Ascend HL7 Interface Specification

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This document describes the standard specifications for the Ascend Interface Engine as of the version date above. Contact Mediware for any information regarding interface support for new messages, features, etc. that may have been added to the interfaces, but not yet documented in these specifications.

General Specifications

Standard (Preferred) Interface Specifications

Connectivity:	Network/Web connection
Protocol:	TCP/IP sockets (using Minimum Lower Layer Protocol)
Record format:	HL7 Version 2.2 or 2.3
Methods and examples:	Send/Receive real-time, individual messages with acknowledgement of each message received before next message is sent. Supported messages include those for ADT, billing/charges, orders/profiling, drug formulary, and inventory control. Typically one socket/port number is dedicated to messages being sent in the same direction (i.e., inbound/outbound) and to/from the same IP address (e.g., typically the same vendor). Acknowledgements for received messages are transmitted back on the same socket/port they were received on. For example, at one facility, incoming ADT and incoming order messages from the same CPOE vendor could share one socket, while outgoing billing messages to that vendor (i.e., an IP address) would use a second socket. Outbound ADT and order messages to an automated dispensing system vendor (i.e., a different IP address) could share a third socket, while inbound charges from that vendor would use a fourth socket/port number.
Charges/Billing:	Batch file (if TCP/IP protocol cannot be used as above)
Record format:	HL7 version 2.2 or 2.3 "batch file" format preferred; custom formats possible but less desirable
Method:	Batch file creation on local or network drive

Standard Incoming or Outgoing Message Types

ADT (patient data):

Inbound	Outbound
A01	A01
A02	A02
A03	A03
A04	
A05	
A06	
A07	
A08	A08
A11	
A13	A13
A17	
A21	
A22	
A30	
A31	
A34	
A44	
A60	

		Additional A events can be mapped to when a patient status/type changes in Ascend.
Orders/profile:	New order, discontinue order, hold order, cancel hold, update order (e.g., typically received from CPOE systems, sent to automated dispensing systems, or sent to utilization review systems.)	
Labs:	Laboratory results	
Formulary:	Add medication, delete medication, update medication	
Billing:	Charge and credit transactions (e.g., typically sent to other financial or accounting systems, or received from automated dispensing systems)	
Inventory control:	Additions/removal from floor stock and usage (charges/credits) transactions received from some automated dispensing systems can be used by the interface to maintain floor stock inventory levels with Ascend.	

Our standard interface uses typical HL7 Version 2.2 or 2.3 records, messages, fields, definitions and processing rules. This document will detail how we use HL7, particularly which messages are used and which fields are required/optional. Refer to documentation published elsewhere (i.e., the internet) for more general HL7 information.

The remaining documentation is organized as follows:

- General HL7 definitions and rules, as implemented by our standard interfaces
- HL7 Messages and their segment combinations, as supported by our standard interfaces
- Detailed information about each support segment, including field descriptions and requirements

General HL7 Definitions and Rules

Sending and Receiving Systems; Inbound and Outbound Messages

In this document, the system transmitting a message may be referred to as the "sender" or "sending/publisher" system and the system receiving and acknowledging the message as the "receiver" or "receiving/subscriber" system. Messages sent by an Ascend interface may be referred to as "outbound" messages and those being received by an Ascend interface may be referred to as "inbound" messages. Therefore, the terms "inbound" and "outbound" will refer to the direction of message travel from Ascend's perspective.

HL7 Messages

A "message" is considered the minimal unit of data transferred between systems using HL7. For example, an admission transaction would be sent as an HL7 "ADT" message. Messages are comprised of two or more "segments" that act as building blocks for each message. Messages are delimited by a "start block" (HEX 0b ...or... ASCII/decimal 11) and an "end block" (HEX 1c plus HEX 0d ...or.... ASCII/decimal 28 plus ASCII/decimal 13).

Conceptual example: <Hex 0b><HL7 Message segments><Hex 1c><Hex 0d>

HL7 Segments

HL7 messages are comprised of several HL7 segments. Examples of segments include: the "message header segment", "patient identification segment", "pharmacy order segment" and "financial transaction

segment" segments, among many others. Each message is terminated by Hex 0d (decimal 13; the "carriage return" character).

Conceptual example:

<Hex 0b>
<Message header segment><Hex 0d>
<Event segment><Hex 0d>
<Patient Id segment><Hex 0d>
<Patient visit segment><Hex 0d>
<Diagnosis segment><Hex 0d>
<Allergy segment><Hex 0d>
<Hex 1c><Hex 0d>

Optional segments and fields will be enclosed in brackets [ ] e.g., [AL1] indicates that the allergy segment is optional. Some segments may, on an optional basis, be repeated within the message. Repeating message options will be displayed with curly brackets { }. For example, {AL1} indicates that the allergy segment may be repeated if needed. These may also be combined, e.g., [{AL1}] indicates the allergy segment is optional **and** that it may be repeated if needed.

Some of the messages outlined below do not list all possible standard HL7 segments. These "unlisted" segments can be included within inbound HL7 messages, but will be ignored by the Ascend interface. Unlisted segments are assumed to be optional, and will not be included in outbound transactions unless the vendor contacts Mediware to make other arrangements.

Fields

Each segment begins with a unique 3 byte message identifier field (e.g., MSH for "message header", PID for "patient identification", etc.). Subsequent fields within the same segment are separated from one another by the field separator character, the "pipe" symbol, "|".

e.g., PID|field2|field3|field4|…..etc.|<Hex 0d>

Fields are transmitted as character strings. Refer to the "Data Types" table below for a listing of the types of data found in the fields. Although field lengths are listed in the message and segment definition tables below, the interface will not "pad" the field with spaces when sending messages. Although the interface can receive fields padded with spaces, the sending system is **not** required to pad fields with spaces. If fields are blank (e.g., PID|||| i.e., field separators with nothing between them) then the sender has no new value for these fields and any previous values in the receiver's system should be left "as is". If the sender transmits two double quote marks as a field value (e.g., |""|), this null value should signal the receiving system to remove any previously held value. If all remaining fields in a segment have no data (and are all optional), the sending system may drop them and terminate the segment at that point. The receiving system should treat dropped fields as blank.

Field Components and Subcomponents

A few HL7 fields are defined as having more than one portion, each of which is separated by a component separator, "^". These field types are called "composite" fields. For example, the patient's name field is usually sent as several components:

"….|last_name^first_name^initial^^|…."

Blank components are shown with two component separators with nothing between them: "^^". If all remaining components in a field definition have no data and are optional, the sending system may drop them. The receiving system should treat dropped components as blank.

Occasionally, components may divided into subcomponents, separated by the subcomponent separator, "&". Rules for their use are similar to those for the component separator.

The interface will usually not further subdivide fields below the "component" level unless otherwise noted. However, refer to standard HL7 documentation for standard subcomponent (and below) definitions if desired.

Data Types

The Data Type Category will appear in subsequent field definition tables to identify the format of the field or its components.

Data Type Code	Data Type Name	Notes/Format
String		
ST	String	
Numeric		
CQ	Composite quantity with units	<quantity (NM)> ^ <units (CE)>
NM	Numeric	
SI	Sequence ID	
Identifier		
ID	Coded values for HL7 tables	
IS	Coded value for user-defined tables	
HD	Hierarchic designator	<application identifier (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)> Used only as part of EI and other data types.
EI	Entity identifier	<entity identifier (ST)> ^ <assigning authority (HD)>
RP	Reference pointer	<pointer (ST) > ^ < application ID (HD)> ^ <main type (ID)> & <subtype (ID)>
PL	Patient location	<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>
PT	Processing type	<processing ID (ID)> ^ <processing mode (ID)>
Date/Time		
DT	Date	YYYY[MM[DD]]
TM	Time	HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ]
TS	Time stamp	YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ] ^ <degree of precision>
Coded Values		
CE	Coded element	<identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
CF	Coded element with formatted values	<identifier (ID)> ^ <formatted text (FT)> ^ <name of coding system (ST)>^<alternate identifier (ID)> ^ <alternate formatted text (FT)> ^ <name of alternate coding system (ST)>
CK	Composite ID with check digit	<ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)>
CN	Composite ID number and	<ID number (ST)> ^ <family name (ST)> ^ <given

	name	name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)>
CX	Extended composite ID with check digit	<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD))> ^ <identifier type code (IS)> ^ < assigning facility (HD)
Generic		
CM	Composite	
Demographics		
AD	Address	<street address (ST)> ^ < other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>
PN	Person name	<family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)>
TN	Telephone number	[NN] [(999)]999-9999[X99999]
Specialty		
CP	Composite price	<price (NM)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>
TQ	Timing/quantity	<quantity (CQ)> ^ <interval (*)> ^ <duration (*)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing>

* for subcomponents, please refer to the definitions in the text.

Field Requirements

In this documentation, fields will be marked as follows: R = required, O= Optional, C = Conditional (if used, these will be explained) and B = included for backwards compatibility with previous versions. Unlisted standard HL7 fields are to be considered optional.

Receiver Processing Rules

The receiver should ignore any "extra" segments, fields, components, and subcomponents (i.e., that were transmitted but were not expected by the receiving system). The receiver should treat segments that were expected, but not present, as consisting entirely of fields that are blank. The receiver should treat fields, components and subcomponents that are expected, but not included in a segment, as blank.

The receiver should send one "ACK" (acknowledgement) message to the sender, following receipt of each message, as follows. After the receiver has received a properly delimited message, the receiver should check the message for the message type (MSH field 9), version ID (MSH field 12) and processing ID (MSH field 11). If any of these are unacceptable, the receiver should send back an HL7 acknowledgement message (ACK) containing an MSA segment, with field #1 containing the value "AR" (application reject).

Otherwise, the receiver should process the message. If the receiver is unable to process the message because of improper message format, missing required field data, or the like, the receiver should send back an HL7 acknowledgement message (ACK) containing an MSA segment, with field #1 containing the value "AE" (application error).

If the receiver is unable to process the message for reasons other than improper format, missing data, the system being down, or the like, the receiver should send back an HL7 acknowledgement message (ACK) containing an MSA segment, with field #1 containing the value "AR" (application reject).

HL7 Messages Supported by Our Standard Interfaces

Admission Messages

The "ADT" message type will be used to transmit admission/patient demographic information from the hospital/pharmacy system to the pharmacy database. Several (incoming) admission events are supported by the interface. Many admission messages share the same message format. The "trigger event" or "event" code (e.g., A01 = admit) found in the Message Header Segment and in the Event Segment define the type of admission message (admission, transfer, discharge, etc.). These will be discussed in the "HL7 Message Segment Detail" section of this documentation.

ADT-A01 Admit a patient	
An "admit patient" message (A01 "event") is used for "Admitted" patients only. These messages are sent as a result of patients beginning their stay in the healthcare facility. Normally, this information is entered in the hospital information system and broadcast to nursing units and ancillary systems. An admission message (A01 event) should be used to notify the pharmacy database of a patient's arrival in the healthcare facility. If an A01 event is received by Ascend for a patient that already is admitted, the message will be treated as an A08 and the patient admission will be updated. Prior to version 7.2, an A01 message requires an Admit Date (PV1-44).	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification
NK1	Next-Of-Kin
PV1	Patient Visit
IN1	Insurance
[{OBX}]	Observation/Result
[{AL1}]	Patient Allergy Information
[{DG1}]	Diagnosis Information

Sample Message Sent From Hospital Information System:

MSH|^~\&|AccMgr|1|||20050110045504||ADT^A01|599102|P|2.3||| EVN|A01|20050110045502|||||
PID|1||10006579^^^1^MRN^1||DUCK^DONALD^D||19241010|M||1|111 DUCK
ST^^FOWL^CA^999990000^^M|1|8885551212|8885551212|1|2||40007716^^^AccMgr^VN^1|123121
234||||||||||NO NK1|1|DUCK^HUEY|SO|3583 DUCK
RD^^FOWL^CA^999990000|8885552222||Y||||||||||||
PV1|1|I|PREOP^101^1^1^^^S|3|||37^DISNEY^WALT^^^^^^AccMgr^^^^CI|||01||||1|||37^DISNEY
^WALT^^^^^^AccMgr^^^^CI|2|40007716^^^AccMgr^VN|4||||||||||||||||||1||G|||20050110045253
|||||| GT1|1|8291|DUCK^DONALD^D||111^DUCK
ST^^FOWL^CA^999990000|8885551212||19241010|M||1|123121234||||#Cartoon Ducks
Inc|111^DUCK ST^^FOWL^CA^999990000|8885551212||PT| DG1|1|I9|71596^OSTEOARTHROS NOS-
L/LEG ^I9|OSTEOARTHROS NOS-L/LEG ||A| IN1|1|MEDICARE|3|MEDICARE|||||||Cartoon Ducks
Inc|19891001|||4|DUCK^DONALD^D|1|19241010|111^DUCK
ST^^FOWL^CA^999990000||||||||||||||||123121234A||||||PT|M|111 DUCK
ST^^FOWL^CA^999990000|||||8291 IN2|1||123121234|Cartoon Ducks
Inc|||123121234A||||||||||||||||||||||||||||||||||||||||||||||||||||||||8885551212 IN1|2|NON-
PRIMARY|9|MEDICAL MUTUAL CALIF.|PO BOX
94776^^HOLLYWOOD^CA^441414776||8003621279|PUBSUMB|||Cartoon Ducks
Inc||||7|DUCK^DONALD^D|1|19241010|111 DUCK
ST^^FOWL^CA^999990000|||||||||||||||||056269770||||||PT|M|111^DUCK

ST^^FOWL^CA^999990000|||||8291 IN2|2||123121234|Cartoon Ducks Inc|||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||8885551212 IN1|3|SELF PAY|1|SELF PAY||||||||||5||1

Sample Message Sent From Ascend:

