**RDE from Cerner (Pharmacy) to eICU**

**1.4**

**Prepared By: Lois Whitley & Tom Fredrickson**

**Date: 7/30/2019**

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# **Document Control**

## Resources

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## Project Distribution List

## Document Version Control

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Modifier** | **Description** |
| V1.0 | 11/30/2016 | Lois Whitley | Originally Created |
| V1.1 | 12/23/2016 | Tom Fredrickson | Updated Cloverleaf Technical Information |
| V1.2 | 3/13/2019 | Art Schwartz | TPN order logic |
| V1.3 | 6/13/2019 | Art Schwartz | Cerner Model Logic |
| V1.4 | 7/29/2019 | Charles Markwardt & Tiffany Bohall | Cerner Model Logic as a result of consolidating interfaces |
|  |  |  |  |

# 1. Introduction

## 1.1 Purpose

The purpose of this document is to outline the Pharmacy Orders (RDE) interface requirements for the Philips eCareManager application (also known as Virtual ICU and eICU) from Cerner PharmNet.

## 1.2 Project Scope

The eICU program includes the Philips eCareManager application which gathers demographic, lab result, pharmacy order, charting, and vital sign information for all inpatients, ED, and outpatients in a bed.

Integration for the eCareManager (eICU) application includes an ADT interface from Soarian, ADT interface from Cerner for Heights and Weights, Orders from the Cerner PharmNet (Pharmacy) system, results from Cerner PathNet (Lab), and CCL flow sheet results from Cerner.

## 1.3 Terminology Standards

### 1.3.1 Acronyms

ACK – General acknowledgement message

ADT – Admission, Discharge and Transfer Message

eICU – electronic intensive care unit; critical care telehealth program

ORU – Observation result/unsolicited

RDE – Pharmacy encoded order message

### 1.3.2 Glossary

eCareManager – Enterprise Telehealth Software suite

Philips – vendor name

## 1.4 Document References

ECAREMANAGER Medication Orders Inbound Interface Vendor Specs

eICU Integration Roadmap

# *2.* Diagram

eCareManager IPC Interface patient Cache

Cerner PharmNet RDE

rde\_cer\_xi6

eCareManager

Database

TCP/IP

TCP/IP

Orion Rhapsody Interface Gateway for eCareManager

Cloverleaf

rde\_eicu\_out

# 3. Requirements

## 3.1 Functional Requirements

Provide detail for the below functional requirements. The message transformation requirements for the components defined in this specification should be specified in section 4.2 of this document.

|  |  |  |
| --- | --- | --- |
| **Cloverleaf** |  |  |
| **Number** | **Requirement Name** | **Requirement Description** |
| FR.2019.7.30 | tpsCernerFacilityHandler |  |
| FR.2016.1.0 | Facility filter | There is a facility filter for limiting messages to just those facilities that have implemented eICU beds. This includes the following:  PV1.3.3 = one of the following: MCS MDU MPH NBY SAH SFB SJN SJS BAH SJH BRM WHH SJW WHW. |
| FR.2016.2.0 | Filter unwanted transactions from eICU | Transactions >=4 days post-discharge.  Outpatients not in a bed.  Pediatric patients. |
| FR.2016.5.0 | tpsNormalizePCAeICU | Normalize observation values for PCA orders outbound from Cerner bound for eICU. e.g.  If (Requested Give Code - Alt ID) RXO-1.4 = “PCA” then  If (Observation Identifier – Name of Coding System) OBX-3.3 = “Dose” then “Dose PCA”  Same for Delay, Bolus, One Hour Limit, Basal. |
| FR.2019.6.0 | Block AL1 | Now down in Cloverleaf pre-proc previously done in Cerner |
| FR.2016.4.0 | Cerner Gap Coverage for RXE | Build @mixtureText RXE:2.5 for when Cerner can't consistently provide. Conditionally RXC exists for mixtures only. per gap analysis done by Ny-Esha Lee w/Philips |
| FR.2019.7.30 | tpsHL7ChangeData | Replace RXC.2.5 with nulls |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Cerner** |  |  |
| **Number** | **Requirement Name** | **Requirement Description** |
| 2019.07.17 | Cerner interface | Existing interface rde\_tcp\_out is used to send both Pharmacy order (RDE) and Dispense (RDS) messages for IV fluid meds. |
|  | Contributor system | PYXISRX |
|  | Contributor Source | PYXIS |
|  | Outbound field processing | MSH 3.0 = HNAM  MSH 4.0 = HNAM  MSH 5.0 = PYXIS  MSH 6.0 = PYXIS  Send AL1 segments  Send the Pharmacy ID type = Pyxis Interface ID  Send Item Alias  Round duration and infusover to whole numbers  Repeating OBX  Max number of OBX = 2 |
|  | Global Script - ESO\_GET\_ORDER\_SELECTION | Skip if the order doesn’t have any ingredients |
|  | Mod Object – rde\_rds\_pharm\_out | Skip if there is no RDE group in the message  Skip if the order control reason (ORC 16.4) = CD:89800833  Preforms additional business logic which can be found in the section 4.3 FSI Data Transformation |

