medcom

HL7 Implementation Guide for CDA Release 2.0 Appointment Document

(Danish profile – DK APD)

Draft for Trial Use

Release 1.1

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Revision History			
Release	**Author**	**Date**	**Notes**
1.0	MedCom	22.05.2017	Draft for trial use
1.1	MedCom	08.06.2018	Added HL7 version 3 status codes and removed "Cancelled" status and corrected erroneous cardinality for effectiveTime(section 5.1) finally added a figure of the DK-APD structure, All corrections are marked)

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1 INTRODUCTION

1.1 Audience

The audience for this document includes software developers and implementers of products and services for publishing of patient health care appointments. This includes public and private disease management organizations as well as local, regional, and national health information exchange networks that wish to create and process appointment documents created according to this specification.

1.2 Purpose

This document is a Danish profile of the Clinical Document Architecture (CDA) Release 2, Consolidated CDA Template for Clinical Notes, August 2015, Planned Encounter V2.

The purpose of this specification is to facilitate the communication of patient health care appointments between applications. Such communication of an appointment is instances of the performance of a service. An appointment describes the "why", the "who" and the "when" and consists of a planned health care service, for a period of time, for a specific reason at a specific location.

A specific use of this specification is to make it possible to show all the citizens health care appointment at Sundhed.dk. This access will provide a common collected overview for health care appointments for the individual citizens and for the health professionals involved in the citizen's treatment.

1.2.1 Application roles and typical use cases

In this specification, there are three roles that an application can assume: a filler application role, a placer application role, and an auxiliary application role.

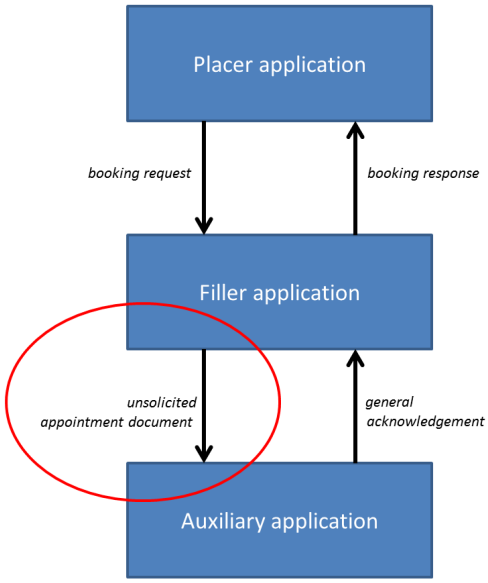

Figure 1. Application role relationships.

These application roles define the interaction that an application will have with other applications. In this specification, the definition of application roles is not intended to define or limit the functionality of specific products developed by vendors of such applications. Instead, this information is provided to help define the model used to develop this specification, and to provide an unambiguous way for applications to communicate with each other.

Application type	Role
Placer application	A placer application requests the booking, modification, cancellation, etc., of a scheduled activity for a health care service. Because it cannot exert any control over the schedule for that resource, it must send its requests to the filler application. Example: A booking request is send from the Electronic Health Record system to the booking system.
Filler application	A filler application is one that "owns" one or more schedules for one or more health care services. In other words, a filler application exerts control over a certain set of services and the schedules that define the availability of those services or resources. The filler application either fulfills or denies requests to book slots, or to modify the schedules for the services over which it exerts control. Finally, the filler application also provides information about scheduled activities to other applications. Example: A booking confirmation is send from the booking system to the Electronic Health Record system. The booking confirmation triggers the preparation of an Appointment Document (following the specification in this document). The Appointment

Application type	Role
	Document is send unsolicited to the Auxiliary application.
Auxiliary application	An auxiliary application passively collects information by receiving unsolicited updates from a filler application. It is only concerned with gathering information about appointments and has no possibilities in changing or controlling appointments in any way. Example: Received Appointment Documents are archived in an XDS repository and the corresponding XDS index is updated.

1.2.2 Data content

The data elements for an appointment include the following:

- Appointment identification code
  - A unique appointment code, generated by the filler system
- Patient
  - The person, who are booked for a health care service
- Appointment requester
  - The organization/person who have ordered the appointment
- Appointment responsible
  - The health care organization responsible for fulfilling the appointment
- Start date and time
  - Start date and time when the appointment is to take place
- End date and time
  - End date and time when the appointment is to conclude
- Performer
  - The responsible performing health care organization/person for the appointment. The performing health care organization is often the appointment responsible.
- Location
  - The visit address for the appointment
- Reason
  - The medical reason for the appointment
- Status
  - The status for the appointment (active/booked, suspended/paused/, aborted/deleted and completed/finished)

The link between the data elements and the Clinical Document Architecture structure is shown in appendix A.

The organizations and addresses used in the XML examples in this document, is shown in appendix C.

The following figure shows the structure of the DK CDA Appointment.

