

Insta Diagnostics Integration Guide

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Insta Supported Diag Integration Messages

The following types of messages are supported by Insta HMS:

Message	File Based Protocol (Supports Lab and Radiology)	Socket Based Protocol (Supports Radiology only)	DB Based Protocol (Supports Lab only)
Send Orders	Y (hl7 ORM message)	Y (hl7 ORM message)	Y Order (Non hl7)
Send Order Cancellation	Y (hl7 ORM message)	Y (hl7 ORM message)	Y Cancellation (Non hl7)
Send Re-Conduction	Y (hl7 ORM message)	-	N
Send Revert Signed-Off	Y (hl7 ORM message)	-	N
Send Amendment	Y (hl7 ORM message)	-	N
Send Results	Y (hl7 ORU message)	-	N
Send Results As RP (Reference Pointer)	Y (hl7 ORU message)	-	N
Send Radiology report (after signed-off)	N	Y (hl7 ORU message)	N
Send Addendum (Radiology)	N	Y (hl7 ORU message)	N
Send Acknowledgement (Radiology)	N	Y (hl7 App Ack , hl7 Commit Ack)	N

Receive Result	Y (hl7 ORU message)	Y (hl7 ORU message)	Y Result (Non hl7)
Receive Amendment	Y (hl7 ORM message)	N	N Amendment (Non hl7)
Receive Re-Conduction	Y (hl7 ORM message)	N	N Re-Conduction (Non hl7)
Receive Revert Signed-Off	Y (hl7 ORM message)	N	N

Terminology

HL7 – Health Level 7 (<http://www.hl7.org/>)

Message – A collection of HL7 segments forming the basic unit of transmission.

Segment – A collection of fields describing one aspect of a complete HL7 message.

Field – One specific attribute of an HL7 Segment.

- File Based Protocol

1. Send Orders

ORM

The Segments/Groups in HL7 message include the following:

SEGMENT/GROUP	NAME	REQUIRED/OPTIONAL/REPEATABLE
MSH	Message header	Required
NTE	Notes and comments	Optional, Repeatable
Patient Group – Optional group (Required for new orders pertaining to a patient only)		
PID	Patient Identification	Required
PID1	Patient Demographics	Optional
NTE-1	Notes and Comments	Optional, Repeatable
Patient Visit Group – Optional group, part of Patient Group		
PV1	Patient Visit	Required
PV2	Patient Visit	Optional
Insurance Group – Optional and repeatable group, part of Patient Group		
IN1	Insurance	Optional
IN2	Insurance Additional Info	Optional
IN3	Insurance Additional Info Certification	Optional

Patient Group Continued		
GT1	Guarantor	Optional
AL1	Patient Allergy Information	Optional, Repeatable
Order Group - Repeatable Group		
ORC	Common Order	Required
Order Detail Group - Optional group, part of Order Group		
OBR	Observation Request	Required
NTE-2	Notes and comments	Optional, Repeatable
DG1	Diagnosis	Optional, Repeatable
Observation Group - Optional and Repeatable, part of Order Details Group		
OBX	Observation	Optional
NTE-3	Notes and comments	Optional, Repeatable
Order Group Continued		
CT1	Clinical trial identification	Optional
BLG	Billing	Optional

Sample ORM message

```

MSH|^~\&|InstaHMS|HLM Tesing||20161111154039||ORM^O01|6828411|P|2.4|||||||^M
PID|1||MR000353^InstaHMS||Samplecollection^Cancellation^Bfr^^Captain||20081112|M|||Address^^OTHER^002^^INDIA||99171878788^^Ruchi@gmail.com|||||||||||^M
PV1|1|O|GENERAL PHYSICIAN^^GENERAL||||12017^ABDUL RAHIM.,M.D|||||||DOC1275^Dr
ABDUL SAMEER||OP000487|||||||||||||^M
ORC|NW|2225617.4696.BLFPP000018^InstaHMS||494677|||||||||||^M
OBR|1|2225617.4696.BLFPP000018^InstaHMS|2225617.4696.BLFPP000018|4696^List^InstaH
MS^^||201611111532|||O||20161111153925122||DOC1275^Dr ABDUL
SAMEER||BLFPP000018|10|||||||||||20161111153200|^M