MSH|^~\&|Ascend|555|PYXIS|555|200501100455||ADT^A01|ADT66561|P|2.3|||||||
PID|||10006579||DUCK^DONALD D||19241010|M|||111^DUCK
ST^^FOWL^CA^99999^^R||8885551212|||||40007716|123121234||||||||||
PV1||I|PREOP^101^1||||37^DISNEY^WALT||||||||||I|||||||||||||||||||||||||200501100452|||||||
DG1|1|||OSTEOARTHROS NOS-L/LEG|||||||||||||||^

ADT-A02 Transfer a Patient	
A "transfer patient" message (A02 event) should be sent to the interface when a patient is transferred to another ward, room or bed.	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification
NK1	Next-Of-Kin
PV1	Patient Visit

Sample Message Sent From Hospital Information System:

MSH|^~\&|AccMgr|1|||20050110114442||ADT^A02|59910287|P|2.3||| EVN|A02|20050110114442|||||
PID|1||10006579^^^1^MRN^1||DUCK^DONALD^D||19241010|M||1|111^DUCK
ST^^FOWL^CA^999990000^^M|1|8885551212|8885551212|1|2||40007716^^^AccMgr^VN^1|123121234||||||||||NO
PV1|1|I|IN1^214^1^1^^^S|3||PREOP^101^|37^DISNEY^WALT^^^^^^AccMgr^^^^CI|||01||||1|||37^DISNEY^WALT^^^^^^AccMgr^^^^CI|2|40007716^^^AccMgr^VN|4|||||||||||||||||1||I|||20050110045253||||||

Sample Message Sent From Ascend:

MSH|^~\&|Ascend|555|PYXIS|555|200501101145||ADT^A02|ADT66738|P|2.3|||||||
PID|||10006579||DUCK^DONALD D||19241010|M|||518 BURG
ST^^FOWL^CA^99999^^R||8885551212|||||40007716|123121234||||||||||
PV1||I|IN1^214^1||||37^DISNEY^WALT||||||||||I|||||||||||||||||||||||||200501100452|||||||
DG1|1|||OSTEOARTHROS NOS-L/LEG|||||||||||||||^ AL1|1|MA|^NKA|||

ADT-A03 Discharge/End Visit	
A "discharge patient" or "end visit" message (A03 event) should be sent when an inpatient's stay in the healthcare facility is ended, or an outpatient or emergency room visit is ended. It signals that the patient's status has changed to "discharged", that a discharge date/time has been assigned, and that the patient no longer requires services normally provided through the pharmacy database.	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification

PV1	Patient Visit

Sample Message Sent From Hospital Information System:

MSH|^~\&|AccMgr|1|||20050112154645||ADT^A03|59912415|P|2.3||| EVN|A03|20050112154642|||||
PID|1||10006579^^^1^MRN^1||DUCK^DONALD^D||19241010|M||1|111^DUCK
ST^^FOWL^CA^999990000^^M|1|8885551212|8885551212|1|2||40007716^^^AccMgr^VN^1|123121
234|||||||||||NO
PV1|1|I|IN1^214^1^1^^^S|3||IN1^214^1|37^DISNEY^WALT^^^^^^^AccMgr^^^^CI|||01||||1|||37
^DISNEY^WALT^^^^^^AccMgr^^^^CI|2|40007716^^^AccMgr^VN|4|||||||||||||||1|||1||P|||200501
10045253|20050112152000|3115.89|3115.89||| DG1|1|||OSTEOARTHROS NOS-L/LEG|||||||||||||^
AL1|1|MA|^NKA|||

Sample Message Sent From Ascend:

MSH|^~\&|Ascend|555|PYXIS|555|200501121547||ADT^A03|ADT67504|P|2.3|||||||
EVN|A03|200501121547||||| PID|||10006579||DUCK^DONALD D||19241010|M|||518 BURG
ST^^FOWL^CA^99999^^R||8885551212|||||40007716|123121234||||||||||
PV1||I|IN1^214^1||||37^DISNEY^WALT|||||||||||I|||||||||||||||||||||||||200501100452|20050112152
0|||||||| DG1|1|||OSTEOARTHROS NOS-L/LEG|||||||||||||^ AL1|1|MA|^NKA|||

ADT-A04 Register an Outpatient/ER Patient
A "register patient" message (A04 event) signals that the patient has arrived or checked in as an outpatient, recurring outpatient, or emergency room patient. Note: Users may be able to configure their system to process, or not process (ignore), some (or all) outpatient and emergency room registrations; in either case an "application accept" acknowledgement will be returned to the sender. This message uses the same segments as the "admit patient" (A01) message.

ADT-A05 Pre-admit a Patient
A "pre-admission" message (A05 event) is sent to notify the interface of a patient pre-admission process. This message can also be used to pre-register an outpatient or emergency room patient. Note: Users may be able to configure their system to process, or not process (ignore), this message type; in either case an "application accept" acknowledgement will be returned to the sender. This message uses the same segments as the "admit patient" (A01) message.

ADT-A06 Change an Outpatient to an Inpatient
A "change outpatient to inpatient" message (A06 event) is sent when an outpatient or ER patient is being admitted as an inpatient. This message should signal the interface to changes a patient's status from outpatient/ER to inpatient/admitted. If a patient is **pre**-registered (not registered) as an outpatient and then admitted as an inpatient, an "admission" message (A01 event) should be sent instead. This message uses the same segments as the "admit patient" (A01) message.

ADT - A07 Change an Inpatient to an Outpatient
A "change inpatient to outpatient" message (A07 event) is sent when an inpatient becomes an outpatient and is still receiving care/services. This message uses the same segments as the "admit patient" (A01) message.

ADT - A08 Update Patient Information
This message (A08 event) is used when any patient information has changed but when no other ADT event has occurred. For example, visit information updates. If there is an admit date in the A08 event and the patient does not exist in Ascend, the patient will be added to Ascend. This message uses the same segments as the "admit patient" (A01) message.

ADT-A11 Cancel Admission
This message currently functions exactly like the A03 Discharge. This message uses the same segments as the “Discharge/End Visit” (A03) message.

ADT – A13 Cancel Discharge
The "cancel discharge" message (A13 event) is sent when an earlier "discharge patient" message (A03 event) is canceled, either because of erroneous entry or because of a revised decision to not discharge, or end the visit of, the patient. This message uses the same segments as the "admit patient" (A01) message.

ADT-A17 Swap Patients	
The "swap patients" message (A17 event) is used to identify two patients that have exchanged beds. The interface will process inbound A17 events, but does not support this event for outbound messages.	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification (patient #1)
PV1	Patient Visit (patient #1)
PID	Patient Identification (patient #2)
PV1	Patient Visit (patient #2)

ADT-A21 Patient Goes on a Leave of Absence
An A21 event is sent to notify systems that an admitted patient has left the healthcare institution temporarily. It is used for systems in which a bed is still assigned to the patient, and it puts the current admitted patient activities on hold. For example, it is used to notify dietary services and laboratory systems when the patient goes home for the weekend.

Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification
MRG	Merge Information
PV1	Patient Visit
[PV2]	Patient Visit - Additional Info. 3
[{ DB1 }]	Disability Information 3 (segment not used in Ascend)
[{ OBX }]	Observation/Result

ADT-A22 Patient Returns From a Leave of Absence	
An A22 event is sent to notify systems that an admitted patient has returned to the healthcare institution after a temporary "leave of absence." It is used for systems in which a bed is still assigned to the patient, and it takes their current admitted patient activities off of "hold" status. For example, it is used to notify dietary services and laboratory systems when the patient returns from a weekend trip to his/her home.	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification
MRG	Merge Information
PV1	Patient Visit
[PV2]	Patient Visit - Additional Info. 3
[{ DB1 }]	Disability Information 3
[{OBX }]	Observation/Result

ADT-A31 Update Person	
The "update person" message (A31 event) is recognized by the interface for inbound messages and processed in the same manner as a "update patient information" (A08 event) message. The "update person" (A31) event is not supported for outbound ADT messages.	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification
NK1	Next-Of-Kin
PV1	Patient Visit
[{OBX }]	Observation / Result
[{AL1}]	Patient Allergy Information

ADT – A44 Move Account Information - Patient Account Number
An A44 event is used to signal a move of records identified by the Prior Patient Account Number from the "incorrect source patient identifier list" identified in the MRG segment (Prior Patient Identifier List) to the "correct target patient identifier list" identified in the PID segment (Patient Identifier List). This message uses that same segments as the "change patient account number" (A35 event) message.

ADT-A60 Update Adverse Reaction Information	
This trigger event is used when person/patient allergy information has changed. It is used in conjunction with a new allergy segment, the IAM. IAM.6 – Allergy Action Code contains the type of event: A = Add Allergy, D = Delete Allergy, U = Update Allergy, X = Update Allergy. If the action code is U or X and the IAM.17 Identifier = I, then the allergy will be deleted in Ascend. Starting in Ascend 6.3, allergies that are deleted not removed from the patient but the allergy status is changed to Inactive.	
Segment	Description
MSH	Message Header
EVN	Event Type
PID	Patient Identification
PV1	Patient Visit
IAM	Adverse Reaction Information

Examples:

Add new allergy:

MSH|^~\&|TEST|A|ASCEND|B|20100423165255||ADT^A60||P|2.1|EVN|A60|20100423165255|PID|1||M1|V11|SAMPLE^JOHN||19870415|M||1|STREET^^CITY^STATE^12345|||||S|CAT|V11|111111111|IAM|1|Drug|16216109350G^HAYFEVER|Mild|Amnesia|A|||||||||self||C|LWOPUS||201004231650|

Inactivate allergy:

MSH|^~\&|TEST|A|ASCEND|B|20100423165255||ADT^A60||P|2.1|EVN|A60|20100423165255|PID|1||M1|V11|SAMPLE^JOHN||19870415|M||1|STREET^^CITY^STATE^12345|||||S|CAT|V11|111111111|IAM|1|Drug|16216109350G^HYLAND'S HAYFEVER|Mild|Amnesia|U||no longer relevant|||||||self||I|LWOPUS|

Resend allergy:

MSH|^~\&|TEST|A|ASCEND|B|20100423165255||ADT^A60||P|2.1|EVN|A60|20100423165255|PID|1||M1|V11|SAMPLE^JOHN||19870415|M||1|STREET^^CITY^STATE^12345|||||S|CAT|V11|111111111|IAM|1|Drug|22787701992A^PHOLCODINE|Severe|Nausea|X|||||||||self||C|LWOPUS||201004231706|

Lab Messages

Inbound Lab messages can be received as ORU (Observation Result) messages and will be posted to the Labs tab on patient's profile in Ascend. These clinical lab messages contain patient information in the PID and PV1 segments and then the lab order(s) are contained in the ORC, OBR and OBX segments.

Segment	Description
MSH	Message Header
PID	Patient Identification
PV1	Patient Visit Identification
ORC	Common Order
NTE	Notes and Comments
OBR	Observation Request
OBX	Observation/Result
NTE	Notes and Comments

Sample Message:

MSH||Ascend|Lab|Ascend|Lab|20080826010407||ORU^R01|0000998398|P|2.4|1|||NE||ASCII|||
PID|1|^^^^^^^^|000000216490|^^^^^^^^|Sample^Joe|^|19501010120000|M|||Sunny Acres^123 Green Acres^Santa Rosa^CA^95403^United States of America^H^^^^|| (707)547-1711 (707)547-1711 ^PRN^^^^^^^^~ (707)547-1711 (707)547-1711 ^PRN^^^^^^|||||204411|||||||||||||||||||
PV1|1|I|IN1^214^1^1^^^S|3||IN1^214^1|37^DISNEY^WALT^^^^^^AccMgr^^^^CI|||01||||1|||37^DISNEY^WALT^^^^^^AccMgr^^^^CI|2|40007716^^^AccMgr^VN|4|||||||||||||||1|||1||P|||20050110045253|20050112152000|3115.89|3115.89|||
ORC|RE|1138972^BIOHEMATOLOGY|^||CM|E|||20080826115200|^^||9584^FeelGood^Doctor||||||||||||100 Healing Way^^Santa Rosa^CA^95403^^M^^^^| NTE|1||^This requisition was edited and resaved on the:2008/08/26 12:09:08 PM|GR NTE|2||^This requisition was edited and resaved on the:2008/08/26 12:10:02 PM|GR
OBR|1|1138972^BIOHEMATOLOGY|000000799869^BIOHEMATOLOGY|1843^CBC^^^^PANEL|S|20080826115200|20080826120900|||||||20080826120900|^^^^|^^|||||||||||||||||^^|||||||||||||
OBX|1|ST|1843^CBC^^^^PANL|1|Result|||N|||F|||||^^|||
OBR|2|1138972^BIOHEMATOLOGY|000000799871^BIOHEMATOLOGY|2604^CMP^^^^PANEL|S|20080826115200|20080826120900|||||||20080826120900|^^^^|^^|||||||||||||||||^^|||||||||||||
OBX|1|ST|2604^CMP^^^^PANL|1|Result|||N|||F|||||^^|||
OBR|3|1138972^BIOHEMATOLOGY|000000799874^BIOHEMATOLOGY|2701^INR^2703^^^TEST|S|20080826115200|20080826120900|||||||20080826120900|^^^^|^^|||||||||||||||||^^|||||||||||||
NTE|1||^INRTherapeutic range for INR is 2.00 to 3.00 |GR
OBX|1|NM|2701^INR^2703^^^TEST|1|1.03||0.76 - 1.28|N|||F|||||00040^FAKE^MELODY|||
OBR|4|1138972^BIOHEMATOLOGY|000000799875^BIOHEMATOLOGY|2741^PTT^^^^TEST|S|20080826115200|20080826120900|||||||20080826120900|^^^^|^^|||||||||||||||||^^|||||||||||||
OBX|1|NM|2741^PTT^^^^TEST|1|30|secs|23 - 40|N|||F|||||00040^FAKE^MELODY|||

Order Messages

There are two HL7 message types that can be used to transmit medication/pharmacy orders. These message types are used to transmit new orders, discontinue orders, update orders, etc. The ORM message type is typically used to transmit "non-perfected" medication orders from a computerized physician order entry system (CPOE) to a pharmacy system. Upon validation/editing of the "non-perfected" order by a pharmacist, the order becomes a "perfected" order ready for dispensing/administration/billing. The RDE message type is typically used to transmit "perfected" medication orders from a pharmacy system to other vendors. For example, order messages sent by the pharmacy system to an automated dispensing system will use the RDE message type. The interface will accept inbound RDE and ORM messages.