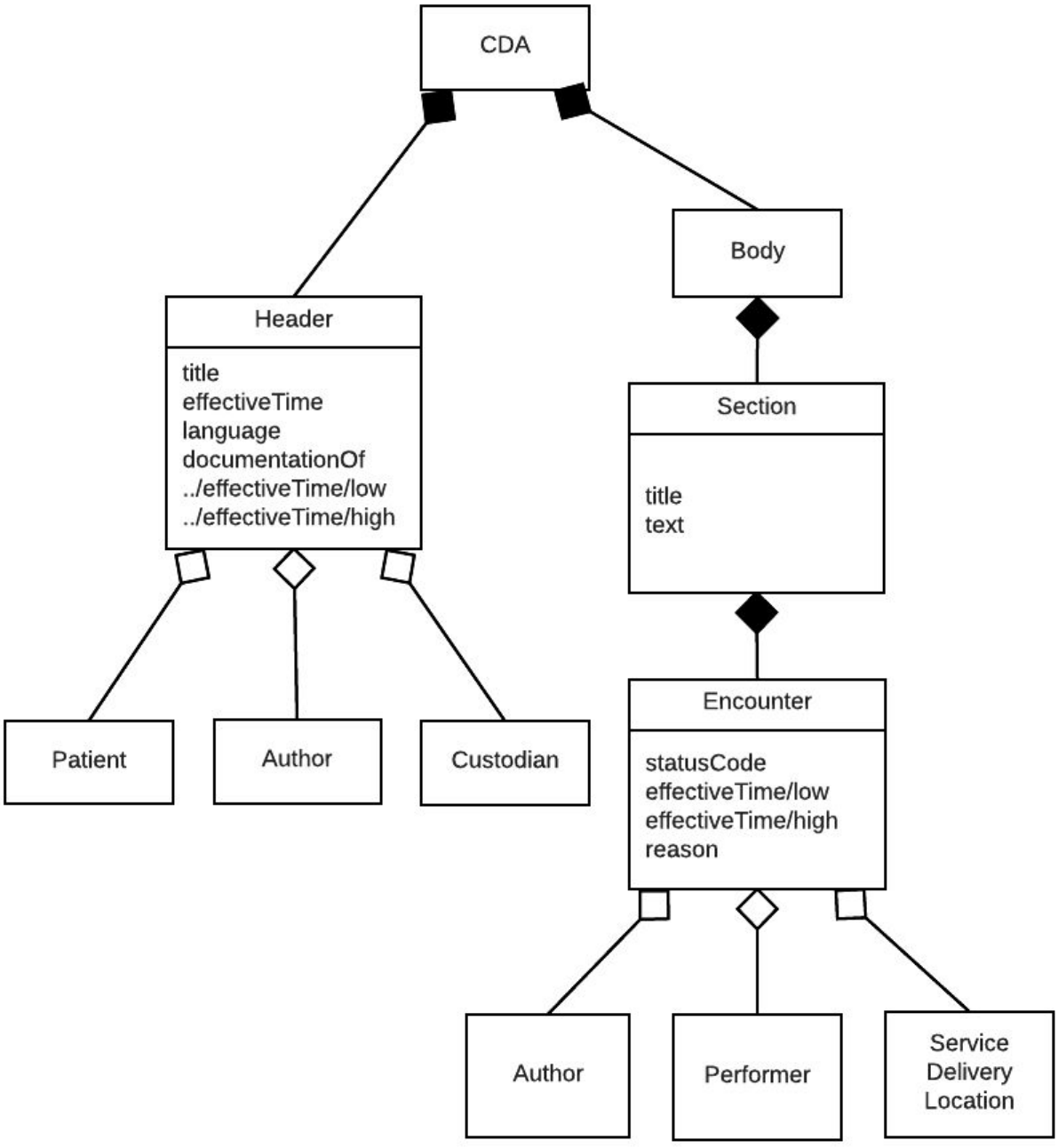

Figure 2: DK CDA Appointment structure

1.3 Scope

This implementation guide is a conformance profile, as described in the "Refinement and Localization"[i] section of the *HL7 Version 3 Interoperability Standards*. The base standard for this implementation guide is the *HL7 Clinical Document Architecture, Release 2.0*[ii]*.* This implementation guide does not describe every aspect of the CDA. Rather, it defines constraints on the base C-CDA used for the Danish Appointment Document (DK APD) profile.

1.4 Approach

Overall, the approach taken here is consistent with balloted implementation guides (IGs) for CDA. These publications view the ultimate implementation specification as a series of layered constraints. CDA itself is a set of constraints on the Health Level Seven (HL7) Reference Information Model (RIM). Implementation guides such as this document add constraints to CDA through conformance statements that further define and restrict the sequence and cardinality of CDA objects and the vocabulary sets for coded elements.

1.4.1 Keywords

The keywords **SHALL**, **SHALL NOT**, **SHOULD**, **SHOULD NOT**, **MAY**, and **NEED NOT** in this document is to be interpreted as described in the HL7 Version 3 Publishing Facilitator's Guide:

- **SHALL:** an absolute requirement
- **SHALL NOT:** an absolute prohibition against inclusion
- **SHOULD/SHOULD NOT:** best practice or recommendation. There may be valid reasons to ignore an item, but the full implications must be understood and carefully weighed before choosing a different course
- **MAY/NEED NOT:** truly optional; can be included or omitted as the author decides with no implications

The keyword **SHALL** allow the use of nullFlavor unless the requirement is on an attribute or the use of nullFlavor is explicitly precluded.

