

Radiation Oncology Safety Information System <http://www.rosis.info>

Feedback letter July 2007 **SPOTLIGHT ON RECORD AND VERIFY**

- *This Newsletter* – Spotlight on Record and Verify
- *Reminder:* The fourth ROSIS short course “**Working towards safer healthcare delivery: minimising the impact of incidents in radiotherapy**” will be held from 12th-15th May 2008. Watch the ROSIS website for further details and the registration form.
- *Reminder:* Have you seen our new website? See it now, at <http://www.rosis.info>

Dear ROSIS Contact,

The ROSIS group would like to draw your attention to some interesting incident reports in the database. **The theme of this newsletter is Record and Verify.**

This topic and related reports are described below, together with some reflections. If you would like to read the full reports or make a comment, click on the links provided.

Remember that you can search the full ROSIS database at <http://www.rosis.info>

Keep the database alive and report your incidents! Reporting is confidential in relation to clinic. If you have forgotten your password, please contact ola@eircom.net

Best regards from the ROSIS group:

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If you do not wish to receive further emails from ROSIS, please state so in a reply to this message, and you will be removed from this mailing list.

If you have not received this message directly from ROSIS but would like to be added to our mailing list, please contact us at snichuin@tcd.ie.

RECORD AND VERIFY

Record and verify systems (R&V systems), or check and confirm systems, have been a crucial part of the technological advancement in Radiation Oncology – enabling the delivery of more sophisticated and complex treatments. However, although the implementation of R&V systems has reduced some types of “random” mistakes, new risks were also introduced.^{1,2,3}

Many R&V-related mistakes arise during manual input of data. Reliance on computers often leads to operators trusting the information they contain – forgetting that the information could either be electronically corrupted, or that often the information has been manually input into the computer by a fallible human in the first place! Instances where much of the data is electronically transferred, but some is manually input can also give rise to a false sense of security.

As this data forms the basis of the patient’s treatment, it is imperative that it is always correct. Approximately one-fifth of the reports in the ROSIS database related to incorrect data input into R&V systems, of which nearly half resulted in incorrect treatment delivery for at least one fraction. Other mistakes related to R&V systems were due to software / network problems, violations of approved procedure, or failure to update the R&V data with treatment changes.

The reports below highlight some of these issues.

Incident Report 453: Transcription Error: Wrong value input

http://www.clin.radfys.lu.se/queries/q_search_ID_new.asp?number=453

Some treatment parameters are to be introduced manually in the R&V system, even if others are transferred automatically from the TPS. One of the formers is the dose per field. Despite the fact that the dose calculation was correct a wrong dose per field has been introduced. The error has been detected by the physicist who checks all treatment parameters at the R&V system before treatment.

Incident Report 271: Transcription Error: Wrong value input

http://www.clin.radfys.lu.se/queries/q_search_ID_new.asp?number=271

Field input incorrectly onto Varis

Pt transferred from 1 unit to another to help reduce pts waiting times

Field treated as 7 x 8 instead of 8 x 7 for 1 field only - corrected on 2nd field

Incident Report 201: Transcription Error: Wrong value input

http://www.clin.radfys.lu.se/queries/q_search_ID_new.asp?number=201

Linac 3 broke down - pt moved to different Linac for 1#. On ant s'clav field size treated incorrectly, length should have been 9.9cm treated at 8.9cm - input incorrectly - check process did not pick up as done at short notice and did not go through normal pre-treatment system.

Incident Report 162: Incorrect data - ? due to error in electronic transfer

http://www.clin.radfys.lu.se/queries/q_search_ID_new.asp?number=162

A lung patient was treated with a 3-field technique. The prescribed gantry angles were 0, 167 and 209 degrees. At fraction no. 11 it is discovered that field 3 has been given in 249 degrees for all the previous 10 fractions. The gantry angle in the dose plan and treatment chart is correct, but wrong in the verification system. We use electronic transfer of data and we cannot rule out a transfer error although we have not been able to repeat it in

tests. Another possibility (although unlikely) is that an authorised person manually have changed the angle, but for what purpose? At the first fraction a portal image was taken. Field 1 & 2 was approved, but not number 3 because it did not look correct. It was decided to take another image the next day, which was done, but that second film was neither checked, nor approved.

Mistakes made in the transfer of the data are often missed where adequate checking procedures are not in place, or where they are in place but have not been used properly / were rushed etc. In these instances, it is common for some of the patient's treatment to be delivered incorrectly before the mistake is found.

Comprehensive checking procedures prior to the use of any data in the R&V system, and appropriate independent checks during the first treatments (or when using any new data) should ensure that most mistakes are detected at an early stage.⁴

As with any other area, it is important that the checking procedures are appropriate. For example – checking data on a R&V system computer screen against original data on paper can itself be very error prone. The data is in different formats (on-screen vs paper), and is probably also in a different layout (sequence of data may be different). The checker must be careful to avoid an “expectation bias” – i.e. where he/she sees a gantry angle of “0” on the paper, and looks to find a “0” on the screen, without also consciously checking that it corresponds to the gantry angle given on the screen.

In 1995, De Graaff and van Kleffens⁵ described a system they developed to minimize manual data entry errors. This system was based on a programme, which automatically checked two independent manual data inputs, and highlighted any inconsistencies to the second inputter. They found that the “introduction of this system has shown a remarkable decrease in data entry errors on our machines.”

To date, ROSIS has not had the capability to explore issues associated with the use of particular R&V systems, but this will change with future revisions of ROSIS. We would be very interested to hear from anyone who has researched / is looking at this topic.

Please give your comments on these reports [snichuin@tcd.ie]. We will add selected comments to next month's feedback letter.

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REFERENCES

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2 Patton GA, Gaffney DK, Moeller JH. Facilitation of radiotherapeutic error by computerized record and verify systems. *Int J Radiat Oncol Biol Phys.* 2003 May 1;56(1):50-7

3 Barthelemy-Brichant N, Sabatier J, Dewé W, Albert A, Deneufbourg JM. Evaluation of frequency and type of errors detected by a computerized record and verify system during radiation treatment. *Radiother Oncol* 1999;53(2):149-154

4 Macklis RM, Meier T, Weinhaus MS. Error rates in clinical radiotherapy. *J Clin Oncol* 1998;16:551-556

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