

# PRHIE HL7 ORU INBOUND LABORATORY & RADIOLOGY RESULTS SPECIFICATION

**(VERSION 1)**

**Document ID: OPS LR SP1**

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## Introduction

The purpose of this document is to describe the HL7 message structure and requirements for third party integration of laboratory and radiology results within the Health Gorilla platform. This specification considers guidelines contained in the HL7 2.5.1 Implementation Guide for Electronic Laboratory Reporting to Public Health (Release 1) that can be retrieved from the HL7 organization at [https://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=98](https://www.hl7.org/implement/standards/product_brief.cfm?product_id=98)

## Scope

The scope of this specification applies to receiving inbound laboratory and radiology results into the Health Gorilla platform to be used by the Puerto Rico HIE.

## Message Structure

The message structure is based on version 2.5.1 of the Health Level Seven (HL7) Standard. In the following message structure, braces { } indicate support for multiple segments and brackets [ ] indicate the segments that are optional.

ORU^R01^ORU_R01	SEGMENT NAME	USAGE
MSH	Message Header	Single Instance, Required
PID	Patient Identification	Single Instance, Required
[ { NTE } ]	Notes and Comments	Repeating, Optional
[ { IN1 } ]	Insurance	Repeating, Required if available
PV1	Patient Visit	Single Instance, Required if available
ORC	Common Order	Single Instance, Required
{		
OBR	Observation Request	Repeating, Required
[ { NTE } ]	Notes and Comments	Repeating, Optional
OBX	Observation/Result	Repeating, Required
[ { NTE } ]	Notes and Comments	Repeating, Optional
}		
SPM	Specimen	Single Instance, Required if available

## Message Delimiters

VALUE	DEFINITION	USAGE
<cr>	Segment Terminator	Terminates a segment record
	Field Separator	Separates two adjacent data fields within a segment
^	Component Separator	Separates adjacent components of data fields
&	Subcomponent Separator	Separates adjacent subcomponents of data fields
~	Repetition Separator	Separates multiple occurrences of a field
\	Escape Character	Escapes the defined delimiters or other values

## Optionality

VALUE	DEFINITION	COMMENT
R	Required	The sending application shall populate the element with a non-empty value. Errors/rejections may be raised due to the absence of a required element
RE	Required, but can be empty	The element may be missing from the message, but must be sent by the sending application if there is relevant data
O	Optional	
C	Conditional	Required based on the trigger event or some other field(s)

## Message Segments

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
MSH	1	Field Separator	R	
MSH	2	Encoding Characters	R	^~\&
MSH	3	Sending Application	R	<i>Ex: HG360</i>
MSH	4	Sending Facility	R	LAB NAME^CLIA VALUE <i>Ex: HGDx^02D1640756</i>
MSH	5	Receiving Application	O	HG
MSH	6	Receiving Facility	O	
MSH	7	Date/Time of Message	R	yyyyMMddHHmmss
MSH	8	Security	O	
MSH	9	Message Type	R	ORU^R01
MSH	10	Message Control ID	R	
MSH	11	Processing ID	R	P – Production T – Testing
MSH	12	Version ID	R	2.5.1

## PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
PID	1	Set ID	R	1
PID	2	Patient ID	O	ID^^^^ALIAS TYPE <i>Ex: 12345^^^^MR</i>
PID	3	Patient Identifier List	R	ID^^^^ALIAS TYPE <i>Ex: 12345^^^^MR~343-87-4364^^^^SS</i>
PID	4	Alternate Patient ID	O	
PID	5	Patient Name	R	Multiple last names must be separated by a space  FAMILY NAME^GIVEN NAME^MIDDLE NAME  <i>Ex: RIVERA GARCIA^MARIA^LUIA</i>
PID	6	Mother's Maiden Name	RE	
PID	7	Date/Time of Birth	R	yyyyMMdd  <i>Ex: 19991212</i>
PID	8	Administrative Sex	R	See Appendix Table
PID	9	Patient Alias	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
PID	10	Race	RE	See Appendix Table  IDENTIFIER^TEXT^CODING SYSTEM  <i>Ex: 2131-1^Other Race^HL70005</i>
PID	11	Patient Address	R	ADDRESS1^ADDRESS2^CITY^STATE^POSTAL CODE^COUNTRY
PID	12	County Code	O	
PID	13	Phone Number – Home	RE	NUMBER^USE^TYPE^^AREA CODE^NUMBER^EXTENSION  <i>Ex:</i> <i>5555555555^PRN^PH^^5^555^5555555^Ext 1</i>
PID	14	Phone Number – Business	RE	NUMBER^USE^TYPE^^AREA CODE^NUMBER^EXTENSION  <i>Ex:</i> <i>5555555555^WPN^PH^^5^555^5555555^Ext 1</i>
PID	15	Primary Language	O	
PID	16	Marital Status	O	
PID	17	Religion	O	
PID	18	Patient Account Number	O	