1.4.2 Conformance Requirements

Constraint in this profile is based on the specification in the Clinical Document Architecture (CDA) Release 2, Consolidated CDA Template for

[i] http://www.hl7.org/v3ballot/html/infrastructure/conformance/conformance.htm
[ii] HL7 Clinical Document Architecture (CDA Release 2). http://www.hl7.org/implement/standards/cda.cfm

Clinical Notes, August 2015 are widely used. For constraint reused the conformance requirement is formatted **CONF: XX**, which will each the traceability for future revision of this document.

I some cases it has been necessary to modify or create new constraints for the use in Denmark. In such case the conformance criteria is formatted **CONF-DK: XX**. All CONF-DK:XX conformance requirements are numbered sequentially.

1.5 Development process

This Danish profile has been prepared by the MedCom in collaboration with a workgroup composed by a number of partners from the health sector and suppliers of ICT solutions to the healthcare sector.

The workgroup meet to four workshops in the period from December 2016 to March 2017. The workgroup included:

Alexei Mihalchuk	A-Data
Michael Christensen	Alexandra Instituttet
Jens Villadsen	CSC
Ole Vilstrup	CSC
Thomas Bo Nielsen	DAK-E
Hans Christian Lund Clausen	DAK-E
Kristian Nielsen Foged	DataGruppen MultiMed
Søren Mikkelsen	Lakeside
Anders Jensen	MedCom
Michael Johansen	MedCom
Michael Due Madsen	MedCom
Jan Petersen	MedCom
Lars Siemensen	Region Midtjylland
Jesper Nielsen	Region Syddanamark
Flemming Elbrønd	Region Syddanmark
Jane Christiansen	Sundhedsdatastyrelsen
Thor Schliemann	Sundhedsdatastyrelsen
Christian Jeppesen	Systematic

Morten Bruun-Rasmussen from MEDIQ assisted as consultant in connection with preparation of this profile.

1.6 Organization of This Guide

This guide includes a set of CDA Templates and prescribes their use within an Appointment CDA document. The main chapters are:

- Chapter 2: Appointment document Header Template describes constraints that apply to the header within the scope of this implementation guide.
- Chapter 3: Appointment Document-Level Template defines the document constraints that apply to Appointment Documents.
- Chapter 4: Section-Level Template defines the section template in the Appointment Documents.
- Chapter 5: Entry-Level Template defines the entry template in Appointment Documents.
- Appendix A shows the mapping between the appointment content and the CDA structure
- Appendix B shows the link between the DK templates and HL7 C-CDA templates used in this specification

1.7 Content of the Package

The following files comprise the package:

Table 1: Content of the Package

Filename[iii]	Description	Standards Applicability
DK-APD-v1.0	This implementation guide	Normative
APD_Example_1.xml	The sample CDA XML file that includes examples of templates discussed in this guide: • Example 1: Appointment without narrative text elements	Informative
CDA.xsl	Stylesheet for display of CDA instances	Informative

[iii] The files can be downloaded from http://svn.medcom.dk/svn/

2 APPOINTMENT DOCUMENT HEADER TEMPLATE

This template describes constraints that apply to the DK CDA Header within the scope of this implementation guide. Header constraints are described in the appropriate document-specific section below.

2.1 Danish Profile Appointment Document Header

The underlying basis for the DK CDA Appointment Document Header is specified in the DK CDA Header.

Additional constraints to the DK CDA Header used the DK CDA Header Appointment Document are described below.

1. **SHALL** contain exactly one [1..1] header-level `templateId` (CONF-DK: 1) such that it
    a. This `templateId` **SHALL** contain exactly one [1..1] `@root="1.2.208.184.14.1"` (CONF-DK: 2).
2. **SHALL** contain exactly one [1..1] `id` (CONF-DK: 3).
    a. This `id` **SHALL** be a globally unique identifier for the document (CONF-DK: 4).
3. **SHALL** contain exactly one [1..1] `code` (CONF-DK: 5).
    a) This `code` **SHALL** specify the Appointment Document generated by the filler system (CONF-DK: 6).
    b) This `code` **SHALL** be selected from the LOINC Ontology which indicates a "Follow-up (referred to) provider &or specialist, appointment date" between the patient and the care provider. (CONF-DK: 7).
        a. This `code` **SHALL** always be set to "39289-4" (CONF-DK: 8).
        b. The `@displayName` **SHALL** always be set to "Dato og tidspunkt for møde mellem patient og sundhedsperson" (CONF-DK: 9).
4. **SHALL** contain exactly one [1..1] `title` (CONF-DK: 10).
    a) This `title` **SHALL** always be set to "Aftale for" followed by the patient id (CONF-DK: 11).

```
<realmCode code="DK"/>
<typeId root="2.16.840.1.113883.1.3" extension="POCD_HD000040"/>
<!-- MedCom DK CDA APD profile OID -->
<templateId root="1.2.208.184.14.1"/>
<id extension="aa2386d0-79ea-11e3-981f-0800200c9a66" root="1.2.208.184"
  assigningAuthorityName="MedCom"/>
<!-- LOINC code for appointment date -->
<code code="39289-4" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"
  displayName="Dato og tidspunkt for møde mellem patient og sundhedsperson"/>
<!-- title = "Aftale for" + patient id -->
<title>Aftale for 2512489996</title>
<effectiveTime value="20170113100000+0100"/>
<confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
<languageCode code="da-DK"/>

<!-- information about the patient-->
<recordTarget typeCode="RCT" contextControlCode="OP"> [22 lines]

<!-- the health care organisation and person responsible for the appointment -->
<author typeCode="AUT" contextControlCode="OP"> [26 lines]

<!-- the organisation responsible for maintaing the CDA document -->
<custodian typeCode="CST"> [14 lines]

<!-- the date and time for when the service event will take place -->
<documentationOf typeCode="DOC"> [7 lines]
```

Figure 3: DK Realm Appointment Document Header Example

2.1.1 recordTarget

The `recordTarget` records the patient associated with the clinical document. Each `recordTarget` must contain at least one `patientRole` element.