RDE - Pharmacy Encoded Order messages (Perfected)

Segment	Description
MSH	Message Header
PID	Patient Identification
{[AL1]}	Allergy
PV1	Patient Visit
ORC	Common order
RXE	Pharmacy Encoded
{RXR}	Pharmacy Order Route
{[RXC]}	Pharmacy Order Component

ORM - Pharmacy Prescription Order messages (Non-perfected)

Segment	Description
MSH	Message Header
EVN	Event Type
NTE	Notes and Comments
PID	Patient Identification
{[AL1]}	Allergy
PV1	Patient Visit
ORC	Common order
RXO	Pharmacy Prescription
{RXR}	Pharmacy Order Route
{[RXC]}	Pharmacy Order Component

Use of RXC segments RXC segments are primarily used whenever more than one ingredient is contained in the order. The usual convention is to send the first ingredient in the RXE (or RXO) segment, and each additional ingredient (if any) in separate RXC segments. Therefore, only orders with multiple ingredients would require RXC segment(s). Some vendors prefer to duplicate the first ingredient data in the first RXC segment even though it was included in the RXO/RXE segment. In such cases, all order messages will contain at least one RXC segment. Please notify Mediware if you expect the first RXC segment ingredient to be a duplicate of the ingredient in the RXE (or RXO) segment in order messages you send or receive.

Formulary Messages

The MFN (Master file notification) message type may be used to transmit drug formulary data. This would allow for the automatic maintenance of many of the fields in the other vendor's drug formulary table. Some fields will require manual entry in any case.

MFN - Master file notification message

Segment	Description
MSH	Message Header
MFI	Master File Identification
MFE	Master File Entry
ZFM	Formulary Maintenance

Financial Messages

The DFT (Detailed Financial Transaction) message type is used to transmit charges and/or credits to/from Hann's On Software to/from another vendor. For outbound charges, the other vendor is typically a (hospital) financial system. For inbound charges, the other vendor is typically an automated dispensing system. If the patient indicated in an inbound DFT message does not exist in Ascend, the Ascend interface will always create a patient so that the charge will not be lost. The Ascend interface can be configured to send one FT1 segment, or multiple FT1 segments, with each DFT message.

DFT - Detailed Financial Transaction message

Segment	Description
MSH	Message Header
{EVN}	Event Type
PID	Patient Identification
{PV1}	Patient Visit
[FT1]	Financial Transaction

File Based Batch HL7 Charge File

Segment	Description
FHS	File Header Segment
BHS	Batch Header Segment
MSH	Message Header
{EVN}	Event Type
PID	Patient Identification
{PV1}	Patient Visit
[FT1]	Financial Transaction
BTS	Batch Trailer Segment
FTS	File Trailer Segment

Charge-On-Administration Messages

The RAS (Charge On Administration) message type is used to transmit charges for orders from bedside administration systems.

RAS messages are accepted in AIS version 7.2 and above.

RAS – Charge On Administration message

Segment	Description
MSH	Message Header
PID	Patient Identification
PV1	Patient Visit
ORC	Common order
RXA	RAS Detail Segment
ZXA	RAS Custom Z Segment

Pocket-Maintenance Messages

The ZPM (Pocket Maintenance) message type is used to transmit inventory counts to and from ADM systems.

ZPM – Pocket Maintenance message

Segment	Description
MSH	Message Header
ZPM	Pocket Maintenance Segment

HL7 Message Segment Detail

In this section of the documentation, we will detail the various HL7 segments that may be combined to form the messages supported by the interface. The section documents the fields that make up each of the message segments, and field requirements. Some detailed information will be provided regarding required fields, but optional fields will not usually be explained in detail. Fields that are listed in a table but not described/defined following the table, are not supported or used by the interface at this time.

The start block and end block characters that delimit each message (as discussed earlier) will not be included in the message descriptions below, but are never-the-less required for working interfaces. In addition, the carriage return character that terminates each segment will also not be included in the descriptions, but are also required for working interfaces.

Segment ID

Each segment must be preceded with an appropriate, unique 3 byte segment identifier (Segment ID). Although not treated as (or sequentially counted as) an official HL7 field, the segment ID is listed first in each of the following segment definition tables for easier reference.

Segments Used for All Messages

MSH - Message Header Segment

The MSH segment is required for all messages and will always be the first segment in the message. Thus every message will have at least two segments.

Seq	Len	Fmt	Opt	Field Name
0	3		R	Segment ID = "MSH"
1	1	ST	R	Field Separator
2	4	ST	R	Encoding Characters
3	20	HD	R	Sending Application
4	20	HD	R	Sending Facility
5	20	HD	R	Receiving Application
6	20	HD	R	Receiving Facility
7	14	TS	R	Date/Time Of Message
8	40	ST	O	Security
9	7	CM	R	Message Type
10	20	ST	R	Message Control ID
11	3	PT	R	Processing ID
12	8	ID	R	Version ID
13	15	NM	O	Sequence Number
14	180	ST	O	Continuation Pointer
15	2	ID	O	Accept Acknowledgment Type
16	2	ID	O	Application Acknowledgment Type
17	2	ID	O	Country Code
18	6	ID	O	Character Set
19	60	CE	O	Principal Language Of Message

Field separator

This field contains the separator between the segment ID and the first real field. It serves as the separator and defines the character to be used as a field separator for the rest of the message. The interface will always use "|" (ASCII/decimal 124).

Encoding characters

This field contains four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. The interface uses "^~\&" respectively.

Sending application

This field defines which application sent the message. For messages sent by our standard interfaces, this will be user defined. For messages received by the interfaces, this field should be the other application's ID.

Sending facility

This field defines which facility sent the message. For messages sent by the interface, this will be user defined and unique to each installation. The other application should use the same "sending facility" ID to send messages to the interface. The "sending" and "receiving" facility should be the same.

Receiving application

This field uniquely identifies the receiving application among all other applications on the network. This field may be used to route messages through an interface engine. For messages received by the interface from the other system, this should be defined by the other application vendor. For messages sent by the interface to the other system, this will be user defined and specified by the other application vendor.

Receiving facility

This field should be the same as the "Sending facility" (above).

Date/time of message

This field contains the date/time that the message was created in the date/time format: YYYYMMDDHHMM[SS]. The "seconds" portion is optional.

Message type

This is a composite field which includes 2 components: <message type> ^ <trigger event>

Message types are always 3 bytes and are required components. The message types used by the interface include:

ACK	General acknowledgment
ADT	ADT message (patient admission, discharge, transfer, and etc.)
DFT	Detailed financial transaction (billing transaction) *
MFN	Master file notification (drug formulary record change)
RDE	Pharmacy order

Trigger events are always 3 bytes. Trigger event codes also appear in the EVN (event) segment which is used to process many ADT messages. Recognized trigger events include:

Trigger Event Types

A01	Admit a patient
A02	Transfer a patient
A03	Discharge a patient
A04	Register an Outpatient
A05	Preadmit a patient
A06	Change an Outpatient to Inpatient
A07	Inpatient to outpatient "transfer"
A08	Update patient information
A11	Cancel admission
A12	Cancel transfer
A13	Cancel discharge
A17	Swap patients
A18	Merge Records
A21	Patient Goes on a Leave of Absence
A22	Patient Returns from Leave of Absence
A23	Delete Record
A31	Update Person
A35	Change Patient Account Number

A44	Move Account Information - Patient Account Number
A60	Update Adverse Reaction Information
P03	Post detailed financial transaction

Message control ID

This field contains a value that uniquely identifies the message. The receiving system should echo this ID back to the sending system in the ACK message's MSA segment. If a message is re-sent for any reason, the message control id will remain the same for each transmission of the identical message.

Processing ID

P = Production, D = Debugging, T = Training

Version ID

This is the HL7 version number in use. The interface will use version "2.2" in this field

MSA - message acknowledgment segment

The MSA segment is part of the "ACK" message type and is used to acknowledge a previously received message.

Seq	Len	Fmt	Opt	Element Name
0	3		R	Segment ID = "MSA"
1	2	ID	R	Acknowledgment Code
2	20	ST	R	Message Control ID
3	80	ST	O	Text Message
4	15	NM	O	Expected Sequence Number
5	1	ID	O	Delayed Acknowledgment Type
6	100	CE	O	Error Condition

Acknowledgment code

AA	Application Accept
AE	Application Error
AR	Application Reject

Message control ID

This field contains the same message control ID that was in the message created by the sending system. It allows the sending system to match the response to the original message.

Text message

This optional field further describes an error condition.

Admissions Message Segments

EVN - event type segment

The EVN segment specifies the type of event contained within the message. Not all HL7 messages will include the EVN.

Seq	*Len*	*Fmt*	*Opt*	*Element Name*
0	3		R	Segment ID = "EVN"
1	3	ID	R	Event Type Code
2	14	TS	R	Recorded Date/Time
3	14	TS	O	Date/Time Planned Event
4	3	IS	O	Event Reason Code
5	10	CN	O	Operator ID
6	26	TS	O	Event Occurred

Event type code

This field indicates the specific type of message. It is most commonly used to send ADT messages to the interface. This field will contain the same data as the "trigger event" (i.e., the second component of the MSH segment's "message type" field). Refer to the event table listed in the MSH-"message type" section above.

Recorded date/time

This contains the date and time that the event was triggered on the hospital/pharmacy system. The interface will recognize two formats:

(1) CCYYMMDDHHMMSS

(2) CCYYMMDDHHMM

PID - patient identification segment

The PID segment contains information about the patient, and is used to specifically identify the patient in the Ascend.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "PID"	N/A
1	4	SI	O	Set ID - Patient ID	N/A
2	12	CX	O	Patient ID (External ID)	PatientID
3	16	CX	R	Patient ID (Internal ID)	Medical Record Number
4	20	CX	O	Alternate Patient ID - PID	Not Used
5	48	PN	R	Patient Name	Patient Last, First, Middle Names
6	48	PN	O	Mother's Maiden Name	Not Used
7	14	TS	O	Date/Time of Birth	DateOfBirth
8	1	IS	O	Sex	Sex
9	48	PN	O	Patient Alias	Not Used
10	1	IS	O	Race	Not Used
11	106	AD	O	Patient Address	Address1&2, City, State, Zip

12	4	IS	O	County Code	Not Used
13	20	TN	O	Phone Number - Home	Cell Phone, Home Phone
14	20	TN	O	Phone Number - Business	Work Phone
15	20	CE	O	Primary Language	Not Used
16	1	IS	O	Marital Status	Not Used
17	3	IS	O	Religion	Not Used
18	12	CX	R	Patient Account Number	PatientID
19	11	ST	O	SSN Number - Patient	SSN
20	25	ST	O	Driver's License Number - Patient	Not Used
21	9	CX	O	Mother's Identifier	Not Used
22	3	IS	O	Ethnic Group	Not Used
23	20	ST	O	Birth Place	Not Used
24	2	ID	O	Multiple Birth Indicator	Not Used
25	2	NM	O	Birth Order	Not Used
26	4	IS	O	Citizenship	Not Used
27	60	CE	O	Veterans Military Status	Not Used
28	80	CE	O	Nationality	Not Used
29	8	TS	O	Patient Death Date and Time	Not Used
30	1	ID	O	Patient Death Indicator	Not Used

Patient ID (Internal ID)

This field should contain the patient's medical record number. This number should be the same each time the same patient is admitted/registered. The interface will use this field as a secondary identifier for the most recent admission (patient account number, field sequence #18, will be the primary identifier - see below). This field could be used by the interface to locate previous admission/order data for the patient.

Unless otherwise specified, the Ascend Interface preferentially accepts/sends the patient's medical record number in this field using a simplified format: i.e., as one component, including the check digit if one is employed (e.g., ...|12345678|...). This differs from the standard HL7 format which would have the check digit appear as a second component (e.g., ..|1234567^8|... the Ascend Interface will ignore any data following the first component of this field. Contact Mediware if you are unable to send/accept this field in this simplified manner.

Patient name

This field contains one or more components. The first component is required. The last two components (suffix and prefix) are not used by the interface and will be ignored.

<family name (20)> ^ <given name (12)> ^ <middle initial or name> ^ <suffix> ^ <prefix>

Date/Time of birth

This field contains the patient's date of birth (CCYYMMDD). Although this is an optional field, it is a highly desirable one and should be completed when possible.

Patient address

Although this field is optional, it is highly desirable for outpatient registrations/admissions. The field components and subcomponents include:

<street address> ^ <2nd street address line> ^ <city> ^ <state> ^ <zip/postal code> ^ <country> ^

Phone number - home

Although this field is optional, it is highly desirable for outpatient registrations/admissions. The area code is not required. Format: Components: [(999)]999-9999

Patient account number

This field contains the unique patient account number assigned by the hospital for each admission/registration. If the same patient is admitted/registered again, the number should be different each time. Typically, pharmacy charges for the patient (i.e., for this admission/registration) are posted to this number. This field will be the primary patient identifier for the interface.

Unless otherwise specified, Ascend preferentially accepts/sends the patient account number field in a simplified format: i.e., as one component, including the check digit if one is employed (e.g., ...|12345678|...). This differs from the standard HL7 format which would have the check digit appear as a second component (e.g., ..|1234567^8|... The Ascend Interface will ignore any data following the first component of this field. Contact Mediware if you are unable to send/accept this field in this simplified manner.

