accessible for readers as it was published in open access journal...
AA: The reference was changed.