2.1.2 author

The `author` element represents the creator of the clinical document.

In the context of this IG (the Appointment Document), the author is the organization responsible for fulfilling the appointment (the health care organization/person responsible for the appointment).

```
<!-- the health care organisation and person responsible for the appointment -->
<author typeCode="AUT" contextControlCode="OP">
<time value="20170216100000+0100"/>
<assignedAuthor classCode="ASSIGNED">
    <id extension="242621000016001" root="1.2.208.176.1.1" assigningAuthorityName="SOR"/>
    <addr use="WP">
      <streetAddressLine>Valdemarsgade 53</streetAddressLine>
      <postalCode>5700</postalCode>
      <city>Svendborg</city>
      <country>Danmark</country>
    </addr>
    <telecom value="tel:65113333" use="WP"/>
    <assignedPerson classCode="PSN" determinerCode="INSTANCE">
      <name>
        <prefix>Læge</prefix>
         <given>Jens</given>
        <family>Jensen</family>
      </name>
    </assignedPerson>
    <representedOrganization classCode="ORG" determinerCode="INSTANCE">
      <name>OUH Radiologisk Afdeling (Svendborg)</name>
      <telecom nullFlavor="NI"/>
      <addr use="WP">
        <streetAddressLine nullFlavor="NI"/>
      </addr>
    </representedOrganization>
  </assignedAuthor>
</author>
```

Figure 4: Person author example

2.1.3 dataEnterer

The `dataEnterer` element may not be used.

2.1.4 informant

The `informant` element may not be used.

2.1.5 custodian

The `custodian` element represents the organization that is in charge of maintaining the document (e.g. a remote disease management organization (DMO)). The custodian is the steward that is entrusted with the use and management of the document. Every CDA document has exactly one custodian.

In the context of this IG (the Appointment Document), the custodian is the organization in charge of the filler system.

```
<!-- the organisation responsible for maintaing the CDA document -->
<custodian typeCode="CST">
<assignedCustodian classCode="ASSIGNED">
    <representedCustodianOrganization classCode="ORG" determinerCode="INSTANCE">
      <id extension="515361000016007" root="1.2.208.176.1.1" assigningAuthorityName="SOR"/>
      <name>OUH Klinisk IT (Odense)</name>
      <telecom value="tel:66113333" use="WP"/>
      <addr use="WP">
        <streetAddressLine>J. B. Winsløwsvej 4 1</streetAddressLine>
        <postalCode>5000</postalCode>
        <city>Odense C</city>
        <country>Danmark</country>
      </addr>
    </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
```

Figure 5: Custodian example

2.1.6 informationRecipient

The `informationRecipient` element may not be used.

2.1.7 legalAuthenticator

The `legalAuthenticator` element may not be used.

2.1.8 authenticator

The `authenticator` element may not be used.

2.1.9 participant (Support)

The `participant` element may not be used.

2.1.10 documentationOf

The `documentationOf/serviceEvent declares the` date and time when the service event will take place.

2.1.11 inFulfillmentOf

The `inFulfillmentOf` element may not be used.

2.2 Rendering Header Information for Human Presentation

Good practice would recommend that the following information to be present whenever the Appointment Document is viewed:

- Document title and document dates
- Names of all persons along with their roles, participations, participation date ranges, identifiers, address, and telecommunications information
- Names of selected organizations along with their roles, participations, participation date ranges, identifiers, address, and telecommunications information
- Appointment details as specified in section 1.2.2.

3 DOCUMENT-LEVEL TEMPLATE

This chapter defines document-level template which describe the purpose and rules for constructing a conforming CDA document for its use case.

3.1 Appointment Document

`[ClinicalDocument: templateId 1.2.208.184.14.1]`

This template describes constraints that apply to the Appointment Document containing a planned health care service, for a period of time, for a specific reason at a specific location.

This document-level template contains the following information:

- Description and explanatory narrative
- Template metadata (e.g., `templateId`, etc.)
- Header constraints
- The required section-level template

Table 2: Appointment Document Contexts

Used By:	Contains Entries:
	Plan of treatment Section

Table 3: Appointment Document Constraints Overview

XPath	Card	Verb	Data Type	CONF#	Fixed Value
ClinicalDocument[templateId/@root = '1.2.208.184.14.1']					
component	1..1	SHALL		CONF-DK: 14	
structuredBody	1..1	SHALL		CONF-DK: 15	
component	1..1	SHALL		CONF-DK: 16	
section	1..1	SHALL		CONF-DK: 17	

1. **SHALL** contain exactly one [1..1] `templateId` (CONF-DK: 12) such that it
   a. **SHALL** contain exactly one [1..1] `@root`="1.2.208.184.14.1" (CONF-DK: 13).
2. **SHALL** contain exactly one [1..1] `component` (CONF-DK: 14).
   a. **SHALL** contain exactly one [1..1] `structuredBody` (CONF-DK: 15).
      i. This `structuredBody` **SHALL** contain exactly one [1..1] `component` (CONF-DK: 16) such that it
         1. **SHALL** contain exactly one [1..1] DK APD Plan of treatment section template (`templateId: 1.2.208.184.14.11.1`) (CONF-DK: 17).