## 3.2 Non-Functional Requirements -N/A

Provide concise detail for the below non-functional requirements. The below requirements must be evaluated for every project.

|  |  |  |
| --- | --- | --- |
| **Cloverleaf** |  |  |
| **Number** | **Requirement Name** | **Requirement Description** |
| NFR.20XX.1.0 | Click here to enter text. | Click here to enter text. |

## 3.3 Messaging Protocols

Below are listed the details for the messaging protocols that will be leveraged for this integration. Please see the reference document located on the Integration SharePoint server: <insert link to document here>

### 3.3.1 Inbound from Cerner to Cloverleaf

* Site: eicu\_9\_p Thread: rde\_cer\_xi6

### 3.3.2 Outbound to eICU

* Site: eicu\_9\_p Thread: rde\_eicu\_out

### 

### 3.3.3 Inbound from Cerner to Cloverleaf

Test

IP Address: 10.5.250.203

Port Number: 22005

Prod

IP Address: 10.5.250.201

Port Number: 22005

### 3.3.4 Outbound to eICU

Test

IP Address: 10.44.110.109

Port Number: 10003

Prod

IP Address: 10.44.110.77

Port Number: 10003

# 4. HL7 Messaging

## 4.1 Messaging Format

### 4.1.1 Segments

The segments utilized for this interface are:

MSH

PID

ORC

RXE

RXR

*Message Construction Notes:*

*[Square Brackets] – Optional*

*{Curly Brackets} – Repeatable*

*MSH – Message Header*

*PID – Patient ID segment*

*ORC – Common Order segment*

*RXE – Pharmacy Encoded Order segment*

*RXR – Pharmacy Route segment*

*[{ – Start of optional, repeatable group*

*}] – End of optional, repeatable group*

### 4.1*.*2 Messaging Event Types

Below are the messages types necessary for this integration

|  |  |
| --- | --- |
| **Event Type** | **Description** |
| O01 | Order message |