```

Field Separator	
Component Separator	^
Subcomponent Separator	&
Repetition Separator	~
Escape Character	\

MSH Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Field Separator	fieldSep	
2	Encoding Characters	encoding	^~\&
3	Sending Application (Sending/Receiving Application or Facility)	sendApp	InstaHMS
4	Sending Facility (Sending/Receiving Application or Facility)	sendFac	Diag OR Patient Registered Center Name (Incaseof multi center)
5	Receiving Application (Sending/Receiving Application or Facility)	recvApp	Nephrolife Care
6	Receiving Facility (Sending/Receiving Application or Facility)	recvFac	RBLRT
7	Date/Time Of Message	msgTimest	20161111154039
8	Security	security	

9	Message Type	msgType	ORM^O01
10	Message Control ID	controlId	12
11	Processing ID	procId	P
12	Version ID	ver	2.4

PID Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Set ID - Patient ID	sid	1 (Always sends 1)
3	Patient ID (Internal ID) (includes Assigning Authority sub-component)	pidList	MR000353^InstaHMS (Unique id for a patient OR OldMrno and Alternate)
5	Patient Name	name	Singh^Jitendar (patient's last name, patient name, middle name and salutation.)
7	Date/Time of Birth	dob	20081112
8	Sex	sex	M
11	Patient Address	addr	34, M Towers^^Bangalore^Karnata ka^^India
13	Phone Number - Home	phHome	9917187XXX^^jitendar@gmail.com (Patient's phone and Email id)

PV1 Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	SetID - PV1	sid	1
2	Patient Class	patientClass	O/I (Inpatient OR Outpatient)
3	Assigned Patient Location	assgndLoc	GENERAL PHYSICIAN^^GENERAL
7	Attending Doctor	attdDoctor	DOC002^Raghuram Bhat
8	Referring Doctor	refDoctor	12017^ABDUL RAHIM.,M.D
17	Admitting Doctor	admitDoctor	DOC1275^Dr ABDUL SAMEER
19	Visit Number	visitNum	OP000487
44	Admit Date/Time	admitTimest	20081112

ORC Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	NW
2	Placer Order Number	placerOrderNum	2225617.4696.BLFPP000018 ^InstaHMS
4	Placer Group Number	placerGrpNum	494677

OBR Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Set ID - OBR	sid	1
2	Placer Order Number	placerOrderNum	2225617.4696.BLFPP000018^InstaHMS
3	Filler Order Number +	fillerOrderNum	2225617.4696.BLFPP000018
4	Universal Service ID	serviceId	901^LDL Cholesterol^InstaHMS
6	Requested Date/time	reqTime	201611111532
11	Specimen Action Code *	specimenAction	O
14	Specimen Received Date/Time *	specimenTime	20161111153925122
16	Ordering Provider	ordProvider	DOC1275^Dr ABDUL SAMEER
18	Placer field 1	placer1	BLFPP000018 (sample number)
19	Placer field 2	placer2	10 (sample type id)
36	Scheduled Date/Time +	scheduledDtTime	20161111153200

2. Sending Cancellation

ORM

[MSH Segment](#)

[PID Segment](#)(This segment will be available based on the configuration 'send_pidpv1_for_cancel' in Insta)

[PV1 Segment](#)(This segment will be available based on the configuration 'send_pidpv1_for_cancel' in Insta)

[ORC Segment](#) (Below is the field which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	CA

[OBR Segment](#)

3. Sending Results

ORU

[MSH Segment](#) (Below is the field which differ from above specification)

9	R	Message Type	msgType	ORU^R01
---	---	--------------	---------	---------

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below is the field which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	RE

[OBR Segment](#)