4 SECTION-LEVEL TEMPLATE

This section contains section-level templates used by the Appointment Document in this Implementation Guide.

Each section-level template contains the following:

- Template metadata (e.g., `templateId`, etc.)
- Description
- Section code
- Section title
- Entry-level template names and Ids for referenced templates (required and optional)

4.1 Appointment Section

`[section: templateId 1.2.208.184.14.11.1]`

This section contains data that define an encounter for the appointment.

Table 4: Appointment Section Pattern Contexts

Used By:	Contains Entries:
Appointment document-level template (required)	Appointment entry-level

Table 5: Appointment Section Constraint Overview

XPath	Card	Verb	Data Type	CONF#	Fixed Value
section[templateId/@root = '1.2.208.184.14.11.1']					
templateId	1..1	SHALL		1098-7723	
@root	1..1	SHALL		CONF-DK: 18	1.2.208.184.14.11.1
@extension	1..1	SHALL		CONF-DK: 19	2017-03-10
Code	1..1	SHALL		1098-14749	
@code	1..1	SHALL		1098-14750	18776-5
@codeSystem	1..1	SHALL		1098-30813	2.16.840.1.113883.6.1
@codeSystemName	1..1	SHALL		CONF-DK: 20	LOINC
@displayName	1..1	SHALL		CONF-DK: 21	Plan of care note
title	1..1	SHALL		CONF-DK: 22	Aftale
text	1..1	SHALL		1098-7725	
entry	1..1	SHALL		CONF-DK: 23	
encounter	1..1	SHALL		CONF-DK: 24	

1. **SHALL** contain exactly one [1..1] `templateId` (CONF:1098-7723) such that it
    a. **SHALL** contain exactly one [1..1] `@root="1.2.208.184.14.11.1"` (CONF-DK: 18).
    b. **SHALL** contain exactly one [1..1] `@extension="2017-03-10"` (CONF-DK: 19).
2. **SHALL** contain exactly one [1..1] `code` (CONF: 1098-14749).
    a. This `code` **SHALL** contain exactly one [1..1] `@code="18776-5"`(CONF:1098-14750).
    b. This `code` **SHALL** contain exactly one [1..1] `@codeSystem="2.16.840.1.113883.6.1"` (CONF:1098-30813).
    c. This `code` **SHALL** contain exactly one [1..1] `@codeSystemName="LOINC"` (CONF-DK: 20).
    d. This `code` **SHALL** contain exactly one [1..1] `@displayName="Plan of care note"`(CONF-DK: 21).
3. **SHALL** contain exactly one [1..1] `title` (CONF-DK: 22).).
4. **SHALL** contain exactly one [1..1] `text` (CONF:1098-7725).
5. **SHALL** contain exactly one [1..1] `entry` (CONF-DK: 23) such that it
    a. **SHALL** contain exactly one [1..1] Planned Encounter (V2) template `(templateId: 1.2.208.184.14.11.2)` (CONF-DK: 24)

```
<section classCode="DOCSECT" moodCode="EVN">
  <!-- DK APD Plan of treatment section template -->
  <templateId root="1.2.208.184.14.11.1" extension="2017-03-10"/>
  <code code="18776-5" codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" displayName="Plan of care note" />
  <title>Aftale</title>
  <text>
    <paragraph>Aftale:</paragraph>
    <table width="100%">
      <tbody>
        <tr>
          <th>Status</th>
          <th>Aftale dato</th>
          <th>Vedrørende</th>
          <th>Mødested</th>
        </tr>
        <tr>
          <td>active</td>
          <td>2017-05-31 11:00 - 2017-05-31 11:20</td>
          <td>Ekkokardiografi (Ultralydsundersøgelse af hjertet)</td>
          <td>Vestergade 17, 5800 Nyborg</td>
        </tr>
      </tbody>
    </table>
  </text>

  <entry> [99 lines]

</section>
```

Figure 6: Appointment Section Example

5 ENTRY-LEVEL TEMPLATE

This part of the guide describes the entry template used within the section of the Appointment Document.

Entry-level template contains an `id` element, which is an identifier for that entry. This `id` may be referenced within the document, or by the system receiving the document. The `id` assigned must be globally unique.

5.1 Appointment content

`[encounter: templateId 1.2.208.184.14.11.2]`

This template is used to specify the content for a planned health care service, for a period of time, for a specific reason at a specific location.