### 4.1*.*3 Cloverleaf Configuration Files

tpsCernerFacilityHandler

tpsAdvHL7Filter.tcl

tpsFilterEICU.tcl

tpsNormalizePCAeICU.tcl

tpsHL7FilterSegment

tpsHL7ChangeData

cerner\_eicu\_pharm\_1.xlt

### 4.1.4 Cloverleaf Site Location

eicu\_9

## 4.2 Data Transformation Requirements Cerner

| **Field Description** | **HL7 Field Loc.** | **Required Y/N/RE** | **Notes** |
| --- | --- | --- | --- |
| Sending Application | MSH.3 | Y | MSH 3.0 = HNAM |
| Sending Facility | MSH.4 | Y | MSH 4.0 = HNAM |
| Receiving application | MSH.5 | Y | MSH 5.0 = PYXIS |
| Receiving Facility | MSH.6 | Y | MSH 5.0 = PYXIS |
| Date/Time of Message | MSH.7 | Y | YYYYMMDDHHMMSS  Date/Time the ACK message was created |
| Common order | ORC | Y |  |
| Quantity/Timing | ORC.7 | Y |  |
| Quantity | ORC.7.1 | N | If the order\_detail table has the value of oe\_field\_display\_value = “Soft Stop” and oe\_field\_meaning = “STOPTYPE” this field will be blank. |
| Interval | ORC.7.2 | N | If frequency is present this field will be populated |
| End Date/Time | ORC.7.5 | N | If the order\_detail table has the value of oe\_field\_display\_value = “Soft Stop” and oe\_field\_meaning = “STOPTYPE” this field will be blank. |
| Pharmacy Encoded Order Segment | RXE | Y |  |
| Quantity/Timing | RXE.1 |  |  |
| Interval | RXE.1.2 | N | If frequency is present this field will be populated |
| Duration | RXE.1.3 | N | If the order\_detail table has the value of oe\_field\_display\_value = “Soft Stop” and oe\_field\_meaning = “STOPTYPE” this field will be blank. |
| End Date/Time | RXE.1.5 | N | If the order\_detail table has the value of oe\_field\_display\_value = “Soft Stop” and oe\_field\_meaning = “STOPTYPE” this field will be blank. |
| Give Amount - Minimum | RXE.3 | N | Copied from RXC.3 |
| Give Amount – Maximum | RXE.4 |  | Copied from RXC.4 |
| Pharmacy Order Component | RXC |  |  |
| Component Code – Name of Alternate Coding System | RXC.2.6 | N | If the medication identifier has a value on the med\_identifier table in Cerner |
| Custom segment | ZX1 |  |  |
| Dispense category | ZX1.7 |  | Populate if present |

## 4.3 Data Transformation Requirements in Cloverleaf

| **Field Description** | **HL7 Field Loc.** | **Required Y/N** | Data Type | **Length** | **Notes** |
| --- | --- | --- | --- | --- | --- |
| Message Header | MSH.1 |  |  |  | copy |
| Encoding Characters | MSH.2 |  |  |  | copy |
| Sending Application | MSH.3 |  |  |  | Hard code BCHS\_MED |
| Sending Facility | MSH.4 |  |  |  | Copy from PV1.3.3 |
| Receiving Facility | MSH.6 |  |  |  | Copy from PV1.3.3 |
| Date/Time of Message | MSH.7 |  |  |  | YYYYMMDDHHMMSS  Date/Time the ACK message was created |
| Message Type | MSH.9 |  |  |  | copy |
| Message Control ID | MSH.10 |  |  |  | copy |
| Patient ID (Internal ID) | PID.3 |  |  |  | Unique for instance of care FIN# Moved PID:18 to PID:3 |
| Order Control | ORC.1 |  |  |  | Order Control Codes Recognized:  NW= New Order  RP= Order Replace Request  RU=Replaced Order Unsolicited  RO=Replacement Order  RQ=Order Replaced as Requested  CA= Cancel Order Request  OC=Order Canceled  CR=Order Canceled as Requested  DC=Discontinue Order Request  OD=Order Discontinued  DR=Order Discontinued as Requested  HD=Hold Order Request  OH=Order Held  HR=Order on Hold as Requested  RL=Release Previous Hold  OE=Order Released  OR=Order Released as Requested  XO=Change Order Request  XX=Order Changed Unsolicited  XR=Order Changed as Requested |
| Placer Order Number | ORC.2 |  |  |  | Primary Key for Medication Orders |
| Ordering Provider | ORC.12 |  |  |  | ^FamilyName^GivenName^Initial |
| Order Effective Date/Time | ORC.15 |  |  |  | YYYYMMDDHHMMSS |
| Quantity/Timing | RXE.1 |  |  |  | ^Interval^^Start Date/Time^^^Condition  Interval=Medication Frequency  Start Date/Time=D/T medication administration is ordered to begin  Condition=Indicates if medication is to be administered PRN |
| Give Code | RXE.2 |  |  |  | Identifies drug ordered  Regular order = Identifier^Text^Coding System Name^^Alternate Text  Mixture order =^^^^Alternate Text  Identifier and Coding System Name used in combination to map corresponding drug  Coding System Name = BCHS\_MED  Text used to populate complete drug name  Alternate Text populates Drug Name in Regular Orders; Mixture Orders describes the complete name of the mixture |
| Give Amount – Minimum | RXE.3 |  |  |  | Regular medications= combined with Units to display on Medications View screen  Mixtures=if null, then the Dose and Dose Units for each ingredient is populated as a regular drug |
| Give Units | RXE.5 |  |  |  | Regular medications=used to properly identify units in eCareManager  Mixtures = if RXE.3 is not populated, then Dose and Dose Units for each ingredient is populated as a regular drug |
| Provider’s administration instrutions | RXE-7.1 |  |  |  | IF TPN hard code “SEE SOURCE SYSTEM” |
| Route | RXR.1 |  |  |  | This value should match one of the route codes in eCareManager route mapping utility; stored as Route and shown in the Medications View screen.  i.e. IV, PO |
|  | RXC |  |  |  | If not TPN Pathcopy RXC segments |