OBX Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Set ID - OBX	sid	1

2	Value Type	valueType	TX / ST / RP
3	Observation Identifier	obsId	CR002&BODY^RAD EX CH 1 VIEW FRNT
4	Observation Sub-ID	obsSubId	1
5	Observation Value	obsValue	7.0
6	Units	units	
7	References Range	refRanges	
8	Abnormal Flags	abnormalFlags	
9	Probability	probability	
10	Nature of Abnormal Test	natureAbnTest	
11	Observ Result Status	obsResultSts	D, C OR F <u>001</u>
12	Date Last Obs Normal Values	dateLastNormal	
13	User Defined Access Checks	accessChecks	
14	Date/Time of the Observation	obsTime	20151006181139
15	Producer's ID	producerId	Mediinterface
16	Responsible Observer	responsibleObserver	
17	Observation Method	obsMethod	

001

VALUE	LABEL
D	Deletes the OBX record
C	Record coming over is a correction and thus replaces a final result
F	Final result

4. Sending Re-Conduction

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below are the fields which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	SC (Status changed)
5	Order Status	orderSts	RP (Order has been replaced)

5. Sending Revert Sign-Off

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below are the fields which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	SC (Status changed)
5	Order Status	orderSts	IP (In process, Unspecified)

6. Sending Amended Results

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#)

NTE Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Set ID-NTE	sid	1
3	Comments	comment	Amendment reason
4	Comment Type	commentType	1R (Primary Reason)

7. Sending Result As RP (Reference Pointer)

ORU

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#)

[OBR Segment](#)

[OBX Segment](#) (Below are the fields which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
2	Value Type	valueType	RP
3	Observation Identifier	obsId	24 Hr Urine,Echocardiography (Test names which involved in a report with comma separated)
5	Observation Value	obsValue	OP00012_0001.pdf (visitID_reportID)

8. Receiving Order

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#)

[OBR Segment](#)

9. Receiving Result

[ORU](#)

10. Receiving Re-conduction

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below are the fields which are differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	SC (Status changed)
5	Order Status	orderSts	RP (Order has been replaced)

[OBR Segment](#)

11. Receiving Revert Sign-off

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below are the fields which are differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	SC (Status changed)
5	Order Status	orderSts	IP (In process, Unspecified)

[OBR Segment](#)

12. Receiving Amendment

ORM

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below are the fields which are differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	SC (Status changed)
5	Order Status	orderSts	IP (In process, Unspecified)

[OBR Segment](#)

- Socket Based Protocol

1. Send Order

[ORM](#)

2. Sending Cancellation

[ORM](#)

3. Sending Addendum Sign -Off Report (Socket Based Protocol)

ORU

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#) (Below is the field which differ from above specification and Placer Group Number field is less)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	SC (Status Changed)

OBR Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
25	Result Status	resultSts	A (Some, but not all, results available)

[OBX Segment](#)

4. Sending Commit Acknowledgement (Socket Based Protocol)

ACK

MSH Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Field Separator	fieldSep	
2	Encoding Characters	encoding	^~\&
3	Sending Application (Sending/Receiving Application or Facility)	sendApp	Insta
4	Sending Facility (Sending/Receiving Application or Facility)	sendFac	Diag
5	Receiving Application (Sending/Receiving Application or Facility)	recvApp	MWL
6	Receiving Facility (Sending/Receiving Application or Facility)	recvFac	MWL
7	Date/Time Of Message	msgTimest	20161111154039
8	Security	security	
9	Message Type	msgType	ACK
10	Message Control ID	controlId	12
11	Processing ID	procId	T
12	Version ID	ver	2.4
15	Accept Acknowledgement Type	ackType	NE (Never)
16	Application Acknowledgement Type	appAckType	NE (Never)

MSA Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Acknowledgement Code	code	CE / CA (Enhanced mode: Accept acknowledgment: Commit Accept / Enhanced mode: Accept acknowledgment: Commit Error)
2	Message Control ID	controlId	Control id from MSH
3	Text Message	msgText	Unparseable message / Unknown message type OR Empty message
4	Expected Sequence Number	expectedSequence	
5	Delayed Acknowledgement Type	delayedAckType	
6	Error Condition	errorCondition	

