**Log Summary:** PDR Pulse Details in RT Brachy Session Record

**Name of Standard**
PS 3, 2011

**Rationale for Correction:**
With the current RT Brachy Session record it is not possible to record exactly the details of the individual pulses. This information would be needed to do a complete verification and or progress overview.

- C.8.8.22.1 is in conflict with the definition in the attribute (3008,0160): the sequence applies to a Channel (for a single pulse), not to all pulses which apply to all channels.

- C.8.8.22.1 refers to the planned Brachy Control Point Sequence (300A,02D0) which is not contained in the Brachy Session Record module. The Brachy Control Point Delivered Sequence (3008,0160) is to be mentioned.

- The Brachy Session Record module contains the attributes ‘Specified Channel Total Time’ and ‘Delivered Channel Total Time’, which both refer to “Control Point 0 and final Control Point of the Brachy Control Point Sequence (300A,02D0) for current Channel”, but again, The Brachy Control Point Delivered Sequence (3008,0160) is to be mentioned.

- If one RT BT Record IOD (containing a.o. the Brachy Session Record module) is to be specified for one PDR treatment (consisting of N pulses), then it is not clear to which pulse the following attributes are associated with: ‘Reference Air Kerma Rate’, ‘Total Reference Air Kerma’, ‘Source Strength Reference Date & Time’, ‘Specified Channel Total Time’, ‘Delivered Channel Total Time’. Moreover, it is incorrect. (E.g. what if there is a significant Repetition Interval? The source decay is not accounted for!)

- In case of an interrupted treatment, the Brachy Session Record cannot specify at which pulse the PDR treatment was terminated. Yes, there is an attribute ‘Treatment Termination Status’, but with all pulses being defined in one Brachy Session Record, it is not known at which pulse the treatment was interrupted. Moreover, it is not even known at which channel at which dwell position the treatment was interrupted. This makes it impossible for the Treatment Management System to come up with a Brachy Delivery Instruction IOD (or plan IOD) on how to continue the PDR treatment!

**Correction Wording:**

In PS 3.3 C.8.8.22 RT Brachy Session Record Module add following in Table C.8-58

RT Brachy Session Record Module

Table C.8-58—RT BRACHY SESSION RECORD MODULE ATTRIBUTES
>Recorded Channel Sequence | (3008,0130) | 1 | Introduces sequence of Channels for current Application Setup. One or more Items shall be included in this sequence.

... 

>>Specified Channel Total Time | (3008,0132) | 1 | Total amount of time specified between Control Point 0 and final Control Point of the Brachy Control Point Delivered Sequence (300A,02D00160) for current Channel (sec).

>>Delivered Channel Total Time | (3008,0134) | 1 | Total amount of time actually delivered between Control Point 0 and final Control Point of the Brachy Control Point Delivered Sequence (300A,02D00160) for current Channel (sec).

... 

>>Specified Number of Pulses | (3008,0136) | 1C | Number of Pulses specified per fraction for current Channel. Required if Brachy Treatment Type (300A,0202) is PDR. See C.8.8.22.1.

>>Delivered Number of Pulses | (3008,0138) | 1C | Number of Pulses actually delivered per fraction for current Channel. Number of Pulses actually delivered per fraction for current Channel including this Pulse, if Pulse Number (3008,xxxx) is specified. Required if Brachy Treatment Type (300A,0202) is PDR. See C.8.8.22.1.

>> Pulse Number | (3008,xxxx) | 3 | Number of the Pulse delivered for this fraction for current Channel. See C.8.8.22.1.

>>Specified Pulse Repetition Interval | (3008,013A) | 1C | Pulse repetition interval (sec) specified for current Channel. Required if Brachy Treatment Type (300A,0202) is PDR. See C.8.8.22.1.

>>Delivered Pulse Repetition Interval | (3008,013C) | 1C | Pulse repetition interval (sec) actually delivered for current Channel. If Pulse Number (3008,xxxx) is specified, actual interval between the previous Pulse and this Pulse. Required if Brachy Treatment Type (300A,0202) is PDR. See C.8.8.22.1.

... 

**In PS 3.3 C.8.8.22.1 PDR (Pulsed Dose Rate) Treatment change the following wording**

C.8.8.22.1 PDR (Pulsed Dose Rate) Treatment
In Brachytherapy treatment techniques where Brachy Treatment Type (300A,0202) is PDR, and the actual Pulse Number (3008,xxxx) of the pulse is not specified, the Brachy Control Point Delivered Sequence (300A,02D0-0160) shall consist of 2N items, where N = Delivered Number of Pulses (3008,0138). Each control point pair shall specify the start and end of a single pulse. However if the Pulse Number (3008,xxxx) is specified, Pulse Number shall be present of either all the channels in the channel sequence. In this case, the Brachy Control Point Delivered Sequence (300A,0160) shall consist of actual control points that were delivered during the current pulse specified. For each delivered channel of the pulse per fraction a Recorded Channel Sequence (3008,0130) is created for each channel.

In Part 6 Addendum: Add the following data elements to PS3.6:

6 Registry of DICOM data elements

<table>
<thead>
<tr>
<th>Tag</th>
<th>Name</th>
<th>VR</th>
<th>VM</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3008,xxxx)</td>
<td>Pulse Number</td>
<td>US</td>
<td>1</td>
</tr>
</tbody>
</table>