NK1 - patient next-of-kin segment

The NK1 segment is used to convey information about the patient's next-of-kin.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "NK1"	N/A
1	4	SI		Set ID – Next-of-kin	N/A
2	48	PN		Name	Caregiver/LegalRepName
3	60	CE		Relationship	CaregiverRelationship
4	106	AD		Address	LegalRepAddress
5	20	TN		Phone Number	LegalRepPhone
6	20	TN		Business Phone Number	Not Used
7	60	CE		Contact Role	(determines use of Name/Contact Person Name)
8	8	ST		Start Date	Not Used
9	8	ST		End Date	Not Used
10	60	ST		Next of Kin/AP Job Title	Not Used
11	20	ST		Next of Kin/AP Code Class	Not Used
12	20	CM		Next of Kin/AP Employee Number	Not Used
13	60	CX		Organization Name	Not Used
14	1	ST		Marital Status	Not Used
15	1	ST		Sex	Not Used
16	14	TS		Date/Time of Birth	Not Used
17	2	ST		Living Dependency	Not Used
18	2	ST		Ambulatory Status	Not Used
19	4	ST		Citizenship	Not Used
20	60	CE		Primary Language	Not Used
21	2	ST		Living Arrangement	Not Used
22	80	CE		Publicity Indicator	Not Used
23	1	ST		Protection Indicator	Not Used

24	2	ST		Student Indicator	Not Used
25	3	ST		Religion	Not Used
26	48	PN		Mother's Maiden Name	Not Used
27	80	CE		Nationality	Not Used
28	3	ST		Ethnic Group	Not Used
29	80	CE		Contact Reason	LegalRep
30	48	PN		Contact Person Name	EmergencyContact
31	20	TN		Contact Person Phone Number	EmergencyPhone
32	106	AD		Contact Person Address	Not Used
33	32			NOKAPs Identifiers	Not Used
34	2	ST		Job Status	Not Used
35	1	ST		Race	Not Used
36	2	ST		Handicap	Not Used
37	11	ST		Contact Person SSN	Not Used

PV1 - patient visit segment

The PV1 segment is used to convey additional information about the patient's admission/registration that is unique to this visit.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "PV1"	N/A
1	4	SI	O	Set ID - PV1	N/A
2	1	IS	R	Patient Class	ADT - PatientClass (see notes below)
3	40	PL	O	Assigned Patient Location	Ward/Room/Bed
4	2	IS	O	Admission Type	Not Used
5	20	CX	O	Pre-admit Number	Not Used
6	40	PL	O	Prior Patient Location	Not Used
7	60	CN	O	Attending Doctor	Doctor ID, Last Name, First Name
8	60	CN	O	Referring Doctor	Not Used
9	60	CN	O	Consulting Doctor	Not Used
10	3	IS	O	Hospital Service	ADT – Hospital Service (see notes below)
11	80	PL	O	Temporary Location	Not Used
12	2	IS	O	Pre-admit test Indicator	Not Used
13	2	IS	O	Readmission Indicator	Not Used
14	3	IS	O	Admit Source	Not Used
15	2	IS	O	Ambulatory Status	Not Used
16	2	IS	O	VIP Indicator	Not Used
17	60	CN	O	Admitting Doctor	Doctor ID, Last Name, First Name
18	2	IS	O	Patient Type	ADT - Patient Type (see notes below)
19	20	CX	O	Visit Number	Not Used
20	4	FC	O	Financial Class	Not Used
21	2	IS	O	Charge Price Indicator	Not Used
22	2	IS	O	Courtesy Code	Not Used
23	2	IS	O	Credit Rating	Not Used

24	2	IS	O	Contract Code	Not Used
25	8	DT	O	Contract Effective Date	Not Used
26	12	NM	O	Contract Amount	Not Used
27	3	NM	O	Contract Period	Not Used
28	2	IS	O	Interest Code	Not Used
29	1	IS	O	Transfer to Bad Debt Code	Not Used
30	8	DT	O	Transfer to Bad Debt Date	Not Used
31	10	IS	O	Bad Debt Agency Code	Not Used
32	12	NM	O	Bad Debt Transfer Amt.	Not Used
33	12	NM	O	Bad Debt Recovery Amt.	Not Used
34	1	IS	O	Delete Account Indicator	Not Used
35	8	DT	O	Delete Account Date	Not Used
36	3	IS	O	Discharge Disposition	Not Used
37	25	CM	O	Discharged to Location	Not Used
38	2	IS	O	Diet Type	Not Used
39	2	IS	O	Servicing Facility	FacilityID (see facility notes)
40	1	IS	O	Bed Status	Not Used
41	2	IS	O	Account Status	Not Used
42	80	PL	O	Pending Location	Not Used
43	80	PL	O	Prior Temporary Location	Not Used
44	14	TS	O	Admit Date/Time	AdmitDate
45	14	TS	O	Discharge Date/Time	DischargeDate
46	12	NM	O	Current Patient Balance	Not Used
47	12	NM	O	Total Charges	Not Used
48	12	NM	O	Total Adjustments	Not Used
49	12	NM	O	Total Payments	Not Used
50	20	CX	O	Alternate Visit ID	Not Used
51	1	IS	O	Visit Indicator	Not Used
52	60	CN	O	Other Healthcare Provider	Suppliers

Patient Class (dynamic field)

This field will be used to pass hospital specific patient classes to the interface. Depending on interface configuration, this field can be used as Patient Type.

If this field is blank in an inbound ADT message, the existing patient class at the patient's admission level will not be replaced with a null and instead will be left as is. So if the existing patient class is A123 and the inbound ADT message does not specify a patient class, then the existing patient class of A123 will be left alone.

Assigned patient location (dynamic field)

This field identifies the current location of the patient. Components: <unit> ^ <room> > ^ <bed>

The first component may be the nursing station or ward. This field should normally be provided for inpatient admissions. A location must contain all three components: Unit/Ward, Room and Bed for the patient to be assigned to a location. A location cannot be just a Unit/Ward but must also contain a room and bed for the Ascend Interface to assign the patient to the location. The interface may be optionally configured to map certain patient classes or patent types to a pre-defined location, if the hospital/pharmacy system does not provide a location (e.g., map outpatients to a room called "OUTPAT", emergency room patients to "ER", etc.)

Attending doctor (dynamic field)

This field contains the attending doctor's data.

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial> ^ ^ ^ <degree>

Admitting doctor (dynamic field)

This field contains the admitting doctor's data. If no Attending doctor data is present in an ADT message, this doctor's information is entered as the attending doctor in Ascend.

Components: <ID number> ^ <family name> ^ <given name> ^ <middle initial> ^ ^ ^ <degree>

Patient type (dynamic field)

This field will be used to pass hospital specific patient types to the interface. For example, if the patient class is "O" (outpatient), the patient type could be used to screen out unwanted "laboratory" or "radiology" patient types from being admitted to the database. Although normally optional, this field may therefore be required for some patient classes for some installations.

If this field is blank in an inbound ADT message, the existing patient type at the patient's admission level will not be replaced with a null and instead will be left as is. So if the existing patient type is Inpatient and the inbound ADT message does not specify a patient type, then the existing patient type of Inpatient will be left alone.

Hospital Service (dynamic field)

This field contains the treatment or type of surgery that the patient is scheduled to receive. Depending on interface configuration, this field can be used as Patient Type.

If this field is blank in an inbound ADT message, the existing hospital service code at the patient's admission level will not be replaced with a null and instead will be left as is. So if the existing hospital service code is INP and the inbound ADT message does not specify a hospital service, then the existing hospital service code of INP will be left alone.

Servicing Facility

This field will be used to receive/pass the Facility Id field in the Facilities table for which the patient belongs. This field determines which facility the patient will be linked to. In order for the patient record to be correctly linked to a facility, you must pass the Facility Id in this field.

PV2 - patient visit 2 segment

The PV2 segment is a continuation of visit-specific information contained on the PV1 segment.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		O	Segment ID = "PV2"	N/A
1	80	PL	O	Prior Pending Location	Not Used
2	60	CE	O	Accommodation Code	Not Used
3	60	CE	O	Admit Reason	Diagnosis Description

4	60	CE	O	Transfer Reason	Not Used
5	25	ST	O	Patient Valuables	Not Used
6	25	ST	O	Patient Valuables Location	Not Used
7	2	IS	O	Visit User Code	Not Used
8	26	TS	O	Expected Admit Date	Not Used
9	26	TS	O	Expected Discharge Date	Not Used
10	3	NM	O	Estimated Length of I/P Stay	Not Used
11	3	NM	O	Actual Length of I/P Stay	Not Used
12	50	ST	O	Visit Description	Not Used
13	90	XCN	O	Referral Source Code	Not Used
14	8	DT	O	Previous Service Date	Not Used
15	1	ID	O	Employment Illness Related Indicator	Not Used
16	1	IS	O	Purge Status Code	Not Used
17	8	DT	O	Purge Status Date	Not Used
18	2	IS	O	Special Program Code	Not Used
19	1	ID	O	Retention Indicator	Not Used
20	1	NM	O	Expected Number of Insurance Plans	Not Used
21	1	IS	O	Visit Publicity Code	Not Used
22	1	ID	O	Visit Protection Indicator	Not Used
23	90	XON	O	Clinic Organization Name	Not Used
24	2	IS	O	Patient Status Code	Not Used
25	1	IS	O	Visit Priority Code	Not Used
26	8	DT	O	Previous Treatment Date	Not Used
27	2	IS	O	Expected Discharge Disposition	Not Used
28	8	DT	O	Signature on File Date	Not Used
29	8	DT	O	First Similar Illness Date	Not Used
30	3	IS	O	Patient Charge Adjustment Code	Not Used
31	2	IS	O	Recurring Service Code	Not Used
32	1	ID	O	Billing Media Code	Not Used
33	26	TS	O	Expected Surgery Date/Time	Not Used
34	2	ID	O	Military Partnership Code	Not Used
35	2	ID	O	Military Non-Availability Code	Not Used
36	2	ID	O	Newborn Baby Indicator	Not Used
37	1	ID	O	Baby Detained Indicator	Not Used

IN1 - Insurance information segment

The IN1 segment is used to transmit patient insurance information. Supported for inbound transactions only.

Seq	Len	Fmt	Opt	Element Name	Field In Ascend
0	3		R	Segment ID = "IN1"	N/A
1	4	SI	O	Set ID – Internal	N/A
2	8	CE	O	Insurance Plan ID	Plan Id

3	59	CX	R	Insurance Company ID	PayerRef
4	130	XON	O	Insurance Company Name	Payer Name
5	106	XAD	O	Insurance Company Address	Payer Address 1
6	48	XPN	O	Insurance Company Contact	Not Used
7	40	XTN	O	Insurance Company Phone	Payer Phone
8	12	ST	O	Group Number	Group Number
9	130	XON	O	Group Name	Group Name
10	12	CX	O	Insured's Group Employer Id	Not Used
11	130	XON	O	Insured's Group Employer Name	Not Used
12	8	DT	O	Plan Effective Date	Patient Insurance Effective From
13	8	DT	O	Plan Expiration Date	Patient Insurance Effective To
14	55	CM	O	Authorization Information	Not Used
15	3	IS	O	Plan Type	Not Used
16	48	XPN	O	Name of Insured	Patient Insurance First Name, Last Name
17	2	IS	O	Insured's Relation to Patient	Patient Insurance Relation To Insured
18	26	TS	O	Insured's Date of Birth	Patient Insurance DOB
19	106	XAD	O	Insured's Address	Patient Insurance Address 1
20	2	IS	O	Assignment of Benefits	Not Used
21	2	IS	O	Coordination of Benefits	Not Used
22	2	ST	O	Coordination of Benefits Priority	Not Used
23	2	ID	O	Notice of Admission Flag	Not Used
24	8	DT	O	Notice of Admission Date	Not Used
25	2	ID	O	Rpt. Of Eligibility Flag	Not Used
26	8	DT	O	Rpt. Of Eligibility Date	Not Used
27	2	IS	O	Release of Information Code	Not Used
28	15	ST	O	Pre-Admit Certification	Not Used
29	26	TS	O	Verification Date/Time	Not Used
30	60	XCN	O	Verification By	Not Used
31	2	IS	O	Type of Agreement Code	Not Used
32	2	IS	O	Billing Status	Not Used
33	4	NM	O	Lifetime Reserve Days	Not Used
34	4	NM	O	Delay Before L. R. Day	Not Used
35	8	IS	O	Company Plan Code	Not Used
36	15	ST	O	Policy Number	Patient Insurance Policy Number
37	12	CP	O	Policy Deductible	Not Used
38	12	CP	O	Policy Limit – Amount	Not Used
39	4	NM	O	Policy Limit – Days	Not Used
40	12	CP	O	Room Rate – Semi-Private	Not Used
41	12	CP	O	Room Rate – Private	Not Used
42	60	CE	O	Insured's Employ Status	Patient Insurance Employment Condition
43	1	IS	O	Insured's Sex	Not Used
44	106	XAD	O	Insured's Employer Address	Not Used
45	2	ST	O	Verification Status	Not Used
46	8	IS	O	Prior Insurance Plan ID	Not Used
47	3	IS	O	Coverage Type	Not Used
48	2	IS	O	Handicap	Not Used
49	12	CX	O	Insured's ID Number	Not Used

AL1 - patient allergy information segment

The AL1 segment is used to transmit patient allergy information. One AL1 segment is sent for each separate patient allergy. Therefore a series of (none, 1 or more) AL1 segment(s) may be included in ADT messages, or in pharmacy order (RDE) messages. Allergies in Ascend are not editing/deleted using AL1 messages, instead you must use A60 to inactivate allergies. Any new allergies not already present on the patient are added to the patient.

Seq	Len	Fmt	Opt	Element Name	Field In Ascend
0	3		R	Segment ID = "AL1"	N/A
1	4	SI	O	Set ID - Internal	N/A
2	2	IS	O	Allergy type	AllergyCodeType
3	60	CE	R	Allergy description	Description
4	2	IS	O	Allergy severity	Not Used
5	15	ST	O	Allergy reaction	Reaction
6	8	DT	O	Identification Date	AllergyDate

Allergy Type

This field indicates a general allergy category. See table below for possible values.

