**Provation to Cerner ORU Requirements**

**Version 1.3**

**Prepared By: Levy Lazarre & Jerome Starke**

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# **Document Control**

## Resources

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## Project Distribution List

## Document Version Control

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Modifier** | **Description** |
| V1.0 | 10/10/17 | Levy Lazarre | Original document |
| V1.1 | 10/11/17 | Jerome Starke | Adding Millennium Changes |
| V1.2 | 10/23/17 | Jerome Starke | Adding some issues |
| V1.3 | 04/03/18 | Dan Olszewski | Adding in non-functional req |

# 1. Introduction

## 1.1 Purpose

The purpose of this document is to describe the ORU (results) Interface from Provation MD to Cerner Millennium.

Provation is an external application used by physicians to document endoscopic procedures. It has been selected by   
BayCare to replace the current EndoWorks system, that is being sunset by the vendor. Some of the advantages of Provation are an increase in workflow efficiency and a marked improvement in documentation, coding and reimbursement processes.

## 1.2 Project Scope

The scope of this project is to automate the integration of the Provation MD system with Cerner Millennium via a one-way Orders interface from Cerner to Provation and a one-way Results interface from Provation to Cerner. Patients demographic information will be acquired by Provation from the Orders interface. For the sake of simplicity and quick implementation, an ADT interface is currently out of scope for this project, although it may be implemented later.

## 1.3 Terminology Standards

### 1.3.1 Acronyms

**ADT** – Admission, Discharge, Transfer: mainly demographic and patient location data

**ORU** – Result Message

### 1.3.2 Glossary

**ADT Event** – Trigger event associated with a patient event: registration, admission, discharge, transfer, update…

## 1.4 Document References

1. MD Results Message Specifications\_07.pdf

2. 5.0 TechArchv50-08.pdf

3. 5.0 TechSpecv50-23.pdf

4. BACFL Mapping Spreadsheet.xls

# 2. Diagram

This diagram shows the results flow between Provation (source) and Cerner Millennium (target).

# 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.2017.1.0 | Send BayCare CPI in PID.3 | Provation will send back the BayCare CPI as the main patient identifier to Cerner in PID.3 and Cloverleaf will hardcode the identifier type code to “BCCPI” in PID.3.5 |
| FR.2017.2.0 | Send BayCare FIN in PID.18 | Provation will send back the BayCare account number (FIN) in PID.18 and Cloverleaf will hardcode the identifier type code to “BCFN” in PID.18.5 |
| FR.2017.3.0  FR.2017.4.0  FR.2017.5.0  FR.2017.6.0 | Send “RE” as order control code in ORC.1 for the result  Principal Result Interpreter must be output as sub-subfields to parse and post correctly on Cerner  Provation will send two  OBX segments to Cerner  For report corrections and addendums, Provation will send an “A” in OBR.25 and OBX.11 | Cloverleaf will harcode a value of “RE” (Observations/Performed Service to follow) in ORC.1  Must reformat Principal and Assistant Result Interpreters in order to post correctly in Cerner  The first OBX will be of type “TX” (plain text) and will comprise of a single line of multiple sentences separated by the HL7 repetition delimiter (~). Cerner will accordingly break this single line into multiple lines of text for proper display in the application.  The second OBX will be of type “ED” and will carry the base-64 encoded PDF narration of the result.  This is for Cerner to display a highlighted warning at the beginning of the report that there have been changes or addendums to the original report. |
|  |  |  |
|  |  |  |

## 3.2 Non-Functional Requirements

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

|  |  |  |
| --- | --- | --- |
| **Cerner** |  |  |
| **Number** | **Requirement Name** | **Requirement Description** |
| NFR.20XX.1.0 | Only acronym END aliases get sent to Provation | The order interface only send orders that are aliased with END in the alias and skips the rest. |

## 3.3 Messaging Protocols

Below are listed the details for the messaging protocols that will be leveraged for this integration.

### 3.3.1 Inbound to the BayCare Cloverleaf from Provation

* TCP MLLP Server Connection

### 3.3.2 Outbound to Cerner

* TCP MLLP Client Connection

### 3.3.3 Cerner Inbound interface (sharing Endoworks feed)

* TCP MLLP Client Connection  
    
  

# 4. HL7 Messaging

## 4.1 Messaging Format

### 4.1.1 Segments

The segments utilized for this interface are:

MSH

PID

PV1

ORC

OBR

{OBX}

*Message Construction Notes:*

*[Square Brackets] – Optional*

*{Curly Brackets} – Repeatable*

*MSH – Message Header*

*PID – Patient ID segment*

*PV1 – Patient Visit segment*

*PV2 – Patient Visit – additional information*

*ORC – Common Order segment*

*OBR – Observation Request segment*

*OBX – Observation/result segment*

*NTE – Notes and comments segment*

### 4.1*.*2 Messaging Event Types

Below are the messages types necessary for this integration

Supported ORU Events

|  |  |
| --- | --- |
| **Event Type** | **Description** |
| R01 | Result Message |

### 4.1*.*3 Cloverleaf Configuration Files

For each HL7 interface specified in Section 2 of this document, identify the Cloverleaf Configuration Files: Variants, TCL Scripts, Xlates, etc.