Table 6: Appointment content Contexts

Used By:	Contains Entries:
Appointment section (required)	Appointment content

Table 7: Appointment content Constraints Overview

XPath	Card	Verb	Data Type	CONF#	Fixed Value
encounter[templateId/@root = '1.2.208.184.14.11.2']					
@classCode	1..1	SHALL		1098-8564	2.16.840.1.113883.5.6 (HL7ActClass)=ENC
@moodCode	1..1	SHALL		CONF-DK: 25	2.16.840.1.113883.11.10.9.23 (Planned moodcode) = APT
templateId	1..1	SHALL		1098-30437	
@root	1..1	SHALL		CONF-DK: 26	1.2.208.184.14.11.2
@extension	1..1	SHAL		CONF-DK: 27	2017-03-10
id	1..1	SHALL		CONF-DK: 28	
Code	1..1	SHALL		CONF-DK: 29	
@code	1..1	SHALL		CONF-DK: 30	185353001
@codeSystem	1..1	SHALL		CONF-DK: 31	2.16.840.1.113883.6.96
@codesystemName	1..1	SHALL		CONF-DK: 32	SNOMED CT
@displayname	1..1	SHALL		CONF-DK: 33	Aftale dato
statusCode	1..1	SHALL		CONF-DK: 34	2.16.840.1.113883.5.14 (ActStatus) = active, suspended, aborted or completed
effectiveTime	1..1	SHALL		CONF-DK: 35	
low	1..1	SHALL		CONF-DK: 36	

XPath	Card	Verb	Data Type	CONF#	Fixed Value
@value	1..1	SHALL		CONF-DK: 37	
high	1..1	SHALL		CONF-DK: 38	
@value	1..1	SHALL		CONF-DK: 39	
performer	1..1	SHALL		CONF-DK: 40	
assignedEntity	1..1	SHALL		CONF-DK: 41	
author	0..*	SHOULD		CONF-DK: 42	
participant	1..1	SHALL		CONF-DK: 43	
@typeCode	1..1	SHALL		1098-31875	2.16.840.1.113883.5.100.2 (HL7ActRelationshipType)=LOC
participantrole	1..1	SHALL		CONF-DK: 44	
entryRelationship	1..1	SHALL		CONF-DK: 45	
@typeCode	1..1	SHALL		1098-31034	2.16.840.1.113883.5.100.2 (HL7ActRelationshipType)=RSON
observation	1..1	SHALL		CONF-DK: 46	

1. **SHALL** contain exactly one [1..1] `@classCode="ENC"` (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6` **STATIC**) (CONF:1098-8564).
2. **SHALL** contain exactly one [1..1] `@moodCode="APT"` Event (CodeSystem: `ActMood 2.16.840.1.113883.11.20.9.23` **STATIC**) (CONF-DK: 25).
3. **SHALL** contain exactly one [1..1] `templateId` (CONF:1098-30437) such that it
    a) **SHALL** contain exactly one [1..1] `@root="1.2.208.184.14.11.2"` (CONF-DK: 26).
    b) **SHALL** contain exactly one [1..1] `@extension="2017-03-10"` (CONF-DK: 27).
4. **SHALL** contain exactly one [1..1] `id` (CONF-DK: 28)
    a. This `id` **SHALL** be a globally unique identifier for the appointment (CONF-DK: 29).
5. **SHALL** contain exactly one [0..1] `code` (CONF-DK: 30) such that it
    a. **SHALL** contain exactly one [1..1] `@code="185353001"` (CONF-DK: 31).
    b. **SHALL** contain exactly one [1..1] `@codeSystem="2.16.840.1.113883.6.96"` (CONF-DK: 32).
    c. **SHALL** contain exactly one [1..1] `@codeSystemName="SNOMED CT"` (CONF-DK: 33).
    d. **SHALL** contain exactly one [1..1] `@displayName="Aftale dato"` (CONF-DK: 34).

An appointment document will always be initiated with `statusCode = "active"` indicating that the Act can be performed. The `statusCode = "suspended"` signals a paused appointment. Once the appointment is completed the `"completed" statusCode` is used. `statusCode = "aborted"` indicates that the Act has been abandoned.

6. **SHALL** contain exactly one [1..1] `statusCode` (CONF:134).
   a. This `statusCode` **SHALL** contain exactly one [1..1] `@code="active"` or `@code="aborted"` or `@code="suspended"` or `@code="completed"` (CodeSystem: `ActStatus 2.16.840.1.113883.5.14`) (CONF-DK: 35).

EffectiveTime represents the time for planned appointment.

7. **SHALL** contain exactly one [1..1] `effectiveTime` (CONF-DK: 36) such that it
   a. **SHALL** contain exactly one [1..1] low (CONF-DK: 37).
      i. **SHALL** contain exactly one [1..1] `@value` (CONF-DK: 38).
   b. **SHALL** contain exactly one [1..1] high (CONF-DK: 39).
      i. **SHALL** contain exactly one [1..1] `@value` (CONF-DK: 40).

A performer represents the organization/person that is responsible for the planned health care service.

8. **SHALL** contain exactly one [1..1] `performer` (CONF-DK: 41). such that it
   a. **SHALL** contain exactly one [1..1] `assignedEntity` (CONF-DK: 42) as specified in section 5.2

The author represents the organization/person who is requesting an appointment for health care service. Information on the conformance criteria regarding the author information is specified in in the DK-CDA-header document.

9. **SHOULD** contain zero or one [0..1] `author` (CONF-DK: 43).