Value	*Description*
DA	Drug Allergy
FA	Food Allergy
MA	Miscellaneous Allergy

Allergy description

This field consists of several components as follows: <Allergy identifier>^<Text>^<Coding system>

The interface service should match the allergy text with the First Databank allergy list and if a match is found in First Databank then it will codify the allergy. Otherwise, the allergy will display as free text in Ascend. So Penicillins would be a codified allergy whereas Penicillin would not since it is not in the FDB allergy list.

Allergy Reaction

This field is a property of the allergy and identifies if the type of allergic reaction (hives, nausea, etc.)

Identification Date

This field represent the allergy was identified/updated.

OBX - observation segment (ADT)

An OBX segment is used to transmit one observation (e.g., patient's height) to the interface. Additional OBX segments are sent for separate observations. Patient height and weight are currently the only observations supported by the interface.

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	*Field In Ascend*
0	3		R	Segment ID = "OBX"	N/A

1	10	SI	O	Set ID - OBX	N/A
2	2	ID	R	Value Type	Always “ST”
3	20	CE	R	Observation Identifier	“HT” or “WT” or “CREA”
4	20	ST	O	Observation Sub-ID	Not Used
5	10	NM	R	Observation Value	Height or Weight
6	20	CE	R	Units	Determines measurement units for result
7	10	ST	O	References Range	Not Used
8	5	ID	O	Abnormal Flags	Not Used
9	5	NM	O	Probability	Not Used
10	2	ID	O	Nature of Abnormal Test	Not Used
11	1	ID	O	Result Status	“F”
12	14	TS	O	Date of Last Normal Values	Not Used
13	20	ST	O	User Defined Access Checks	Not Used
14	14	TS	O	Date/Time of the Observation	DateOfWeight, DateOfSerumCreat
15	60	CE	O	Producer's ID	Not Used
16	80	CN	O	Responsible Observer	Not Used
17	60	CE	O	Observation Method	Not Used

Value Type

Always ‘ST’.

Observation Identifier

Components: <identifier> ^ <text> ^ <name of coding system>

The interface can use the following components:

Identifier Text Coding system

1010.3 HEIGHT AS4

1010.1 WEIGHT AS4

Observation Value

Actual height or weight value.

If there is already a height or weight present on the patient in Ascend and the admit message does not contain an OBX height or weight value, the interface will not erase the height/weight value already stored on the patient in Ascend.

Units

Unit of measure. For height, use "CM" for centimeters or "IN" for inches. For weight, use "KG" for kilograms or "LB" for pounds.

Examples:

OBX||ST|1010.1^WEIGHT^AS4||65|KG<cr>

OBX||ST|1010.3^HEIGHT^AS4||180|CM<cr>

OBX - observation segment (Labs)

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	*Field in Ascend*
0	3		R	Segment ID = "OBX"	*N/A*
1	10	SI	O	Set ID - OBX	*N/A*
2	2	ID	R	Value Type	*N/A*
3	20	CE	R	Observation Identifier	*LabId*
4	20	ST	O	Observation Sub-ID	*Not used*
5	10	NM	R	Observation Value	*LabResult*
6	20	CE	R	Units	*Units*
7	10	ST	O	References Range	*Range*
8	5	ID	O	Abnormal Flags	*Abnormal Flag*
9	5	NM	O	Probability	*Not used*
10	2	ID	O	Nature of Abnormal Test	*Not used*
11	1	ID	O	Result Status	*ObservResultStatus*
12	14	TS	O	Date of Last Normal Values	*Not used*
13	20	ST	O	User Defined Access Checks	*Not used*
14	14	TS	O	Date/Time of the Observation	*Not used*
15	60	CE	O	Producer's ID	*Not used*
16	80	CN	O	Responsible Observer	*Not used*
17	60	CE	O	Observation Method	*Not used*

Observation Value

Field contains the lab result. Can be up to 20 characters and is not limited to numeric values but can accept letters and symbols (> 1, < 9%, 3 mm, etc.).

Abnormal Flags

Starting with Ascend version 7.0, Ascend will support the receiving of the Lab Abnormal Flag and will associate an Abnormal Flag with the order. The Lab Abnormal Flag can be up to 20 characters. The interface will add any Abnormal Flags that are received through the interface but not already in the Ascend table.**OBR - Observation Request segment**

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

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	*Field in Ascend*
0	3		R	Segment ID = "OBR"	N/A
1	4	SI	C	Set ID - Observation Request	N/A
2	75	EI	C	Placer Order Number	LabOrderNumber
3	75	EI	C	Filler Order Number	Not Used
4	200	CE	R	Universal Service ID	N/A
5	2	ID	B	Priority	Not Used
6	26	TS	B	Requested Date/Time	Not Used
7	26	TS	C	Observation Date/Time	ResultDate
8	26	TS	O	Observation End Date/Time	Not Used
9	20	CQ	O	Collection Volume	Not Used

10	60	XCN	O	Collector Identifier	Not Used
11	1	ID	O	Specimen Action Code	Not Used
12	60	CE	O	Danger Code	Not Used
13	300	ST	O	Relevant Clinical Info.	Not Used
14	26	TS	C	Specimen Rcv'd. Date/Time	SpecimenDate
15	300	CM	O	Specimen Source	Not Used
16	80	XCN	O	Ordering Provider	Not Used
17	40	XTN	O	Order Callback Phone Number	Not Used
18	60	ST	O	Placers Field 1	Not Used
19	60	ST	O	Placers Field 2	Not Used
20	60	ST	O	Filler Field 1	Not Used
21	60	ST	O	Filler Field 2	Not Used
22	26	TS	C	Results Rpt./Status Change	Not Used
23	40	CM	O	Charge to Practice	Not Used
24	10	CM	O	Diagnostic Service Sect ID	Not Used
25	1	ID	C	Result Status	Not Used
26	400	CM	O	Parent Result	Not Used
27	200	TQ	O	Quantity/Timing	Not Used
28	150	CN	O	Result Copies to	Not Used
29	150	CM	O	Parent Number	Not Used
30	20	ID	O	Transportation Mode	Not Used
31	300	CE	O	Reason for Study	Not Used
32	200	CM	O	Principal Result Interpreter	Not Used
33	200	CM	O	Assistant Result Interpreter	Not Used
34	200	CM	O	Technician	Not Used
35	200	CM	O	Transcriptionist	Not Used
36	26	TS	O	Scheduled Date/Time	Not Used
37	4	NM	O	Number of Sample Containers	Not Used
38	60	CE	O	Transport Logistics of Collected Sample	Not Used
39	200	CE	O	Collector’s Comment	Not Used
40	60	CE	O	Transport Arrangement Responsibility	Not Used
41	30	ID	O	Transport Arranged	Not Used
42	1	ID	O	Escort Required	Not Used
43	200	CE	O	Planned Patient Transport Comment	Not Used

NTE – notes and comments segment

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	*Field in Ascend*
0	3		O	Segment ID = "NTE"	N/A
1	4	SI	O	Set ID - NTE	N/A
2	8	ID	O	Source of Comment	Not Used
3	64K	FT	O	Comment	Comments

DG1 - diagnosis segment

The DG1 segment is used to transmit one patient diagnosis to the interface. Additional DG1 segments are sent for separate diagnoses. If there is a new diagnosis, or a change in any of the diagnoses, they should all be resent to the interface. Diagnoses in Ascend are not editing/deleted using DG1 messages. Any new diagnoses not already present on the patient are added to the patient.

Seq	Len	Fmt	Opt	Element Name	Field In Ascend
0	3		R	Segment ID = "DG1"	N/A
1	4	SI	O	Set ID - Diagnosis	N/A
2	2	ID	R	Diagnosis coding method	Not Used
3	8	ID	O	Diagnosis code	DiagnosisCode
4	40	ST	R	Diagnosis description	Diagnosis
5	14	TS	R	Diagnosis date/time	DiagnosisDate
6	2	ID	R	Diagnosis/DRG type	Not Used
7	4	ST	O	Major diagnostic category	Not Used
8	4	ID	O	Diagnosis related group (DRG)	Not Used
9	2	ID	O	DRG approval indicator	Not Used
10	2	ID	O	DRG grouper review code	Not Used
11	2	ID	O	Outlier type	Not Used
12	3	NM	O	Outlier days	Not Used
13	12	NM	O	Outlier cost	Not Used
14	4	ST	O	Grouper version and type	Not Used

Diagnosis coding method

ICD9 is the only valid coding system supported by the interface. This field should contain "I9" if the diagnosis is an ICD9 coded diagnosis. Otherwise, the field should be omitted.

Diagnosis code

If the ICD9 code is available, it should be placed here.

Diagnosis description

This field should contain the diagnosis description (i.e., either the one related to the ICD9 code, or free text).

Diagnosis/DRG type

Valid types include "ADMITTING", "INTERIM" and "FINAL"

MRG - merge information

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "MRG"	N/A
1	16	CX	R	Prior Patient ID - Internal	Medical Record Number
2	20	CX	O	Prior Alternate Patient ID	Not Used
3	12	CX	R	Prior Patient Account Number	Not Used
4	12	CX	O	Prior Patient ID - External	Not Used
5	20	CX	O	Prior Visit Number	Not Used
6	20	CX	O	Prior Alternate Visit ID	Not Used
7	48	PN	O	Patient Name	Not Used

Prior Patient ID - Internal

This field will typically contain the incorrect medical record number. The Ascend Interface will preferentially send/receive this field in a simplified format, as discussed under PID - patient identification segment.

The interface ignores MRG segment fields 2-7 for inbound and outbound messages at this time.

IAM – patient adverse information

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "IAM"	N/A
1		SI	R	Set ID	N/A
2		CE	O	Allergen Type Code	
3		CE	O	Allergen Code/Description	Allergy
4		CE	O	Allergy Severity Code	
5		ST	O	Allergy Reaction Code	Reaction
6		CNE	O	Allergy Action Code	
7		EI	O	Allergy Unique Identifier	
8		ST	O	Action Reason	
9		CE	O	Sensitivity to Causative Agent Code	
10		CE	O	Allergen Group Code/Description	
11		DT	O	Onset Date	
12		ST	O	Onset Date Text	
13		TS	O	Reported Date/Time	
14		XPN	O	Reported By	
15		CE	O	Relationship to Patient Code	
16		CE	O	Alert Device Code	
17		CE	O	Allergy Clinical Status Code	
18		XCN	O	Statused by Person	
19		XON	O	Statused by Organization	
20		TS	O	Statused at Date/Time	Date

Allergen Code/Description

This field will contain the allergy text.

Allergy Reaction Code

This field will contain the allergy reaction.

Allergy Action Code

Allergy Action Code contains the type of event: A = Add Allergy, D = Delete Allergy, U = Update Allergy, X = Update Allergy. If the action code is U or X and the IAM.17 Identifier = I, then the allergy will be deleted in Ascend. Starting in Ascend 6.3, allergies that are deleted not removed from the patient but the allergy status is changed to Inactive.

Statused at Date/Time

This field will be the allergy date/time.

Pharmacy Order Segments

Pharmacy order messages (RDE) include some segments that have already been discussed in the admissions area (e.g., PID, PV1, etc.). The remaining RDE segments are reviewed below.

ORC - common order segment

The ORC segment is used to transmit order data that is common to all order message types (e.g., laboratory, radiology, pharmacy, etc.). One ORC segment is sent for each pharmacy order. For pharmacy/medication orders, ORC segments are typically used with RDE (Pharmacy Encoded) "perfected" order messages and with ORM (Pharmacy Prescription) "non-perfected" order messages.

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	*Field in Ascend*
0	3		R	Segment ID = "ORC"	N/A
1	2	ST	R	Order control	Status
2	25	CM	R	Placer order number	RxNumber
3	25	CM	O	Filler order number	OrderRef
4	30	CM	O	Placer group number	Not Used
5	2	ST	O	Order status	Not Used
6	1	ST	O	Response flag	Not Used
7	200	CM	O/R	Timing / Quantity (Required for ORM messages)	Frequency, StartDate, EndDate
8	200	CM	O	Parent	Not Used
9	14	TS	R	Transaction date/time	EnteredDate
10	60	CN	O	Entered by	EnteredByRef
11	60	CN	O	Verified by	VerifiedByRef
12	80	CN	O	Ordering provider	PhysicianRef
13	80	CM	O	Location for enterer	Not Used
14	20	TN	O	Call back phone number	Not Used
15	14	TS	O	Order effective date/time	–DC date if available, otherwise Start Date if available.
16	200	CE	O	Order control reason	Not Used
17	60	CE	O	Entering organization	Not Used
18	60	CE	O	Entering device	Not Used

Order Control

This field contains the purpose of the RDE order message. Values include:

Value	*Description*
NW	New order
CA	Cancel order
DC	Discontinue order
HD	Hold order
RL	Release/cancel previous hold
XO	Change/update order

RO	Replacement Order

Placer order number

In general, the placer order number should identify the application that created or "placed" the order, whereas the filler order number (below) should identify the application that fulfills (dispenses/administers) the order. For example, a CPOE system would normally be the placer, and the pharmacy system receiving the order would normally be the filler. However, when no CPOE system is in use and the order is originally entered into the pharmacy system, then sent to an automated dispensing system, the pharmacy system would normally be the placer and the automated dispensing system the filler !! Fortunately, vendors can come to an agreement that one of the applications is to always be placer and one is to always be filler, if desired.

The placer order number is a composite field. The first component is a string that uniquely identifies the order for the specified patient on the hospital/pharmacy system (the "placer"). The optional second component contains the Application ID of the application that placed the order.
e.g., <Order number>^<Application ID>.

Filler order number

In general, the filler order number should identify the application that fulfills the order (also see Placer order number above for a more detailed explanation). The filler order number is a composite field. The first component is a string that uniquely identifies the order for the specified patient on the system that fulfills (dispenses/administers) the order. The optional second component contains the Application ID of the application.
e.g., <Order number>^<Application ID>.