HL7 Variants: 2.3 cerner\_emr

Xlate: provation\_ cerner\_oru.xlt

### 4.1.4 Cloverleaf Site Location

Production = cerner\_results\_7\_p

Test = cerner\_results\_7

## 4.2 Data Transformation Requirements

| **Field Description** | **HL7 Field Loc.** | **Required R/O/C** | **Data Type** | | **Length** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| **Message Header Segment** | **MSH** | R |  | |  | PathCopy |
| Sending Application | MSH.3 | C |  | |  | Hardcode “PROVATION” |
| Sending Facility | MSH.4 | C |  | |  | Copy. If MSH.4 = SDS (St Joseph’s Day Surgery), copy “SJH” to MSH.4 |
| Receiving Application | MSH.5 | O |  | |  | Hardcode “POSTIMAGE” |
| Receiving Facility | MSH.6 | Y |  | |  | Hardcode “HNAM” |
| HL7 Version | MSH.12 | Y |  | |  | Hardcode “2.3” |
| **Patient Identifier Segment** | **PID** | R |  | |  |  |
| Patient ID (Internal) | PID.3 | R |  | |  | Provation is sending the BayCare CPI in this field. Copy it to the first subfield of PID.3. Copy “BCCPI” as the ID type code to the fifth subfield of PID.3 |
| Patient Name | PID.5 | R |  | |  | Copy |
| Date of Birth | PID.7 | O |  | |  | Copy |
| Gender | PID.8 | O |  | |  | Copy |
| Race | PID.10 | O |  | |  | Copy |
| Patient Account Number | PID.18 | R |  | |  | Copy (first component of PID.18). Copy “BCFN” ” as the ID type code to the fifth subfield of PID.18 |
| SSN Number - Patient | PID.19 | O |  | |  | Copy |
| **Patient Visit Segment** | **PV1** | R |  | |  |  |
| Set ID – PV1 | PV1.1 | O |  | |  | Hardcode “1” |
| Patient Class | PV1.2 | O |  | |  | Copy |
| Assigned Patient Location | PV1.3 | R |  | |  | Copy |
| Admission Type | PV1.4 | O |  | |  | Copy |
| Attending Physician | PV1.7 | O |  | |  | PathCopy |
| Referring Physician | PV1.8 | O |  | |  | PathCopy |
| Patient Type | PV1.18 | O |  | |  | Copy |
| Admit Date/Time | PV1.44 | O |  | |  | Copy |
| Discharge Date/Time | PV1.45 | O |  | |  | Copy |
| **Common Order Segment** | **ORC** | R |  | |  |  |
| Order Control Code | ORC.1 | R |  | |  | Copy “RE” to this field. |
| Placer Order Number | ORC.2 | R |  | |  | Copy |
| Filler Order Number | ORC.3 | R |  | |  | Copy OBR.3 to this field. |
| Date/Time of Transaction | ORC.9 | O |  | |  | Copy |
| Order Effective Date/Time | ORC.15 | O |  | |  | Copy |
| **Observation Request Segment** | **OBR** | R |  | |  |  |
| Set ID - OBR | OBR.1 | O | |  |  | Copy |
| Placer Order Number | OBR.2 | R | |  |  | Copy |
| Filler Order Number | OBR.3 | O | |  |  | Copy |
| Universal Service ID | OBR.4 | R | |  |  | Copy |
| Observation Date/Time | OBR.7 | O | |  |  | Copy |
| Observation End Date/Time | OBR.8 | O | |  |  | Copy |
| Results Rpt/Status Chng - Date/Time | OBR.22 | O | |  |  | Copy |
| Diagnostic Service | OBR.24 | O | |  |  | The Millennium Shared endworks script is hard coding to MDOC |
| Result Status | OBR.25 | R | |  |  | Copy |
| Principal Result Interpreter | OBR.32 | R |  | |  | Copy ID, last name, first name, middle name, suffix. Format as sub-subfields so that they can post correctly in Cerner. |
| Assistant Result Interpreter | OBR.33 | O |  | |  | Copy ID, last name, first name, middle name, suffix. Format as sub-subfields so that they can post correctly in Cerner. |
| **OBX Segments** | **OBX** | R |  | |  | **ITERATE** – Process each OBX |
| Set ID - OBX | OBX.1 | O |  | |  | Copy |
| Value Type | OBX.2 | R |  | |  | Copy |
| Observation Identifier | OBX.3 | R |  | |  | Copy |
| Observation Value | OBX.5 | R |  | |  | PathCopy |
| **Formatting necessary if this OBX contains an embedded PDF:** |  |  |  | |  | **IF OBX.2 = ED** |
| Observation Sub-ID | OBX.4 | R |  | |  | Harcode “1” |
| Filler | OBX.5 [0] | R |  | |  | Blank out this subfield |
| Sender Type | OBX.5 [1] | R |  | |  | Hardcode “APPLICATION” |
| Document Type | OBX.5 [2] | R |  | |  | Hardcode “PDF” |
| Encoding Type | OBX.5 [3] | R |  | |  | Hardcode “BASE64” |
| User Defined Accesss Checks | OBX.13 | R |  | |  | Hardcode “Provation.pdf” |
| Observation Result Status | OBX.11 | R |  | |  | Copy |
| Date/Time of the Observation | OBX.14 | R |  | |  | Copy |