SEG	SEQ	ELEMENT NAME	OPT	COMMENT
PID	19	SSN Number	RE	
PID	20	Driver's License Number	O	
PID	21	Mother's Identifier	O	
PID	22	Ethnic Group	RE	See Appendix Table  IDENTIFIER^TEXT^CODING SYSTEM  <i>Ex: H^Hispanic or Latino^HL70189</i>

#### IN1 – Insurance

The IN1 segment contains insurance policy coverage information necessary to produce properly prorated and patient and insurance bills.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
IN1	1	Set ID	R	
IN1	2	Insurance Plan ID	O	
IN1	3	Insurance Company ID	R	
IN1	4	Insurance Company Name	R	
IN1	5	Insurance Company Address	O	
IN1	6	Insurance Co Contact Person	O	
IN1	7	Insurance Co Phone Number	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
IN1	8	Group Number	O	
IN1	9	Group Name	O	
IN1	10	Insured's Group Emp ID	O	
IN1	11	Insured's Group Emp Name	O	
IN1	12	Plan Effective Date	O	
IN1	13	Plan Expiration Date	O	
IN1	14	Authorization Information	O	
IN1	15	Plan Type	O	
IN1	16	Name of Insured	O	FAMILY NAME^GIVEN NAME^MIDDLE NAME
IN1	17	Insured's Relationship to Patient	R	See Appendix Table
IN1	18	Insured's Date of Birth	O	
IN1	19	Insured's Address	R	ADDRESS1^ADDRESS2^CITY^STATE^POSTAL CODE
IN1	36	Policy Number	R	

### PV1 – Patient Visit

The PV1 segment is used by Registration/Patient Administration applications to communicate information on an account or visit-specific basis.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
PV1	1	Set ID	R	1
PV1	2	Patient Class	R	See Appendix Table
PV1	3	Assigned Patient Location	O	
PV1	4	Admission Type	RE	See Appendix Table
PV1	5	Preadmit Number	O	
PV1	6	Prior Patient Location	O	
PV1	7	Attending Doctor	O	IDENTIFIER^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^ASSIGNING AUTHORITY  <i>Ex: 3903165967^SMITH^JOHN^J^^NPI</i>
PV1	8	Referring Doctor	O	IDENTIFIER^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^ASSIGNING AUTHORITY  <i>Ex: 3903165967^SMITH^JOHN^J^^NPI</i>
PV1	9	Consulting Doctor	O	IDENTIFIER^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^ASSIGNING AUTHORITY

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
				<i>Ex: 3903165967^SMITH^JOHN^J^^NPI</i>
PV1	10	Hospital Service	O	
PV1	11	Temporary Location	O	
PV1	12	Preadmit Test Indicator	O	
PV1	13	Re-admission Indicator	O	
PV1	14	Admit Source	O	
PV1	15	Ambulatory Status	O	
PV1	16	VIP Indicator	O	
PV1	17	Admitting Doctor	O	IDENTIFIER^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^ASSIGNING AUTHORITY  <i>Ex: 3903165967^SMITH^JOHN^J^^NPI</i>
PV1	18	Patient Type	O	
PV1	19	Visit Number	RE	
PV1	20	Financial Class	O	
PV1	21	Charge Price Indicator	O	
PV1	22	Courtesy Code	O	
PV1	23	Credit Rating	O	
PV1	24	Contract Code	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
PV1	25	Contract Effective Date	O	
PV1	26	Contract Amount	O	
PV1	27	Contract Period	O	
PV1	28	Interest Code	O	
PV1	29	Transfer to Bad Debt Code	O	
PV1	30	Transfer to Bad Debt Date	O	
PV1	31	Bad Debt Agency Code	O	
PV1	32	Bad Debt Transfer Amount	O	
PV1	33	Bad Debt Recovery Amount	O	
PV1	34	Delete Account Indicator	O	
PV1	35	Delete Account Date	O	
PV1	36	Discharge Disposition	RE	
PV1	37	Discharged to Location	O	
PV1	38	Diet Type	O	
PV1	39	Servicing Facility	O	
PV1	40	Bed Status	O	
PV1	41	Account Status	O	
PV1	42	Pending Location	O	
PV1	43	Prior Temporary Location	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
PV1	44	Admit Date/Time	RE	yyyyMMddHHmmss
PV1	45	Discharge Date/Time	RE	yyyyMMddHHmmss
PV1	46	Current Patient Balance	O	
PV1	47	Total Charges	O	
PV1	48	Total Adjustments	O	
PV1	49	Total Payments	O	
PV1	50	Alternate Visit ID	O	
PV1	51	Visit Indicator	O	
PV1	52	Other Healthcare Provider	O	

#### ORC – Common Order

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested).

