SleepXML - XML Application For Polysomnographic Data Storage And Exchange

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SleepXML

XML dialect to describe PSG Data

- What does SleepXML do?
 - Uses XML Schema Definition Language for Sleep Event Definitions.
 - **SleepXML** Schema specifies the events' structure, such as what events are allowed, what types and classes they have, what parameters of what kind they have, etc.
 - Converts Event Data between event definitions /displays (XSLT).
 - Generates PSG reports statistics by processing Event Data
 - Creates and links with databases

SleepXML XML dialect to describe PSG Data

- What SleepXML does NOT do?
 - SleepXML does NOT attempt to define a structure of PSG events that all PSG equipment makers and users have to accept. This is hard to accomplish because:
 - a) the field of polysomnography is still in developing stage;
 - b) every major PSG equipment manufacturer has it's own structure of PSG events;
 - b) every major Sleep Disorders Research lab has developed a custom set of events and annotations that describe the best that particularly lab's way of scoring PSG recordings.

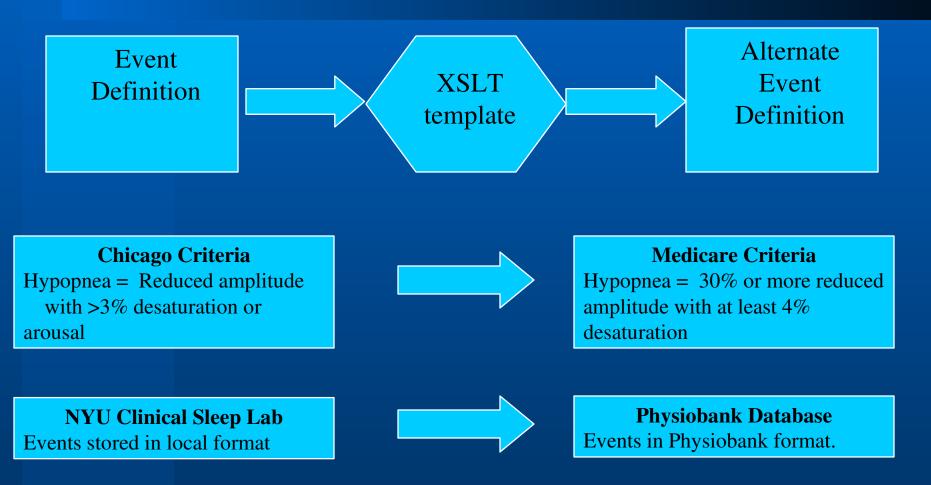
SleepXML

Event definition

- SleepXML Schema: XML document defining structure of PSG Events:
 - defines PSG channel types (Airflow, SpO2, etc.);
 - defines PSG events on those channels (respiratory, arousals, etc.);
 - defines event parameters (time, duration, SpO2 drop, stage, position).

```
<xs:element name="Respiratory" SleepXML:Color="0,225,240" sql:relation="RespEvent">
   <xs:complexType>
       <xs:all>
           <xs:element name="RecordGUID" minOccurs="0" sql:hide="true"/>
           <xs:element name="Classification" default="Other Respiratory Event" minOccurs="1" sql:field="Classification">
                <xs:simpleType>
                   <xs:restriction base="xs:string">
                        <xs:enumeration value="Obstructive Apnea" SleepXML:Color="25,15,255" />
                        <xs:enumeration value="Flow Hypopnea" SleepXML:Color="25,125,240" />
                        <xs:enumeration value="Obstructive Non A. Non H." SleepXML:Color="225,0,240" />
                        <xs:enumeration value="Central Apnea" />
                        <xs:enumeration value="Central Hypopnea" />
                        <xs:enumeration value="Central Non A. Non H." />
                        <xs:enumeration value="Other Respiratory Event" />
                   </xs:restriction>
                </xs:simpleType>
           </xs:element>
```

SleepXML Converting Respiratory Events



SleepXML Viewer Implementation

SleepXML Viewer application:

- Uses EDF for raw samples storage and calibration;
- Uses HL-7 for Patient Demographics;
- Loads SleepXML Schema from the PSG study folder and analyzes Event Set structure;
- Loads XSLT template for the current Event Set Presentation;
- Displays PSG Events on the waveforms and as a list;
- The Events could be scored, deleted or edited

SleepXML Other Tools Available

SleepXML Event Set Schema Tool:

- Available online: www.SleepXML.org
- Allows to create Event Set, add and modify PSG Events;
- Event Set is downloadable after editing;

Conversion Tools:

- Respironics Alice Events to SleepXML;
- Compumedics ProFusion Events to SleepXML;
- Physionet Events to SleepXML
- Database upload module: MS SQL Server-compatible

SleepXML Advantages

- Openness: No proprietary Data/Report formats
- Flexibility: No hard-coded Event/Statistic/Report definitions;
 Event definitions could be designed for a particular Clinical
 Study or research needs
- Interchangeability: Enable Sleep Labs to freely exchange PSG data while maintaining their individuality in defining PSG events
- Cross-Platform: Web browser-based data presentation
- Automatic report generation
- Compatibility with SQL-server for data storage

SleepXML

Conclusion:

SleepXML provides an infrastructure for the interchange, reformatting, presentation and archiving of PSG data. It is not a rigid PSG Data standard, but a way to describe any PSG data.

www.SleepXML.org