## 4.4 Sample Message

**Pharmacy Orders Outbound**

MSH|^~\&|BCHS\_MED|MCS||MCS|20190724134731||RDE^O01|Q4432208739T5825938426|P|2.3

PID|||6000144787^^^&BCHS^FIN^&MCS

ORC|XO|15245647855^HNAM\_ORDERID||||||||||^LQLGSN^MUCLLFXUSH HWAGWD|||20190724134730

RXE|^^^20190724134200|2342798^sodium chloride 0.9%- 500 mL^BCHS\_MED^^Sodium Chloride 0.9% 1,000 mL|1000||mL||||||||||||||||||100.000000|mL/hr

RXR|IV

# **5. Testing**

## 5.1. Unit Testing Scenarios

|  |  |
| --- | --- |
| **Scenario** | **Expected Result** |
| TPN orders |  |
|  |  |
|  |  |
|  |  |
|  |  |

## 5.2 Integrated Testing Scenarios

|  |  |
| --- | --- |
| **Scenario** | **Expected Result** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

## 5.3 Testing Approvals

|  |  |  |  |
| --- | --- | --- | --- |
| **Testing Phase** | **Date** | **Department** | **Team Member** |
| PH1.UNIT |  |  |  |
| PH1.INTEGRATED |  |  |  |

### 

## 5.4 Piloting

List the facilities and associated networks in scope for pilot testing.

## 5.5 Approvals

|  |  |  |  |
| --- | --- | --- | --- |
| **Testing Phase** | **Date** | **Department** | **Team Member** |
| PH1.0 |  |  |  |
|  |  |  |  |
|  |  |  |  |

# 6. Deployment / Implementation Model

Provide the detail as to how to deploy the solution defined in the IDBB from both the BAYCARE and vendor perspective.

## 6.1 Alerts

Are you going to need alerting on this connection?

|  |  |
| --- | --- |
| Yes |  |
| No |  |

If the answer is yes, please complete the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Site Name** | **Hours of Support** | **Distribution Group** | **Comments** |
|  |  |  |  |
|  |  |  |  |

# Appendix A: Risks and Concerns

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Name** |  |  | | |  |  |  |  |
| **Number** | **Risk / Concern** | **Comment** | **Mitigation** | | |  |  |  |
| RC.2013.1.0 |  |  | |  | |  |  |  |

# Appendix B: Issues List

This is a dynamic list of the open issues related to the IDBB that remain to be solved, including but not limited to TBDs, pending decisions, information needed, conflict awaiting resolution, and the like.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Name** |  |  | | |  |  |  |  |
| **Number** | **Issue** | **Comment** | **Fix** | | |  |  |  |
| I.2013.1.0 |  |  | |  | |  |  |  |

* End of document