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
ORC	1	Order Control	R	
ORC	2	Placer Order Number	O	
ORC	3	Filler Order Number	R	
ORC	4	Placer Group Number	O	
ORC	5	Order Status	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
ORC	6	Response Flag	O	
ORC	7	Quantity/Timing	O	
ORC	8	Parent	O	
ORC	9	Date/Time of Transaction	O	
ORC	10	Entered By	O	
ORC	11	Verified By	O	
ORC	12	Ordering Provider	R	IDENTIFIER^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^^^^^^^^^IDENTIFIER TYPE  <i>Ex:</i> 3903165967^SMITH^JOHN^J^^^^^^^^^^NPI
ORC	13	Enterer's Location	O	
ORC	14	Call Back Phone Number	O	
ORC	15	Order Effective Date/Time	O	yyyyMMddHHmmss
ORC	16	Order Control Code Reason	O	
ORC	17	Entering Organization	O	
ORC	18	Entering Device	O	
ORC	19	Action By	O	
ORC	20	Advanced Beneficiary Notice Code	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
ORC	21	Ordering Facility Name	R	
ORC	22	Ordering Facility Address	R	ADDRESS1^ADDRESS2^CITY^STATE^POSTAL CODE
ORC	23	Ordering Facility Phone Number	R	NUMBER^USE^TYPE^^AREA CODE^NUMBER^EXTENSION Ex: 5555555555^WPN^PH^^5^555^555555^Ext 1

#### OBR – Observation Request

In the reporting of clinical data, the OBR serves as the report header. It identifies the observation set represented by the following atomic observations. It includes the relevant ordering information when that applies. It contains many of the attributes that usually apply to all of the included observations.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
OBR	1	Set ID	R	
OBR	2	Placer Order Number	O	
OBR	3	Filler Order Number	R	
OBR	4	Universal Service Identifier	R	Universal identifiers such as LOINC strongly encouraged  IDENTIFIER^TEXT^CODING SYSTEM



SEG	SEQ	ELEMENT NAME	OPT	COMMENT
				<i>Ex: 58410-2^CBC PANEL^LN</i>
OBR	5	Priority	O	
OBR	6	Requested Date/Time	O	yyyyMMddHHmmss
OBR	7	Observation Date/Time	R	yyyyMMddHHmmss
OBR	8	Observation End Date/Time	O	yyyyMMddHHmmss
OBR	9	Collection Volume	O	
OBR	10	Collector Identifier	O	
OBR	11	Specimen Action Code	O	
OBR	12	Danger Code	O	
OBR	13	Relevant Clinical Information	O	
OBR	14	Specimen Received Date/Time	O	yyyyMMddHHmmss
OBR	15	Specimen Source	O	
OBR	16	Ordering Provider	R	IDENTIFIER^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^^^^^^^^IDENTIFIER TYPE  <i>Ex: 3903165967^SMITH^JOHN^J^^^^^^^^^^^NPI</i>
OBR	17	Order Callback Phone Number	O	
OBR	18	Placer Field 1	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
OBR	19	Placer Field 2	O	
OBR	20	Filler Field 1	O	
OBR	21	Filler Field 2	R	Used to capture places of service. LAB ID^LAB NAME^ADDRESS^CITY^STATE^POSTAL CODE^^^CLIA VALUE^PHONE  <i>Ex: HGL^HEALTH GORILLA LABORATORY^456 BANANA WAY^MOUNTAIN VIEW^CA^94040^^^02D1640756^5555555555</i>
OBR	22	Results Rpt/Status Chng – Date/Time	R	yyyyMMddHHmmss
OBR	23	Charge to Practice	O	
OBR	24	Diagnostic Serv Sect ID	O	
OBR	25	Result Status	R	See Appendix Table
OBR	26	Parent Result	O	
OBR	27	Quantity/Timing	O	
OBR	28	Result Copies To	O	Up to two supported providers  NPI VALUE^FAMILY NAME^GIVEN NAME^MIDDLE NAME^^^^^^^NPI

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
				<i>Ex:</i> 3903165967^SMITH^JOHN^J^^^^^^^^^^^NPI~ 3903165967^SMITH^JOHN^J^^^^^^^^^^^NPI