5. Sending Application Acknowledgement (Socket Based Protocol)

ACK

MSH Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
9	Message Type	msgType	ACK^R01
15	Accept Acknowledgement Type	ackType	AL (Always)

MSA Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Acknowledgement Code	code	AE / AA (Original mode: Application Accept - Enhanced mode: Application acknowledgment: Accept / Original mode: Application Error - Enhanced mode: Application acknowledgment Error)
2	Message Control ID	controlId	Control id from MSH
3	Text Message	msgText	Unparseable message / Unknown message type OR Empty message
4	Expected Sequence Number	expectedSequence	

5	Delayed Acknowledgement Type	delayedAckType	
6	Error Condition	errorCondition	0

6. Receiving Addendum (Socket Based Protocol)

[ORU](#)

7. Receiving Results (Socket Based Protocol)

ORU

[MSH Segment](#)

[PID Segment](#)

[PV1 Segment](#)

[ORC Segment](#)

[OBR Segment](#)

[OBX Segment](#) (Below are the supported formats in addition to the above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
2	Value Type	valueType	NM (Numeric)

8. Sending Sign-Off Report (Socket Based Protocol)

ORU

[MSH Segment](#) (Below are the fields which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
4	Sending Facility (Sending/Receiving Application or Facility)	sendFac	Diag OR Center Code and Patient Registered Center Name (Incaseof multi center)
9	Message Type	msgType	ORU^R01

[PID Segment](#) (Below are fields which are differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
5	Patient Name	name	Singh^Jitendar (patient's last name, patient name and salutation.)
13	Phone Number - Home	phHome	9917187XXX^^^jitendar@gmail.com (Patient's phone)

[PV1 Segment](#) (Below are the fields which differ from above specification)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
2	Patient Class	patientClass	O/I(Inpatient, Incoming Patient OR Outpatient)

[ORC Segment](#) (Below is the field which differ from above specification and Placer Group Number field is less)

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
1	Order Control	ctrl	RE (Observations/ Performed Service to follow)

[OBR Segment](#) (Below are the fields which differ from above specification)

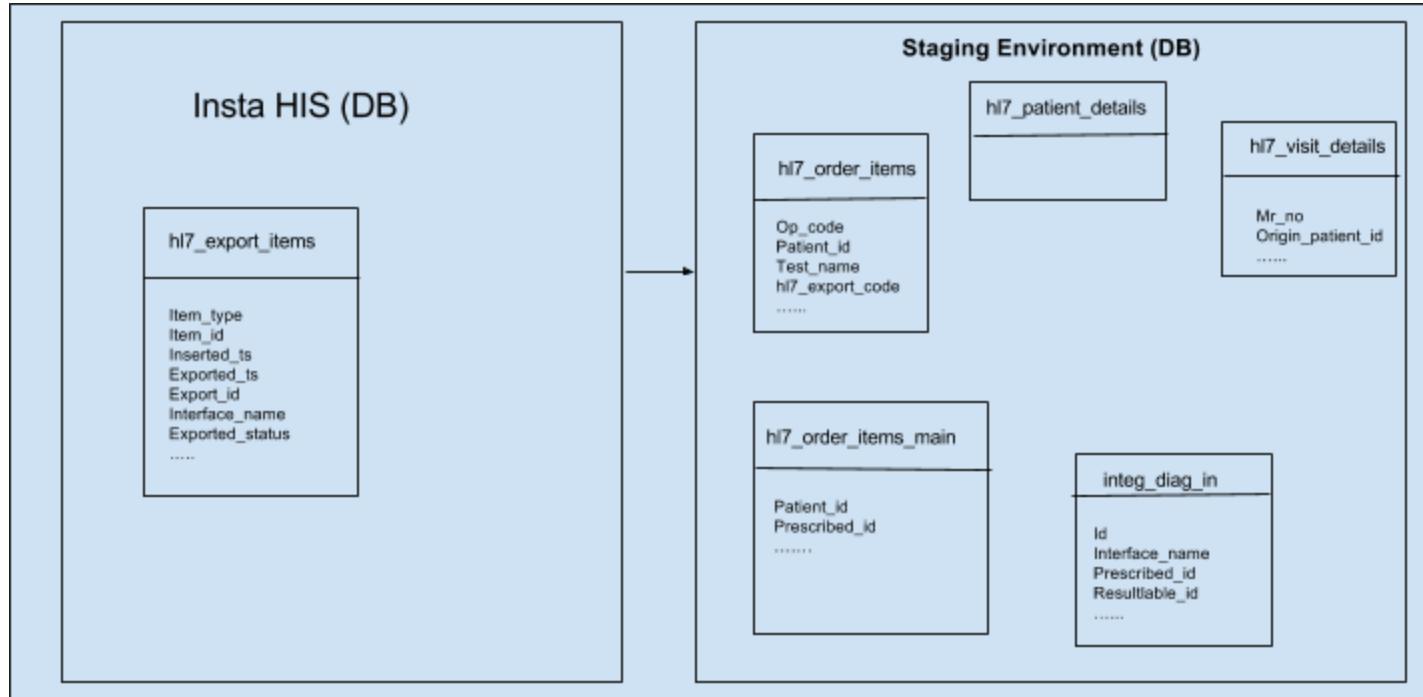
SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE
25	Result Status	resultSts	F (Final Result)