The location participant captures where the planned appointment for the health care service will take place.

10. **SHALL** contain exactly one [1..1] `participant` (CONF-DK: 44) such that it
    a. **SHALL** contain exactly one [1..1] `@typeCode="LOC"` (CodeSystem: `HL7RelationshipType 2.16.840.1.113883.5.1002`) (CONF:1098-31875).

b. **SHALL** contain exactly one [1..1] `participantrole` (CONF-DK: 45) as described in section 5.3.

The following entryRelationship captures the reason for the planned appointment for the health care service.

11. **SHALL** contain exactly one [1..1] `entryRelationship` (CONF-DK: 46) such that it
    a. **SHALL** contain exactly one [1..1] `@typeCode="RSON"` (CodeSystem: `HL7ActRelationshipType 2.16.840.1.113883.5.1002`) (CONF:1098-31875).
    c. **SHALL** contain exactly one [1..1] `observation` (CONF-DK: 47) as described in section 5.4.

```
<entry>
  <encounter moodCode="APT" classCode="ENC">
    <!-- DK APD Planned Encounter template -->
    <templateId root="1.2.208.184.14.11.2" extension="2017-03-10" />

    <id root="1.2.208.184" extension="9a6d1bac-17d3-4195-89a4-1121bc809b4d" assigningAuthorityName="MedCom"/>
    <code code="185353001" displayName="Aftale dato" codeSystemName="SNOMED CT"
      codeSystem="2.16.840.1.113883.6.96">
    </code>
    <statusCode code="active" />

    <!-- time period for the planned health care service -->
    <effectiveTime>
      <low value="20170531110000+0100"/>
      <high value="20170531120000+0100"/>
    </effectiveTime>

    <!-- responsible organisation/person for the health care service -->
    <performer typeCode="PRF"> [25 lines]

    <!-- organisation/person who are requesting the appointment (placer) -->
    <author typeCode="AUT" contextControlCode="OP"> [25 lines]

    <!-- location for the planned health care service -->
    <participant typeCode="LOC">
      <participantRole classCode="SDLOC"> [14 lines]
    </participant>

    <!-- reason for the planned health care service -->
    <entryRelationship typeCode="RSON">
      <observation classCode="OBS" moodCode="RQO">
        <code code="NI" displayName="Ekkokardiografi (Ultralydsundersøgelse af hjertet)"/>
      </observation>
    </entryRelationship>
  </encounter>
</entry>
```

Figure 7: Appointment content Example

5.2 assignedEntity for the planned health care service

This template is used to specify the organization/person responsible for the planned care.

Table 8: assignedEntity content Constraints Overview

XPath	Card	Verb	Data Type	CONF#	Fixed Value
assignedEntity					
Id	1..1	SHALL			
@extension	1..1	SHALL			
@root	1..1	SHALL			
@assigning AuthorityName	1..1	SHALL			
Addr	1..1	SHALL			
telecom	1..1	SHALL			
assignedPerson	1..1	SHOULD			
represented organization	1..1	SHALL			

The conformance criteria for assignedEntity elements are specified in in the DK-CDA-header document.

5.3 Service delivery location

This template is used to specify where the planned appointment for the health care service will take place.

Table 9: Appointment participantrole content Constraints Overview

XPath	Card	Verb	Data Type	CONF#	Fixed Value
participantrole[templateId/@root = '1.2.208.184.14.11.3']					
@classCode	1..1	SHALL			SDLOC
templateId	1..1	SHALL			
@root	1..1	SHALL			1.2.208.184.14.11.3
@extension	1..1	SHALL			2017-03-10
id	1..1	SHALL			
@extension	1..1	SHALL			
@root	1..1	SHALL			1.2.208.176.1.1
@assigning AuthorityName	1..1	SHALL			SOR
addr	1..1	SHALL			
telecom	1..1	SHALL			
playingEntity	1..1	SHALL			
name	1..1	SHALL			

The address to be used is "besøgsadressen" in the SOR registry.

1. **SHALL** contain exactly one [1..1] `@classCode="SDLOC"` (CONF-DK: 48).
2. **SHALL** conform to the DK Service Delivery Location template (templateId: 1.2.208.184.14.11.3) (CONF-DK: 49).
3. **SHALL** contain exactly one [1..1] `@extension="2017-03-10"` (CONF-DK: 50).
4. **SHALL** contain exactly one [1..1] `id` (CONF-DK: 51) such that it
    a) **SHALL** contain exactly one [1..1] `@extension` as a unique identifier for the physical address for the visit (SOR-besøgsadressen), (CONF-DK: 52).

b) **SHALL** contain exactly one [1..1] `@root="1.2.208.176.1.1"` (CONF-DK: 53).
c) **SHALL** contain exactly one [1..1] `@assigningAuthorityName="SOR"` (CONF-DK: 54).

5. **SHALL** contain exactly one [1..1] `addr` (CONF-DK: 55). The conformance for the `addr` is specified in in the DK-CDA-header document.
6. **SHALL** contain exactly one [1..1] `telecom` (CONF-DK: 56). The conformance for the `telecom` is specified in in the DK-CDA-header document.
7. **SHALL** contain exactly one [1..1] `playingEntity` (CONF-DK: 57) such that it
    a) **SHALL** contain exactly one [1..1] `@name` as a free text for the physical address for the visit (SOR-besøgsadressen), (CONF-DK: 58).