### OBX – Observation/Result

The OBX segment is used to transmit a single observation or observation fragment.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
OBX	1	Set ID	R	
OBX	2	Value Type	R	See Appendix Table
OBX	3	Observation Identifier	R	Universal identifiers such as LOINC strongly encouraged  IDENTIFIER^TEXT^CODING SYSTEM  <i>Ex: 789-8^RBC^LN</i>
OBX	4	Observation Sub-ID	O	
OBX	5	Observation Value	R	Value type should match OBX.2
OBX	6	Units	O	
OBX	7	References Range	O	
OBX	8	Abnormal Flags	O	See Appendix Table
OBX	9	Probability	O	

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
OBX	10	Nature of Abnormal Test	O	
OBX	11	Observation Result Status	R	See Appendix Table
OBX	12	Effective Date of Reference Range	O	
OBX	13	User Defined Access Checks	O	
OBX	14	Date/Time of the Observation	R	yyyyMMddHHmmss
OBX	15	Producer's ID	O	
OBX	16	Responsible Observer	O	
OBX	17	Observation Method	O	
OBX	18	Equipment Instance Identifier	O	
OBX	19	Date/Time of the Analysis	O	
OBX	20	Reserved	O	
OBX	21	Reserved	O	
OBX	22	Reserved	O	
OBX	23	Performing Organization Name	R	
OBX	24	Performing Organization Address	R	ADDRESS1^ADDRESS2^CITY^STATE^POSTAL CODE

#### SPM - Specimen

The intent of this segment is to describe the characteristics of a specimen.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
SPM	1	Set ID	R	
SPM	2	Specimen ID	R	
SPM	3	Specimen Parent IDs	O	
SPM	4	Specimen Type	R	
SPM	5	Specimen Type Modifier	O	
SPM	6	Specimen Additives	O	
SPM	7	Specimen Collection Method	O	
SPM	8	Specimen Source Site	O	
SPM	9	Specimen Source Site Modifier	O	
SPM	10	Specimen Collection Site	O	
SPM	11	Specimen Role	O	
SPM	12	Specimen Collection Amount	O	
SPM	13	Grouped Specimen Count	O	
SPM	14	Specimen Description	O	
SPM	15	Specimen Handling Code	O	
SPM	16	Specimen Risk Code	O	
SPM	17	Specimen Collection Date/Time	R	yyyyMMddHHmmss

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
SPM	18	Specimen Received Date/Time	R	yyyyMMddHHmmss
SPM	19	Specimen Expiration Date/Time	O	
SPM	20	Specimen Availability	O	
SPM	21	Specimen Reject Reason	O	
SPM	22	Specimen Quality	O	
SPM	23	Specimen Appropriateness	O	
SPM	24	Specimen Condition	O	
SPM	25	Specimen Current Quantity	O	
SPM	26	Number of Specimen Containers	O	
SPM	27	Container Type	O	
SPM	28	Container Condition	O	
SPM	29	Specimen Child Role	O	

#### NTE – Notes and Comments

The NTE segment is commonly used for sending notes and comments and can be grouped with PID, OBR, and OBX segments.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
NTE	1	Set ID	R	
NTE	2	Source of Comment	O	
NTE	3	Comment	R	

### MSA – Message Acknowledgement

The MSA segment contains information sent while acknowledging another message.

SEG	SEQ	ELEMENT NAME	OPT	COMMENT
MSA	1	Acknowledgement Code	R	See Appendix Table
MSA	2	Message Control ID	R	
MSA	3	Text Message	O	