OBX Segment

SEQ	ELEMENT DESCRIPTION	INTERNAL IDENTIFIER	EXAMPLE

1	Set ID - OBX	sid	1
2	Value Type	valueType	TX
3	Observation Identifier	obsId	(HL7Exportcode / testid and Testname)
5	Observation Value	obsValue	Report content

- DB Based Protocol



1. Sending DB Order

Order Entry

Staging table :hl7_order_items

DB Column	EXAMPLE
item_type	TEST,TESTMODIFIED,TESTRESULT
item_id	45629(unique identification number in insta for each order)
inserted_ts	2017-10-03 15:47:46.845976
exported_ts	2017-10-03 17:40:46.642376
export_id	32435(Unique export sequence)
interface_name	medi_interface
export_status	N-not yet exported, F-failed to export, S-export successful
export_msg_id	14322(message sequence)
export_failure_msg	Failure message
bill_paid	N-bill is not paid or sample not collected, Y- bill is paid
op_code	N-order to read, C- order cancelled indicating not to read
patient_id	OP120725(visit id)
test_name	COMPLETE BLOOD COUNTS (CBC)
hl7_export_code	
test_id	DGC0783
pres_date	2017-01-03 15:20:00
common_order_id	43555(order number)
scheduled_time_start	2013-09-13 15:24
start_date_time	2013-09-13 15:30:10
scheduled_time_end	2013-09-13 17:24

equipment_code	
sample_sno	SE10911
sample_date	2017-01-03 15:20:00(sample collected date)
mr_no	MR013140
oldmrno	PR14065
last_name	xyz(patient last name)
patient_name	abc(patient full name)
salutation	Mr, Ms
patient_gender	M-Male, F-Female
expected_dob	19830404 (expected date of birth calculated by age)
patient_address	BANGALORE
cityname	BANGALORE
city_code	088
statename	KARNATAKA
state_code	017
country_name	India
country_code	91
patient_phone	7800938764
reg_date	2016-03-30
doctor	DOC0189(unique doctor id for each doctor from insta)
doctor_name	DR.SUSHMA RANI
bed_type	GENERAL1,GENERAL2
ward_name	GENERAL
reference_doctor_id	DOC0067 (refferal doctor id)
diagnosis_code	N17.8 (icd_code)
diagnosis	Hypercholesterolemia, metabolic syndrome