Timing/Quantity

For RDE "perfected" pharmacy order messages, this is an optional field since the Quantity/Timing field found in the RXE segment serves the same purpose. If provided, it must match the data in the corresponding RXE field. However, for inbound ORM "non-perfected" pharmacy orders, this composite field is required since the RXO segment does not provide a corresponding Quantity/Timing field. Refer to the RXE Quantity/Timing documentation for detailed information about this field, subcomponents and options.

Transaction Date/Time

This is the date and time that the transaction was entered into the hospital/pharmacy order entry system.

Entered By

This field identifies the person who entered the order into the hospital/pharmacy system. Since the RXE segment does not have a corresponding field for this data, this field should be included if the "entered by" data must appear in the database.

Verified By

This optional field identifies the person who verified the order (i.e., if the order was entered by somebody whose work needs to be checked by a pharmacist). This field can contain the same data as the RXE field "Pharmacist verifier ID".

ORC - common order segment (Lab Messages)

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	*Field in Ascend*

0	3		R	Segment ID = "ORC"	N/A
1	2	ST	R	Order control	Status
2	25	CM	R	Placer order number	Not Used
3	25	CM	O	Filler order number	Not Used
4	30	CM	O	Placer group number	Not Used
5	2	ST	O	Order status	Not Used
6	1	ST	O	Response flag	Not Used
7	200	CM	O/R	Timing / Quantity (Required for ORM messages)	Not Used
8	200	CM	O	Parent	Not Used
9	14	TS	R	Transaction date/time	Not Used
10	60	CN	O	Entered by	Not Used
11	60	CN	O	Verified by	Not Used
12	80	CN	O	Ordering provider	DoctorRef (dynamic field)
13	80	CM	O	Location for enterer	Not Used
14	20	TN	O	Call back phone number	Not Used
15	14	TS	O	Order effective date/time	Not Used
16	200	CE	O	Order control reason	Not Used
17	60	CE	O	Entering organization	Not Used
18	60	CE	O	Entering device	Not Used

RXE - pharmacy encoded segment

The RXE segment is the "master" pharmacy order segment. It is used for all types of pharmacy orders including unit dose orders and IV solution orders. It will contain data about the primary ingredient only. Additional ingredients such as IV additives, are contained in associated RXC segments. RXE segments should only be used in Pharmacy Encoded Order messages (i.e., Perfected orders), whereas ORM messages (i.e., Pharmacy medication order, Non-perfected orders as might be received from a CPOE system) will use an RXO segment.

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	Field in Ascend
0	3		R	Segment ID = "RXE"	N/A
1	200	TQ	R	Quantity/Timing	QuantityTiming
2	100	CE	R	Give code/Drug identification	FormularyLookupField
3	20	NM	R	Give amount/minimum	Strength * Quantity
4	20	NM	O	Give amount/maximum	Not Used
5	60	CE	R	Give units	PerUnits
6	60	CE	O	Give dosage form	Item Description
7	200	ST	R	Providers administration instructions	Label
8	12	ID	O	Deliver to location	Not Used
9	1	ID	O	Substitution flag	Not Used
10	20	NM	O	Dispense amount	Item Quantity
11	60	CE	O	Dispense units	Not Used
12	3	NM	O	Number of refills ordered	Not Used
13	60	CN	O	Ordering doctor's DEA number	Not Used
14	60	CN	O	Pharmacist verifier ID	Not Used
15	20	ST	O	Prescription number	Not Used

16	20	NM	O	Number of refills remaining	Not Used
17	20	NM	O	Number of refills/doses dispensed	Not Used
18	26	TS	O	Date/time of most recent refill/dispense	Not Used
19	10	CQ	O	Total daily dose	Not Used
20	1	ID	O	Needs human review	Not Used
21	200	ST	O	Pharmacy special dispensing instructions	Label
22	20	ST	O	Give per (unit of time)	Not Used
23	6	ST	O	Give rate amount (for IV solution orders)	Rate
24	20	ST	O	Give rate units (for IV solution orders)	RateUnits

Quantity/Timing

This composite field describes how much of the drug is to be administered, when it is to be administered and for how long. This field applies to the entire order. This field is required in the RXE segment whereas its counterpart in the ORC segment is optional. The quantity/timing data includes any changes (from the original doctor's order) that the pharmacist may have made when reviewing the order.

The quantity/timing field has ten components:

Seq	*Len*	*Fmt*	*Opt*	*Component Name*
1	3	NM	O	Quantity
2	60	CM	R	Interval
3	10	CM	O	Duration
4	14	TS	R	Start date/time
5	14	TS	R	End date/time
6	2	CE	O	Priority
7	60	ST	O	Condition
8	60	ID	O	Text description
9	10	CM	O	Secondary timing or conjunction component
10	10	CM	O	Order sequencing

Quantity

This component specifies the number of tablets, capsules, etc. of the drug to administer at each scheduled time. If omitted, the assumed quantity is 1.

Interval

This component is comprised of 2 subcomponents (separated by the subcomponent separator "&"):

<SIG code> <Interval>&<Actual administration times>

Both of the two subcomponents are required if this is a scheduled order with fixed administration times. The actual administration times must be sent. The actual administration times should be in military time format and separated by commas.

e.g., ^TID&0800,1600,2200^"

On the other hand, scheduled orders with interval-based SIG Code must have the SIG code subcomponent and must include a start date/time but will not include actual (fixed) administration times. The SIG Code and interval are included since the interval may or may not be included in the Sig Code.

e.g., ^Q8H Q8H^"

e.g., ^DAILY Q24H^"

SIG codes normally include the common frequency codes found in pharmacy order entry systems (e.g., QD, BID, TID, QID, QOD, QintegerH [where integer is a number in hours; e.g., Q4H = every 4 hours], PRN, PRNxxx [where xxx can specify specific times e.g., PRNQ6H], and etc.).

To indicate specific days of the week:

- Some vendors use the "TextDescription" component. In this case, the field is masked with eight zeros "00000000", the first zero representing Sunday and the seventh represent Saturday. The eight zero represents an every other day order. If an order were scheduled Monday, Wednesday and Friday then the "TextDescription" component would read "01010100". If an order were scheduled every other day then the "TextDescription" component would read "00000001".
- Other vendors use a third subcomponent of the "Interval" component of the Quantity/Timing field in the RXE segment. This subcomponent might be called "Schedule Interval." It is indicated by including a second "&", followed by "QJ" and then numbers indicating the days of the week. (e.g., 1=Monday 2=Tuesday 3=Wednesday 4=Thursday 5=Friday 6=Saturday 7=Sunday). So an order for BID at 8:00 AM and 10:00 PM every Tuesday, Thursday, & Saturday, would contain the following "Interval" component:

  BID QJ246&0800,2200

In some cases, an inbound order message includes "Interval" components that contain insufficient information to calculate how often to actually schedule each dose. This will result in an order with no doses scheduled. In such cases, the pharmacist will have to add more specific instructions to the order to generate a dosage schedule. An example is an Interval of "Continuous" for an IV solution order. Without an IV solution volume and a rate of administration and/or an interval, the order administration times (e.g., "hang times") cannot be calculated.

Duration

This component specifies how long the order is to remain active. If this component is not provided, the End date/time component must be provided. When both are provided, the interface will use the more restrictive value. The duration is specified as follows:

Value	*Description*
X<number>	Order is active for <number> doses
M<number>	Order is active for <number> minutes
H<number>	Order is active for <number> hours
D<number>	Order is active for <number> days

Start Date/Time

This field is used to specify the first date/time that the medication should be administered. It is a required field.

End Date/Time

This component is used to specify the date/time that the medication should be stopped. If this component is not specified, then the duration must be provided. When both are provided, the interface will use the more restrictive value.

Priority

This component describes the urgency of the request and is not used by the interface.

Condition

This component describes the criteria for administering the drug. For example, "As needed for pain" or "to maintain systolic BP < 140". In the database, this will appear as part of the SIG.

Text Description

If this is a scheduled order, this field should be masked with eight zeros "00000000". he first zero representing Sunday and the seventh represent Saturday. The eight zero represents an every other day order. If an order were scheduled Monday, Wednesday and Friday then the "TextDescription" component would read "01010100". If an order were scheduled every other day then the "TextDescription" component would read "00000001".

For non-scheduled orders, this component can be used to describe the administration interval without using SIG codes. For example, "Take as needed".

Secondary Timing or Conjunction Component

This field is ignored by the interface.

Order Sequencing

This field is ignored by the interface.

Give code/drug ID

This field includes 3 components: <identifier>^<description>^<coding system>

The Give code identifies the drug ordered for the patient and must uniquely identify a drug from the drug formulary. The interface will usually use the hospital/pharmacy's unique charge code for the drug as the identifier. The description is a text description of the drug. It may include the drug strength/volume and dosage form/route. The coding system should contain the value "CDM" if the charge code is being used, or "UNIQUE" if the unique drug formulary record reference number is used.

e.g., <54678990>^VANCOCIN 500MG INJECTION^CDM

Give amount minimum

For varying amount orders, this should be the minimum amount of medication to be given to the patient per dose. For non-varying order, it is the exact amount to be given with each dose. The give amount may refer to a strength, volume, or number of tablets/capsules, etc. For example, for a dosage of Tylenol 650mg, the patient might receive two 325mg tablets per dose. The give amount, in this case, could be "650" or "2". The unit of measure in each case (e.g., mg or tablets) will be defined in the "Give units" (see below).

Give amount maximum

In a varying amount order, this is the maximum ordered amount of medication to be given with each dose. In a non-varying dose order, this field can also contain the exact amount, but this is optional. If the maximum dose is the same as the minimum dose, receiving vendors should interpret this as being an order with non-varying dosage amounts.

Mediware does not recommend using varying doses for one order to meet recent regulatory requirements and medication safety recommendations. Instead, several orders should be sent, each with a specific non-varying dose. For example, instead of sending one "variable dose" order for "DEMEROL INJ 50-100MG AS NEEDED FOR PAIN", three orders (one each for each available product strength: DEMEROL INJ 50MG, 75MG and 100MG) should be sent.

Give Units

This field clarifies the unit of measure for the "Give minimum/maximum" fields. The interface will append this value to the end of the "Give amount" for display/storage purposes. Typical units include: ML, MG, GM, L, UNITS, TABLETS, CAPSULES, PACKETS, BOTTLES, and etc.

Provider's administration instructions

The ordering provider's instructions to the nurse or other person who will be administering the medication. This free text field should contain the entire SIG. e.g., "Give 200mg QID X 4 days"

Pharmacist verifier ID

This is the ID of the pharmacist who verified the order. If the verifying pharmacist is to be contained in the database, it must be provided here.

Prescription Number/Rx Number

This may be a unique number assigned to the order by the hospital/pharmacy system. This number may or may not be the same as the Placer order number in the ORC segment. In any case, the interface uses the ORC segment Placer order value to locate the hospital/pharmacy system's order within the database

Pharmacy Special Dispensing Instructions

These are special instructions from the pharmacist to the nurse or other person administering the medication. For outbound data, the order's 'SIG' and 'Comments' fields are combined to populate this field.

Give rate amount

This field should only be used for IV solutions, enteral solutions, irrigations, and similar "fluid" orders that can be properly described in milliliters per hour. Otherwise the field should not be sent.

Give rate units

If a Give rate is provided, the only units recognized by the interface at this time are "ML/HR"

RXO - pharmacy prescription segment

The RXO segment is the "master" pharmacy prescription segment found in ORM messages (i.e., Pharmacy medication orders as might be received from a CPOE system; "Non-perfected" orders that have not been checked or edited by a pharmacist) . The RXO will contain data about the primary ingredient only. Additional ingredients such as IV additives, are contained in associated RXC segments.

After a "non-perfected" order (i.e., an ORM message containing an RXO segment) has been checked/edited by a pharmacist, the order becomes "perfected". Subsequent order messages containing "perfected" orders should use the RDE message format and contain an RXE segment.

Also note that RXO segments do not have a Quantity/Timing field as found in the RXE segment. Inbound ORM messages also contain ORC segments, and the Quantity/Timing field in the ORC is intended to serve the same purpose as the Quantity/Timing field in the RXE segment.

RXO segments are very similar to RXE segments and share many of the same fields. Please refer back to the RXE segment definitions above for more information on corresponding RXO fields. In most cases, the RXO field names are the same as the RXE names except they have the word "Requested" appended to the front. (e.g., the RXE "Give Code" is the same as the RXO "Requested Give Code").

Seq	*Len*	*Fmt*	*Opt*	*Element Name*	Field in Ascend
0	3		R	Segment ID = "RXO"	N/A
1	100	CE	R	Requested Give code (Drug identification)	Description1
2	20	NM	R	Requested Give amount/minimum	Strength
3	20	NM	O	Requested Give amount/maximum	Not Used
4	60	CE	R	Requested Give units	StrengthUnits
5	60	CE	O	Requested Give dosage form	StrengthUnits
6	200	ST	R	Pharmacy instructions	Not Used
7	200	ST	O	Administration instructions	PhysicianOrder
8	12	ID	O	Deliver to location	Not Used
9	1	ID	O	Allow Substitution	Not Used
10	100	CE	O	Requested Dispense code	Not Used
11	20	NM	O	Requested Dispense amount	Not Used
12	60	CE	O	Requested Dispense units	Not Used
13	3	NM	O	Number of refills ordered	Not Used
14	60	CN	O	Ordering doctor’s DEA number	Not Used
15	60	CN	O	Pharmacist verifier ID	Not Used
16	1	ID	O	Needs human review	Not Used
17	20	ST	O	Requested Give per (unit of time)	Not Used
18	20	ST	O	Requested Give strength	Not Used
19	20	ST	O	Requested Give strength units	Not Used
20	200	CE	O	Indications	Not Used
21	6	ST	O	Requested Give rate amount (for IV solution orders)	Rate
22	20	ST	O	Requested Give rate units (for IV solution orders)	RateUnits

RXR - pharmacy route segment

The RXR segment is used to specify the route or method of drug administration.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "RXR"	N/A
1	60	CE	R	Route	Route Code
2	60	CE	O	Site	Route Description
3	60	CE	O	Administration device	Not Used

4	60	CE	O	Administration method	OrderTypeCategory

Route

The allowable route for administering this medication in the format: <Route code>^<Route description>

The interface expects all route codes to be 2 bytes. e.g., PO^BY MOUTH

RXC - pharmacy component segment

The optional RXC segment is used to convey information about additional ingredients, additives or components of the drug order that cannot be adequately conveyed by the ORC and RXE (or RXO) segments alone. RXC segments are primarily used whenever more than one ingredient is contained in the order. The usual convention is to send the first ingredient in an RXE (or RXO) segment, and each additional ingredient (if any) in separate RXC segments. Therefore, only orders with multiple ingredients would normally require RXC segment(s). For example, for multi-ingredient orders such as IV solutions with additives, the interface will normally accept the first ingredient's data (typically the base solution) in the RXE segment, and remaining ingredients/components (typically additives) in subsequent RXC segments.