## Sample Message

```
MSH|^~\&|HG360|HGDX^02D1640756|HG||20230101120000||ORU^R01|27932081|P|2.5.1
PID|1||HG12345^^^MR~123-45-6789^^^SS||HEALTH GORILLA^SAMPLE^M||19991212|M||2131-1^Other
Race^HL70005|123 JUNGLE ST^APT 1^MOUNTAIN VIEW^CA^94040^USA||5555555555^PRN^PH^5^555^5555555^Ext
1|5555555555^WPN^PH^5^555^5555555^Ext 1|||||H^Hispanic or Latino^HL70189
NTE|||Patient Level Comment
PV1|1|O||A|||1234567890^PORTER^JANE^J^^^^^^^^^NPI|1234567890^PORTER^JANE^J^^^^^^^^^NPI|1234567890
^PORTER^JANE^J^^^^^^^^^NPI|||||1234567890^PORTER^JANE^J^^^^^^^^^NPI|12345|||||01|
|||||20230101120000|20230102120000|
ORC^RE|226405|HG00015S|||||1234567890^PORTER^JANE^J^^^^^^^^^NPI|||||P360|123 JUNGLE
ST^APT 1^MOUNTAIN VIEW^CA^94040^USA|5555555555^WPN^PH^5^555^5555555^Ext 1|
OBR|1|226405|HG00015S|34529-8^PT and aPTT panel - Platelet poor plasma by Coagulation
assay^LN||20230101120000|20230101120000|||||20230101120000||1234567890^PORTER^JANE^J^^^^^^^^^NPI
I||||HGL^HEALTH GORILLA LABORATORY^456 BANANA WAY^MOUNTAIN
VIEW^CA^94040^^^02D1640756^5555555555|20230101120000|||F|||1234567890^CC1^DOCTOR^J^^^^^^^^^NPI~12
34567890^CC2^DOCTOR^J^^^^^^^^^NPI
NTE|1|L|Procedure Level Comment
NTE|2|L|Procedure Level Comment
OBX|1|NM|5902-2^Prothrombin Time (PT)^LN||11.9||9.2-11.8|H|||F|||20230101120000|||||HEALTH
GORILLA LABORATORY|456 BANANA WAY^MOUNTAIN VIEW^CA^94040
NTE|1|L|Result Level Comment
OBX|2|NM|6301-6^INR^LN||1.14||0-2.5|||F|||20230101120000|||||HEALTH GORILLA LABORATORY|456
BANANA WAY^MOUNTAIN VIEW^CA^94040
OBX|3|NM|14979-9^Partial Thromboplastin Time^LN||29.4||24.4-
31.2|||F|||20230101120000|||||HEALTH GORILLA LABORATORY|456 BANANA WAY^MOUNTAIN
VIEW^CA^94040
SPM|1|12345^67890||USPEC^Source,
Unspecified|||||20230101120000^20230101120000|20230101120000
```





## Appendix

### Code Sets

#### Administrative Sex

VALUE	DESCRIPTION
A	Ambiguous
F	Female
M	Male
N	Not applicable
O	Other
U	Unknown

#### Race

VALUE	DESCRIPTION
1002-5	American Indian or Alaska Native
2054-5	Asian
2054-5	Black or African American
2076-8	Native Hawaiian or Other Pacific Islander
2106-3	White
2131-1	Other Race

### Ethnic Group

VALUE	DESCRIPTION
H	Hispanic or Latino
N	Not Hispanic or Latino
U	Unknown

### Insured's Relationship to Patient

VALUE	DESCRIPTION
ASC	Associate
BRO	Brother
CGV	Caregiver
CHD	Child
DEP	Handicapped Dependent
DOM	Life Partner
EMC	Emergency Contact
EME	Employee
EMR	Employer
EXF	Extended Family
FCH	Foster Child
FND	Friend
FTH	Father
GCH	Grandchild

VALUE	DESCRIPTION
GRD	Guardian
GRP	Grandparent
MGR	Manager
MTH	Mother
NCH	Natural Child
NON	None
OAD	Other Adult
OTH	Other
OWN	Owner
PAR	Parent
SCH	Stepchild
SEL	Self
SIB	Sibling
SIS	Sister
SPO	Spouse
TRA	Trainer
UNK	Unknown
WRD	Ward of Court

### Patient Class

VALUE	DESCRIPTION
B	Obstetrics
C	Commercial Account
E	Emergency
I	Inpatient
N	Not Applicable
O	Outpatient
P	Preadmit
R	Recurring Patient
U	Unknown

### Admission Type

VALUE	DESCRIPTION
A	Accident
C	Elective
E	Emergency
L	Labor and Delivery
N	Newborn
R	Routine
U	Urgent

### Result Status / Observation Result Status

VALUE	DESCRIPTION
P	Preliminary
F	Final
C	Corrected

### Value Type

VALUE	DESCRIPTION
CE	Coded Entry
ED	Encapsulated Data
FT	Formatted Text
NM	Numeric
SN	Structured Numeric
ST	String
TX	Text

### Abnormal Flags

VALUE	DESCRIPTION
L	Below Low Normal
H	Above High Normal
LL	Below Lower Panic Limits
HH	Above Upper Panic Limits

VALUE	DESCRIPTION
<	Below Absolute Low-Off Instrument Scale
>	Above Absolute High-Off Instrument Scale
N	Normal
A	Abnormal
AA	Very abnormal

#### Acknowledgement Code

VALUE	DESCRIPTION
AA	Application Accept
AE	Application Error
AR	Application Reject