visit_type	OP-out patient, IP- in patient, OSP- out side patient
refdoctorname	DR.NAMITHA (refferal doctor name)
conduction_format	T-Template based test, V-Value based test
resultlabel_id	233(result id)
resultlabel	Hemoglobin
center_id	5(unique center id from insta)
center_name	Koramangala region
conducting_doctor_id	DOC0189(conducting doctor id)
conducting_doctor_name	DR.SUSHMA RANI (conducting doctor name)
prescription_doctor_id	DOC0189(prescription doctor id)
prescription_doctor_name	DR.SUSHMA RANI (test prescribed doctor name)
prescription_department	Microbiology (prescribed doctor department)
out_house_sample	t- true(out_house test),f- false(not out-house test)
middle_name	Mn (patient middle name)

Staging table: HI7_order_items_main

DB Column	EXAMPLE
patient_id	IN000250
prescribed_id	67758(item_id)
inserted_ts	2017-10-03 15:47:46.845976
exported_ts	2017-10-03 17:40:46.642376
export_id	32435(Unique export sequence)
package_name	Body check up (package name)
tpa_name	BAJAJ ALLIANZ
plan_name	Bajaj plan
employee_id	P3244

order_remarks	Order details
additional_test_info	Clinical information
orig_center_id	7
priority	R-Regular, S-Stat, U-Urgent
sample_type	Blood,serum,urine etc..
email_id	abc@gmail.com
origin_center_name	Koramangla lab center
origin_patient_id	OP121650
out_house_name	t- true(out_house test),f- false(not out-house test)

Insurance modified details available in **hi7_visit_details** staging table (Visit wise)

DB Column	EXAMPLE
mr_no	MR013140
origin_patient_id	OP121650
inserted_ts	2017-10-03 15:47:46.845976
exported_ts	2017-10-03 17:40:46.642376
tpa_name	BAJAJ ALLIANZ
plan_name	Bajaj plan
employee_id	P3244
patient_details_status	'VM'- Visit modifications

Patient demographic changes available in **hl7_patient_details** staging table (mr_no wise)

DB Column	EXAMPLE
hl7_patient_details_id	233(sequence no)
mr_no	MR013140
oldmrno	PR14065
last_name	xyz(patient last name)
patient_name	abc(patient full name)
salutation	Mr, Ms
patient_gender	M-Male, F-Female
expected_dob	19830404 (expected date of birth calculated by age)
patient_address	BANGALORE
cityname	BANGALORE
city_code	088
statename	KARNATAKA
state_code	017
country_name	India
country_code	91
patient_phone	7800938764
inserted_ts	2017-10-03 15:47:46.845976 (Timestamp when order got generated in Insta)
exported_ts	2017-10-03 17:40:46.642376 (Timestamp when Insta exports to staging table)
email_id	abc@gmail.com
patient_details_status	'DM' (Indicates patient demography modified)

2. Sending DB Cancellation order

[Sending DB Order](#)(Below is the field which differ from above specification of **hl7_order_items** staging table to initiate order cancellation from insta)

DB Column	EXAMPLE
op_code	C (order cancellation from insta)

3. Receiving DB Results

Result Entry

Staging table to read results in insta: **integ_diag_in**

DB Column	EXAMPLE
id	3243(Sequence number)
interface_name	medi_interface
prescribed_id	34567(Unique item id for each order)
resultlabel_id	34(Result Label id number)
sample_no	SE10911 (sample identification number)
report_value	2.3(result label value)
status	N(normal)- result to read, RR(report ready)- external result to read, SC(status changed)- amendment/reconduction request, S- successfully read, F-Failed to read.
comments	Result entry comments
inserted_ts	2017-10-03 15:47:46.845976(result entry time)
read_ts	2017-10-03 15:50:46.845976(results read time)
export_failure_msg	Failure message

value_type	ST-value based test, TX- template based test
pat_id	Insta patient_id (visit id)

4. Amendment and Re-conduction

[Receiving DB Results](#)(Below is the field which differs from above specifications of integ_diag_in table to initiate amendment/reconduction)

DB Column	EXAMPLE
status	SC(status changed) - insta supports amendment/Re-conduction.