Some vendors prefer to duplicate the first ingredient data in the first RXC segment even though it was included in the RXO/RXE segment. In such cases, all order messages will contain at least one RXC segment. Please notify Mediware if you expect the first RXC segment ingredient to be a duplicate of the ingredient in the RXE (or RXO) segment in order messages you send or receive. In any case, the interface will assume that all received RXC segments are to be logically linked to the most recent ORC/RXE (or ORC/RXO) segments (i.e. part of the current RDE or ORM order message).

The User-defined fields, "Field7", "Field8" and "Field 9" are available in versions 7.2 and above.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "RXC"	N/A
1	1	ID	R	Component type	TPNType
2	100	CE	R	Component code	Description1
3	20	NM	R	Component amount	Formulary Strength
4	60	CE	O	Component units	Formulary StrengthUnits
5	20	NM	O	Component strength	Item Strength
6	60	CE	O	Component strength units	Item StrengthUnits
7	60	ST	O	Field7	User-defined
8	60	ST	O	Field8	User-defined
9	60	ST	O	Field9	User-defined

Component type

Values for this field include:

Value	*Description*
B	Base

A	Additive

For IV orders, the "B" value would be used to identify the solution. For non-IV orders, the "B" value may apply to the primary (e.g., greater quantity) base ingredient into which other (lesser quantity) ingredients are mixed. (e.g., if a topical cream is being prepared). If "base" components are present, they should be sent first. The first "base" component should be considered the "primary base". The first "additive" sent should be the "primary additive".

Component code

This field defines the base or additive component in the same manner as the RXE "Give code". The data in the component code refers only to the individual ingredient, not to the entire order.

<identifier> ^ <description> ^ <coding system>

The interface will usually use the hospital/pharmacy's unique charge code for the drug as the identifier. The description is a text description of the drug. It may include the drug strength/volume and dosage form/route. The coding system should contain the value "CDM" if the charge code is being used, or "UNIQUE" if the unique drug formulary record reference number is used..

e.g., <54678990>^AMPICILLIN 1GM IV^CDM

Component amount

This field identifies the amount of the component to be added. E.g., "500" (for 500MG), "10" (for 10ML), "1" (for 1 vial)

Component units

The units of measure for the component amount are described in this field. E.g., "MG" (for 500MG), "ML" (for 10 ML),"VIAL" (for 1 vial).

Component strength

If the component code description does not include a strength, it should be included here.

Component strength unit

If the component code description does not include the unit of measure, it should be included here. The interface may append the "strength units" to the end of the "strength" for display/storage purposes.

Z - custom segment

The optional Z segment can be used to convey information for outbound orders. You can define the layout of the Z segment in the Ascend Interface. Database fields (all fields in the Orders table plus the OrderType from the OrderTypes table) can be mapped by using the {} to wrap the database fields. The following is an example Z segment for an outbound order:

ZOR|{OrderType}|{Description}

Master File Maintenance Segments

The following message segments are used to update the drug formulary table in the database.

MFI - master file identification segment

The MFI segment identifies which master file is to be updated, and the type of update being performed.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "MFI"	N/A
1	60	CE	R	Master file identifier	Outbound formulary ID – "ZFM"
2	6	ID	O	Master file application ID	Not Used
3	3	ID	O	File-level event code	Outbound formulary – "UPD"
4	14	TS	O	Entered date/time	Not Used
5	14	TS	O	Effective date/time	Not Used
6	6	ID	O	Response code	Outbound formulary – "NE"

Master file identifier

Identifies a standard HL7 master file or a site-specific master file. The format is:

<identifier>^<text>^<name of coding system>^<alternate identifier>^<alternate text>^<name of alternate coding system>

For the interface, the identifier will usually be "ZFM", the text will be "FORMULARY" and the name of the coding system will usually be "CDM" (charge description master file), or "UNIQUE" (the unique drug formulary record reference number).

Master Files Application ID

The name/code of the application responsible for maintaining the original file.

File-level event code

Currently only the value "UPD" is supported by the interface.

Response Level Code

The field should contain "NE" if it is provided.

MFE - master file entry segment

The MFE segment determines what type of record-level event (e.g. add, delete, modify, etc.) that is to occur.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "MFE"	N/A
1	60	CE	R	Record level event code	Outbound RecordLevelEventCode - "MDL" or "MUP"
2	6	ID	O	MFN control ID	Not Used

3	3	ID	O	Effective date/time	Not Used
4	14	TS	O	Primary key value	Outbound Primary Key Value

Record-level event code

This field defines the record-level event that is to be applied to the master file.

Value	*Description*
MAD	Add record
MDL	Delete record
MUP	Update record

Effective Date/Time

The effective date/time for the record-level action.

Primary Key Value

The field which uniquely identifies the drug in the master file. The format for this field is:

<identifier>~<text>~<name of coding system>

The interface will usually use the hospital/pharmacy's unique charge code for the drug as the identifier. The text is a description of the drug. It may include the drug strength/volume and dosage form/route. The coding system should contain the value "CDM", or "UNIQUE" if the unique drug formulary record reference number is used.

e.g., 56745622^FERROUS SULFATE 300MG TABLET^CDM

ZFM - drug formulary maintenance segment

The ZFM segment is a special segment used by the interface to receive additional detail about a drug from the hospital/pharmacy system.

When Set As A Standard HL7 Interface Type

Seq	Len	Fmt	Opt	Element Name
0	3		R	Segment ID = "ZFM"
1	30	ST	R	Description 1
2	30	ST	O	Description 2
3	20	ST	R	Charge code
4	2	ST	O	Route code
5	14	ST	O	Strength
6	10	ST	O	Strength units
7	14	ST	O	Per
8	10	ST	O	Per units
9	14	ST	R	NDC
10	10	ST	O	Dosage
11	10	ST	O	Dosage units
12	20	ST	O	Dosage form

13	20	CM	O	
14	8	ST	O	AHFS number
15	100	ST	O	Default order SIG
16	50	ST	O	Default order comment
17	50	ST	O	Default label
18	10	ST	O	Default IV rate
19	3	NM	O	Default expiration days
20	2	NM	O	Default expiration hours
21	30	ST	O	Charge Code
22	2	ST	O	DEA schedule/code
23	10	NM	O	AWP cost per dosage
24	10	NM	O	Acquisition cost
25	50	ST	O	
26	20	NM	O	InventoryRef

When Set As A Pyxis HL7 Interface Type

Seq	Len	Fmt	Opt	Element Name
0	3		R	Segment ID = "ZFM"
1	30	ST	R	A – Add D – Delete C - Change
2	30	ST	O	Drug Id (Based on inventory setting): Charge Code, Alternate Charge Code, NDC, Inventory Id
3	20	ST	R	Description 1
4	2	ST	O	DEA Code (1-5) If DEA Code = 0 Then C is sent U is sent for all other DEA Codes
5	14	ST	O	Alternate Charge Code
6	15	ST	O	Facility Id
7	50	ST	O	Description 2
8	50	ST	O	Dosage Form
9	54	ST	R	Strength
10	50	ST	O	Strength Units
11	50	ST	O	Per
12	50	ST	O	Per Units
14	20	ST	O	AHFS number
33	20	ST	O	NDC

When Set As A Omnicell or AcuDose Interface Type

Seq	Len	Fmt	Opt	Element Name
0	3		R	Segment ID = "ZFM"
1	30	ST	R	Description 1
2	30	ST	O	Description 2
3	20	ST	R	
4	20	ST	O	Drug Id (Based on inventory setting): Charge Code,

				Alternate Charge Code, NDC, Inventory Id
5	20	ST	O	Dosage Form
6	20	ST	O	Strength units and Per
7	20	ST	O	Route
8	14	ST	O	NDC
9	10	ST	R	
10	10	ST	O	IV Rate
11	10	ST	O	IV Rate Units
12	100	ST	O	Default order SIG
13	20	CM	O	AHFS number

Generic Name

This is the generic name for this medication. The name can include strength, volume, concentration, route and/or dosage form information. E.g., "MEPERIDINE 50MG/ML 2ML SYRINGE", "ACETAMINOPHEN 300MG SUPPOS".

Brand Name

This is the manufacturer's proprietary name for the medication. The name can include strength, volume, concentration, route and/or dosage form information. E.g, "DEMEROL 100MG INJ", "TYLENOL".

Hospital/Pharmacy drug code

The hospital/pharmacy's unique code, typically used to charge for this drug. This will be the unique code used by the interface to identify the drug used by the Hospital/Pharmacy system. The code must be unique to each drug to prevent identification of the wrong drug.

Route code

The route of administration for the medication expressed as a 2 byte code. The interface will preferentially utilize route codes defined by First Databank. If multiple routes are possible, leave this field blank.

Strength

The strength of the medication. E.g., "500" (for 500MG). If the strength is not included in the generic name, it should be included in this field. If a concentration is to be expressed, the numerator should be listed in this field and the denominator in the volume field. E.g., "40" (for 40MG / 2ML)

Strength units

The unit of measure for the strength. E.g., "MG" (for 500 MG) and "MG" (for 40MG / 2ML)

Volume

The volume of the medication. E.g., "5" (for 5ML). If the volume is not included in the generic name, it should be included in this field. If a concentration is to be expressed, the denominator should be listed in this field.

E.g., "2" (for 40MG / 2ML)

Volume units

The unit of measure for the volume. E.g., "ML" (for 5ML) and "ML" (for 40MG / 2ML)

NDC number

The National Drug Code number assigned to this medication. The number can be transmitted in "nnnnnnnnnnn" or "nnnnn-nnnn-nn" formats, however, exactly 11 numeric digits must be provided, including zeroes in the appropriate locations to create a "5-4-2" NDC pattern. This field is used to maintain the database with clinical screening data (e.g., for drug interactions) and other First Databank data.

Dosage

The total strength/volume of the medication dosage represented by the pharmacy drug code. For example, the NDC number for the drug might represent a 20ML multi-dose vial, but the pharmacy drug code and the generic name represent a smaller 5ML dosage. In this case, the dosage would be "5".

Dosage units

The unit of measure for the dosage. E.g., "MG" (for 500MG) and "ML" (for 5ML).

Dosage form

The form that the medication is dispensed as. E.g. tablet, patch, capsule, vial, and etc.

Package Size

This field can be used to transmit the package size and/or volume of the formulary item. This field has three components. The first contains the size and/or volume. The second specifies the units of measure. The third contains the package description. I.e., <size/volume>^<units>^<description>

AHFS number

This is the American Hospital Formulary Service number for this drug..

Default SIG

This field is not currently used by the interface.

Default comment

This field is not currently used by the interface.

Default label message

This field is not currently used by the interface.

Default IV rate

This field is not currently used by the interface.

Default expiration days

This field is not currently used by the interface.

Default Expiration hours

This field is not currently used by the interface.

Bar code ID

This is the unique bar code value that will be used to identify a packaged and labeled drug prior to administration to the patient. The value may, in many cases, be the same as the pharmacy drug code. However, it may also be a manufacturer’s bar code, or another user-defined value.

DEA/Schedule code

This is the DEA "narcotic" control schedule for the drug. DEA control/schedule number values range from 1-5.

AWP cost

This field is not currently used by the interface.

Acquisition cost

This field is not currently used by the interface.

Detailed Financial Transaction Segments

The Detailed Financial Transaction message (DFT) is used to send and/or receive charge and/or credit information to/from another vendor.

If the AIP interface is used to transmit charges to another vendor (e.g., a hospital financial system), these charges are usually held until a predetermined time each day. At that time, DFT charge messages are sent one-at-a-time, with each message acknowledged by the receiving system before the interface sends the next DFT message. (The interface marks each acknowledged charge with the "transmitted" date/time). This process continues until all non-transmitted charges for the current period have been transmitted, and starts again the next day at the designated time. The process can be launched automatically at a preset time, or manually (menu).

Batch file creation/transmission of charges can also be done. Contact Mediware for more information on charge transaction batch files.

If the Ascend interface is used to receive charges from another vendor (e.g., an automated dispensing system), these charges are usually received/processed throughout the day on a "real-time" basis.

FT1 - Financial Transaction segment

The FT1 segment contains the detail data necessary to post charges and credits to the Ascend database, to a hospital financial system's patient accounting record, and to similar databases.