## 4.3 Sample Message

Inbound to Cloverleaf from Provation: see entire file: provation\_oru\_result\_in.txt in the Provation folder

SH|^~\&|ProVation|SJS|Repository|SJS|201710090916||ORU^R01|23|P|2.3PID|1||810015480||Eventthreeb^One||19811206|F||||||||||6000035075PV1|1|O|ENDSH||||MS011948^Bailey^Christian^^^Dr.OBR|1|94|94|NOTEID^Upper GI endoscopy^Unknown|||20170929100707|||||||||||| |{D9181725E26F4C8D920D881AA09447EE}||20171009091605|||A||||||261^Heartburn^CMORECUI~704026^Established reflux esophagitis^CMORECUI|MS011948&Bailey&Christian&&&Dr.OBX|1|TX|NOTEID^Upper GI endoscopy^Unknown|1|St. Joseph's Hospital South~GI ~\_~Patient Name: Eventthreeb , One Procedure Date: 9/29/2017 10:07 AM~MRN: 810015480 Date of Birth: 12/6/1981~Gender: Female Attending MD: Christian Bailey , ~Scope Summary: 4859 - EGD ~\_~ ~Procedure: Upper GI endoscopy~Indications: Heartburn, Reflux esophagitis~Providers: Christian Bailey (Doctor)~Referring MD: ~Requesting Provider: ~Medicines: None~Complications: No immediate complications.~\_~Procedure: Pre-Anesthesia Assessment:~ - Prior to the procedure, a History and Physical was ~ performed, and patient medications and allergies were ~ reviewed. The patient is competent. The risks and ~ benefits of the procedure and the sedation options and ~ risks were discussed with the patient. All questions ~ were answered and informed consent was obtained. Patient ~identification and proposed procedure were verified by ~ the physician, the nurse, the anesthesiologist, the ~anesthetist and the technician in the pre-procedure ~area. Prophylactic Antibiotics: The patient does not ~ require prophylactic antibiotics. Prior Anticoagulants: ~The patient has taken no previous anticoagulant or ~antiplatelet agents. ASA Grade Assessment: II - A ~patient with mild systemic disease. After reviewing the ~risks and benefits, the patient was deemed in ~ satisfactory condition to undergo the procedure. The ~anesthesia plan was to use monitored anesthesia care ~(MAC). Immediately prior to administration of ~medications, the patient was re-assessed for adequacy to ~receive sedatives. The heart rate, respiratory rate, ~oxygen saturations, blood pressure, adequacy of ~pulmonary ventilation, and response to care were ~monitored throughout the procedure. The physical status ~of the patient was re-assessed after the procedure.~After obtaining informed consent, the endoscope was ~passed under direct vision. Throughout the procedure, ~the patient's blood pressure, pulse, and oxygen ~saturations were monitored continuously. The Endoscope ~was introduced through the mouth, and advanced to the ~lower third of esophagus. The upper GI endoscopy was ~accomplished with ease. The patient tolerated the ~procedure well.~ ~Findings:~Impression:- No specimens collected.~- Normal examination.~Recommendation: Discharge patient to home (with spouse).~Attending Participation:~I personally performed the entire procedure.~~~Dr. Bailey~Christian Bailey, ~9/29/2017 10:11:31 AM~Number of Addenda: 0~~Note Initiated On: 9/29/2017 10:07 AM||||||A|||20170929100707|MS011948OBX|2|ED|NOTEID^Upper GI endoscopy^Unknown|2|PROVATION^Upper GI endoscopy^PDF^BASE64^JVBERi0xLjYN . . .