5.4 Indication identifier

This template is used to specify the reason for the planned appointment for the health care service.

Table 10: Appointment observation content Constraints Overview

XPath	Card	Verb	Data Type	CONF#	Fixed Value
observation					
@classCode	1..1	SHALL		CONF-DK: 48	2.16.840.1.113883.1.11.11529 (Observation) = OBS
@moodCode	1..1	SHALL		CONF-DK: 49	2.16.840.1.113883.11.20.9.25 (Request) = RQO
code	1..1	SHALL		CONF-DK: 50	
@code	1..1	SHALL		CONF-DK: 51	2.16.840.1.113883.5.1008 (NullFlavor) = NI
@displayName	1..1	SHALL		CONF-DK: 52	

A performer represents the organization/person that is responsible for the planned health care service.

1. **SHALL** contain exactly one [1..1] `@classCode="OBS"` (CONF-DK: 59).
2. **SHALL** contain exactly one [1..1] `@moodeCode="RQO"` (CONF-DK: 60).

   Reason for the planned appointment for the health care service (free text).

3. **SHALL** contain exactly one [1..1] `code` (CONF-DK: 61) such that it

a) **SHALL** contain exactly one [1..1] `@code="NI"` (CONF-DK: 62).
b) **SHALL** contain exactly one [1..1] `@displayName` (CONF-DK: 63).

6 APPENDIX A. APPOINTMENT CONTENT

Appendix A shows the mapping between the appointment content and the CDA structure.

Data	Header/ Body	CDA element
Identification	H	Clinicaldocument
Patient	H	recordTarget
Appointment requester	B	Author
Appointment responsible	H	Author
Start date/time	B	EffectiveTime
End date/time	B	Effective Time
Performing	B	Performer
Location	B	Participant
Reason	B	entryRelationship
Appointment status	B	encounter

7 APPENDIX B. DK TEMPLATES

Appendix B shows the link between the DK templates and HL7 C-CDA templates used in this specification.

Id	Template name	Relationship	Status
1.2.208.184.14.1	DK CDA Appointment Document	N/A	Temporary
1.2.208.184.14.11.1	DK APD Plan of treatment section template	2.16.840.1.113883.10.20.22.2.10	Temporary
1.2.208.184.14.11.2	DK APD Planned Encounter template	2.16.840.1.113883.10.20.22.4.40	Temporary
1.2.208.184.14.11.3	DK Service Delivery Location	2.16.840.1.113883.10.20.22.4.32	Temporary

8 APPENDIX C. EXAMPLE DATA

This appendix C shows an example on how data for an appointment are used in the DK-APD_Example_1.xml.

The patient, cpr: 2512489996, Nancy Ann Berggren, Skovvejen 12, Landet 5700 Svendborg is referred to the hospital by her General Practitioner, SOR-id 48681000016007, Lægerne Toldbodvej, Toldbodvej 9 5700 Svendborg for an Ekkokardiografi (Ultralydsundersøgelse af hjertet).

The referral is send to SOR-id 242621000016001, OUH Radiologisk Afdeling (Svendborg), Valdemarsgade 53 Svendborg, who is executing the booking.

OUH Radiologisk Afdeling (Svendborg) has two sites, one in Svendborg and one in Nyborg. Both sites have the same administrative address, Valdemarsgade 53, 5700 Svendborg. The booking system is maintained by SOR-id 515361000016007 OUH Klinisk IT (Odense), J. B. Windsløvsvej 4 1, 5000 Odense C.

The booking is settled to May 31st 2017, 11.00-11.20 at SOR id 320161000016005, OUH Radiologisk Ambulatorium (Nyborg), Valdemarsgade 53, 5700 Svendborg. The address for the visit is OUH Radiologisk Ambulatorium (Nyborg), Vestergade 17, 5800 Nyborg.

The responsible for planned medical service is læge Anders Andersen.

The patient can change the appointment by calling læge Jens Jensen, phone 66113333-1.

HEADER		
recordTarget	Cpr number	2512489996
	Patient name	Nancy Ann Berggren
	Patient address	Skovvejen 12 Landet 5700 Svendborg
	Phone	65123456
author	Id (SOR)	242621000016001
	Organization	OUH Radiologisk Afdeling (Svendborg)
	Phone (work)	66113333-1
	Address	Valdemarsgade 53 5700 Svendborg
custodian	Id (SOR)	515361000016007
	Organization	OUH Klinisk IT (Odense)
	Phone (work)	66113333-2
	Address	J. B. Winsløvsvej 4 1 5000 Odense C

BODY		
performer	Id (SOR)	320161000016005
	Organization	OUH Radiologisk Ambulatorium (Nyborg)
	Phone (work)	66113333-3
	Address	Valdemarsgade 53 5700 Svendborg
author	Id (SOR)	48681000016007
	Organization	Lægerne Toldbodvej
	Phone (work)	62214518
	Address	Toldbodvej 9 5700 Svendborg
participant	Id (SOR)	320161000016005
	Phone (work)	66113333
	Address (SOR besøgsadresse)	Vestergade 17 5800 Nyborg
	Phone (work)	66113333-4