Outbound from Cloverleaf to Cerner: see entire file: provation\_oru\_result\_to\_cerner.txt in the Provation folder

MSH|^~\&|PROVATION|SJS|POSTIMAGE|HNAM|201710090916||ORU^R01|23|P|2.3PID|||810015480^^^^BCCPI||Eventthreeb^One||19811206|F||||||||||6000035075^^^^BCFNPV1|1|O|ENDSH||||MS011948^Bailey^Christian^^^Dr.ORC|RE||94OBR|1|94|94|NOTEID^Upper GI endoscopy^Unknown|||20170929100707|||||||||||||||20171009091605|||A| ||||||MS011948^Bailey^ChristianOBX|1|TX|NOTEID^Upper GI endoscopy^Unknown||St. Joseph's Hospital South~GI ~\_~Patient Name: Eventthreeb , One Procedure Date: 9/29/2017 10:07 AM~MRN: 810015480 Date of Birth: 12/6/1981~Gender: Female Attending MD: Christian Bailey , ~Scope Summary: 4859 - EGD~\_~ ~Procedure: Upper GI endoscopy~Indications: Heartburn, Reflux esophagitis~Providers: Christian Bailey (Doctor)~Referring MD:~Requesting Provider: ~Medicines: None~Complications: No immediate complications.~\_ ~Procedure: Pre-Anesthesia Assessment:~- Prior to the procedure, a History and Physical was ~ performed, and patient medications and allergies were ~reviewed. The patient is competent. The risks and ~benefits of the procedure and the sedation options and ~ risks were discussed with the patient. All questions ~were answered and informed consent was obtained. Patient ~identification and proposed procedure were verified by ~the physician, the nurse, the anesthesiologist, the ~anesthetist and the technician in the pre-procedure ~area. Prophylactic Antibiotics: The patient does not ~require prophylactic antibiotics. Prior Anticoagulants: ~The patient has taken no previous anticoagulant or ~antiplatelet agents. ASA Grade Assessment: II - A ~patient with mild systemic disease. After reviewing the ~risks and benefits, the patient was deemed in ~satisfactory condition to undergo the procedure. The ~anesthesia plan was to use monitored anesthesia care ~(MAC). Immediately prior to administration of ~medications, the patient was re-assessed for adequacy to ~receive sedatives. The heart rate, respiratory rate, ~oxygen saturations, blood pressure, adequacy of ~ pulmonary ventilation, and response to care were ~monitored throughout the procedure. The physical status ~of the patient was re-assessed after the procedure.~After obtaining informed consent, the endoscope was ~passed under direct vision. Throughout the procedure, ~the patient's blood pressure, pulse, and oxygen ~saturations were monitored continuously. The Endoscope ~was introduced through the mouth, and advanced to the ~lower third of esophagus. The upper GI endoscopy was ~accomplished with ease. The patient tolerated the ~procedure well.~~Findings:~~Impression: - No specimens collected.~ - Normal examination. ~Recommendation:- Discharge patient to home (with spouse).~~Attending Participation:~I personally performed the entire procedure.~~~Dr. Bailey~\_~Christian Bailey, ~9/29/2017 10:11:31 AM~Number of Addenda: 0~~Note Initiated On: 9/29/2017 10:07 AM||||||A|||20170929100707OBX|2|ED|NOTEID^Upper GI endoscopy^Unknown|1|^APPLICATION^PDF^BASE64^JVBERi0xLjYNCiXi48. . .

**Go Live Date for Provation ORU interface: October 12, 2017**

# Appendix A: Risks and Concerns

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Name** |  |  | | |  |  |  |  |
| **Number** | **Risk / Concern** | **Comment** | **Mitigation** | | |  |  |  |
| RC.2017.1.0 |  |  | |  | |  |  |  |

# 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** | | |  |  |  |
|  | Results Failing to post in Cerner | OBR;4/OBX;3 not matching one of the two inbound code\_set 72 alias | | In Provation, if a new report template is used it will send out a default with the display instead of an inbound alias we have setup | |  |  |  |
|  | Addendum in Cerner but not in Provation or in the PDF stored in Cerner. | Addendum displayed in Cerner but the PDF report didn’t show the addendum | | Workflow issue, the addendum was done in Cerner and should be done in Provation. | |  |  |  |

* End of document