For inbound DFT messages, fields that are marked as "R" (in the table below, under the Opt column) are required fields, whereas fields marked "O" are optional. In most cases, fields that are required by the receiving system can be provided even if they are marked as "optional" below.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "FT1"	N/A
1	4	SI	O	Set ID - FT1	N/A
2	12	ST	O	Transaction ID	OrderRef or PatientRef
3	10	ST	O	Transaction Batch ID	BatchNumber from interface configuration
4	14	TS	R	Transaction Date	ChargeDate
5	14	TS	O	Transaction Posting Date	Current date/time
6	8	IS	R	Transaction Type	Credit or Charge indicator from interface configuration
7	80	ST	R	Transaction Code	ChargeCode
8	30	ST	O	Transaction Description	Item
9	30	ST	O	Transaction Description - Alternate	Not Used
10	8	NM	R	Transaction Quantity	Quantity
11	12	CP	O	Transaction Amount Extended	Quantity * AmountUnit
12	12	CP	O	Transaction Amount Unit	AmountUnit
13	60	CE	O	Department Code	HL7SendingFacility from interface configuration
14	30	CE	O	Insurance Plan	Not Used
15	12	CP	O	Insurance Amount	Not Used
16	40	PL	O	Assigned Patient Location	FacilityName
17	1	IS	O	Fee Schedule	Not Used
18	50	IS	O	Patient Type	PatientType
19	60	CE	O	Diagnosis Code	Not Used

20	120	XCN	O	Performed By Code	Not Used
21	12	XCN	O	Ordered By Code	Doctor ID, Last Name, First Name
22	12	CP	O	Unit Cost	AcquisitionCost, AWP or RetailPrice1
23	22	EI	O	Filler Order Number	Not Used
24	120	XCN	O	Entered By Code	Not Used
25	80	CE	O	Procedure Code	HCPC

Set ID - FT1

For the first occurrence of the segment the sequence number would be 1, for the second occurrence it would be 2, etc.

Transaction Date

This is the date the charge or credit occurred. (For scheduled medications, this will also be the date the drug was scheduled to be administered). For outbound transactions the format will be CCYYMMDD. For inbound transactions, the following formats will be accepted: CCYYMMDDHHMM; CCYYMMDDHHMMSS; CCYYMMDD.

Transaction Type

These values are table driven. The usual values are "CH" for charges and "CR" (or "CD") for credits.

Transaction Code

For outbound DFT messages, this field will invariably contain the charge code number (a.k.a. CDM number) for the medication.

For inbound DFT messages, charge code numbers may be used. However, charge code numbers may not be unique (i.e., several items in the database may use the same charge code (CDM) value. While this is usually not a problem for a financial system vendor receiving DFT messages, other vendors may send, or expect to receive, transaction codes based on unique values (such as NDC numbers, formulary record reference numbers, or other unique identifiers). Contact Mediware for more information if this is the case.

Transaction Quantity

This field must contain the quantity to be charged or credited. The quantity should not contain decimal places because most financial systems do not support partial quantities.

Department Code

This optional field may contain the code representing which department the charges are for.

Patient Type Code

This field, when required by another vendor, will usually contain a code indicating which type of patient the charge/credit is for.

Z - Custom segment

The Z segment contains custom data about the charge/credit. The Z segment can be used to send additional information to report NDC billing. The layout of the Z segment is user-defined and is configured

in the Ascend interface service. You can specify fields that you want the interface to use by wrapping the field name in {}. A sample Z segment configuration is shown below:

```
ZND|{NDC}|{NDCQuantity}|{NDCUOM}
```

In this case, the outbound Ascend charge interface would create a ZND segment which would include the charges NDC, the NDC quantity and the NDC unit of measure.

Sample message when configured to bundle all charges and credits for the same patient on the same day (notice there are multiple FT1s under one MSH):

MSH|^~\&|ASCEND|1|AccMgr|1|200501122200||DFT^P03|DFT48390|P|2.3|1||||||
EVN|P03|200501122200||||| PID|||10006579||DUCK^DONALD D||19241010|M|||111 DUCK ST^^FOWL^CA^99999||^^^^^^^8885551212|||||40007716|139129819||||||||||
PV1||I|IN1^214^1||||59^BEAR^FOZZIE||||||||||I||||||||||||||||||||1|||||200501100452|200501121520|||||||
FT1|1|48390||20050111|20050112|CH|66000230^AMLODIPINE BESYLATE|AMLODIPINE BESYLATE||1|||1|||||I|||||||
FT1|2|48390||20050111|20050112|CH|66000780^CITALOPRAM HYDROBROMIDE|CITALOPRAM HYDROBROMIDE||1|||1|||||I|||||||
FT1|3|48390||20050111|20050112|CH|66001700^FUROSEMIDE|FUROSEMIDE||4|||1|||||I|||||||
FT1|4|48390||20050111|20050112|CH|66001990^HYDROCODONE/ACETAMINOPHEN|HYDROCODONE/ACETAMINOPHEN||5|||1|||||I|||||||
FT1|5|48390||20050111|20050112|CH|66002650^LISINOPRIL|LISINOPRIL||1|||1|||||I|||||||
FT1|6|48390||20050110|20050112|CH|66003750^OXYCODONE HCL SR tab|OXYCODONE HCL SR tab||1|||1|||||I|||||||
FT1|7|48390||20050111|20050112|CH|66004070^POTASSIUM CHLORIDE CAP|POTASSIUM CHLORIDE CAP||4|||1|||||I|||||||
FT1|8|48390||20050111|20050112|CH|66005630^WARFARIN SODIUM|WARFARIN SODIUM||1|||1|||||I|||||||
FT1|9|48390||20050111|20050112|CH|66005690^ZOLPIDEM TARTRATE|ZOLPIDEM TARTRATE||1|||1|||||I|||||||
FT1|10|48390||20050111|20050112|CH|66006020^SIMVASTATIN UD TAB|SIMVASTATIN UD TAB||1|||1|||||I|||||||
FT1|11|48390||20050111|20050112|CH|66006230^DIGOXIN|DIGOXIN||2|||1|||||I|||||||
FT1|12|48390||20050111|20050112|CH|66014830^FONDAPARINUX inj.|FONDAPARINUX inj.||1|||1|||||I|||||||

Sample message when configured to send each charge or credit in a separate message (notice each FT1 has its own MSH):

MSH|^~\&|ASCEND|1|AccMgr|1|200501122200||DFT^P03|DFT48390|P|2.3|1||||||
EVN|P03|200501122200||||| PID|||10006579||DUCK^DONALD D||19241010|M|||111 DUCK ST^^FOWL^CA^99999||^^^^^^^8885551212|||||40007716|139129819||||||||||
PV1||I|IN1^214^1||||59^BEAR^FOZZIE||||||||||I||||||||||||||||||||1|||||200501100452|200501121520|||||||
FT1|1|48390||20050111|20050112|CH|66000230^AMLODIPINE BESYLATE|AMLODIPINE BESYLATE||1|||1|||||I|||||||
MSH|^~\&|ASCEND|1|AccMgr|1|200501122200||DFT^P03|DFT48391|P|2.3|1||||||
EVN|P03|200501122200||||| PID|||10006579||DUCK^DONALD D||19241010|M|||111 DUCK ST^^FOWL^CA^99999||^^^^^^^8885551212|||||40007716|139129819||||||||||
PV1||I|IN1^214^1||||59^BEAR^FOZZIE||||||||||I||||||||||||||||||||1|||||200501100452|200501121520|||||||
FT1|1|48390||20050111|20050112|CH|66000780^CITALOPRAM HYDROBROMIDE|CITALOPRAM HYDROBROMIDE||1|||1|||||I|||||||

Charge-On-Administration Segments

The RAS (Charge On Administration) message type is used to transmit charges for orders from bedside administration systems.

RAS messages are accepted in AIS version 7.2 and above.

RXA -

The RXA segment contains the detail data necessary to post administered doses to the Ascend database.

For inbound RAS messages, fields that are marked as "R" (in the table below, under the Opt column) are required fields, whereas fields marked "O" are optional. In most cases, fields that are required by the receiving system can be provided even if they are marked as "optional" below.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "RXA"	N/A
1	4	SI	O	Give Sub-ID Counter	
2	4	ST	O	Administration Sub-ID Counter	
3	26	TS	O	Date/Time Start of Administration	The value of dose was dispensed. This will be the administration/charge date in Ascend.
4	26	TS	R	Date/Time End of Administration	Not Used
5	250	TS	O	Administered Code	Ordered and Administered Id. Id = Ordered Id. Alternate Id = Administered Id.
6	20	IS	R	Administered Amount	Not Used
7	250	ST	R	Administered Units	Not Used
8	250	ST	O	Administered Dosage Form	Not Used
9	250	ST	O	Administration Notes	This will be the Ascend dose notes.
10	250	NM	R	Administering Provider	User that dispensed the dose.
11	200	CP	O	Administered at Location	Not Used
12	20	CP	O	Administered Per (Time Unit)	Not Used
13	20	CE	O	Administered Strength	Not Used
14	250	CE	O	Administered Strength Units	Not Used
15	20	CP	O	Substance Lot Number	Not Used
16	26	PL	O	Substance Expiration Date	Not Used
17	250	IS	O	Substance Manufacturer Name	Not Used
18	250	IS	O	Substance/Treatment Refusal Reason	Not Used
19	250	CE	O	Indication	Not Used
20	2	XCN	O	Completion Status	CP = Complete, RE = Refused, NA = Not Administered, PA = Partially Administered. This is the dose administration status
21	2	XCN	O	Action Code-RXA	Not Used
22	26	CP	O	System Entry Date/Time	

Pocket Maintenance Segments

The RAS (Charge On Administration) message type is used to transmit charges for orders from bedside administration systems.

ZPM – Pocket Maintenance Segment

The ZPM segment contains the detail data necessary to adjust inventory based on ADM system activity.

For inbound ZPM messages, fields that are marked as "R" (in the table below, under the Opt column) are required fields, whereas fields marked "O" are optional. In most cases, fields that are required by the receiving system can be provided even if they are marked as "optional" below.

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	3		R	Segment ID = "ZPM"	N/A
1	1	ST	R	Pocket Code	U – Unload W – Waste (ignored) (other) – Update count
2	10	ST	O	Pyxis console name System	Not Used
3	10	ST	R	Station Name	InventoryAreas.Description
4	2	NM	R	Drawer Number	Drawer
5	5	NM	R	Pocket Descriptor	Pocket
6	25	TS	R	Item ID	Item ID
7	30	ST	R	Item Name	Item Name
8	1	ST	O	Item Class	Not Used
9	8	NM	O	EBC	Not Used
10	8	NM	R	ABC	Not Used
11	8	NM	R	Transaction Amount	Inventory.QuantityOnHand
12	10	ST	O	User ID	Not Used
13	20	ST	O	User Name	Not Used
14	10	ST	O	Witness ID	Not Used
15	20	ST	O	Witness Name	Not Used
16	26	NM	R	Total Count of item in station	QuantityCurrent
17	25	ST	O	Alternate Item ID	Not Used
18	15	ST	O	Facility Code	Not Used
19	30	ST	O	Alternate Item ID 2	Not Used
20	25	ST	O	Nursing Unit	Not Used
21	2	NM	O	Subdrawer	Not Used
22	8	NM	O	Full Count in pocket	Not Used
23	8	NM	O	Par Count in pocket	PAR
24	12	TS	O	Transaction Time	Not Used
25	30	ST	O	Lot Number	Not Used
26	30	ST	O	Serial Number	Not Used

Batch File Segments

FHS - File Header segment

Seq	Len	Fmt	Opt	Element Name	Field in Ascend

0	1	ST	R	File Field Separators	N/A
1	4	ST	R	File Encoding Characters	N/A
2	15	ST	O	File Sending Application	Sending Application
3	20	ST	O	File Sending Facility	Sending Facility
4	15	ST	O	File Receiving Application	Receiving Application
5	20	ST	O	File Receiving Facility	Receiving Facility
6	26	TS	O	File Creation Date/Time	DATE (YYYYMMDDHHmm)
7	40	ST	O	File Security	N/A
8	20	ST	O	File Name/ID/Type	DFT^FHS
9	80	ST	O	File Header Comment	N/A
10	20	ST	O	File Control ID	DATE (YYYYMMDDHHmm-Start)
11	20	ST	O	Reference File Control ID	

FTS - File Trailer segment

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	10	NM	R	File Batch Count	Number of batches in the file
1	80	ST	O	File Trailer Comment	N/A

BHS - Batch Header segment

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	1	ST	R	Batch Field Separator	N/A
1	3	ST	R	Batch Encoding Characters	N/A
2	15	ST	O	Batch Sending Application	Sending Application
3	20	ST	O	Batch Sending Facility	Sending Facility
4	15	ST	O	Batch Receiving Application	Sending Application
5	20	ST	O	Batch Receiving Facility	Sending Facility
6	26	TS	O	Batch Creation Date/Time	DATE (YYYYMMDDHHmm)
7	40	ST	O	Batch Security	N/A
8	20	ST	O	Batch Name/ID/Type	DFT^BHS
9	80	ST	O	Batch Comment	N/A
10	20	ST	O	Batch Control ID	Number representing batch count
11	20	ST	O	Reference Batch Control ID	N/A

BTS - Batch Trailer segment

Seq	Len	Fmt	Opt	Element Name	Field in Ascend
0	10	ST	R	Batch Message Count	Number representing batch count
1	80	ST	R	Batch Comment	N/A
2	100	NM	O	Batch Totals	Sending Application

Sample Messages

Sample Pyxis ZPM Load Message:

MSH|^~\&|PYXISRX|PYXISPH|BILLING|BILLFAC|20070424142927||ZPM|EPL^04242007142927|P|2.2|||| ZPM|L|console|DAYSURG|3|1|1234567|Acme Drug|2|0|0|12|AM1234|DUCK, DONALD|||48|1771856||||4|12|10|20070424142841||

Sample Pyxis ZPM Unload Message:

MSH|^~\&|PYXISRX|PYXISPH|BILLING|BILLFAC|20070423205633||ZPM|EPU^04232007205633|P|2.2|||| ZPM|U|console|MS4|1|13|1234567|Acme Drug|U|13|13|13|AM1234|DUCK, DONALD|||0|1784263||||0|0|0|20070423205558||

Sample Unperfected Inbound Order Message:

MSH|^~\&|CPOE1|SITEA|ASCEND|SITEA|200802210600||ORM^O01|0221200806000626|P^|2.3|||||||| PID|1||16095||WILLY^CHILLY||19361206000000|M|||13901 ICEFLOW ST^^FARGO^ND^99999 |||||M||110151001|222-22-2222|||||||||||| OBX|1|ST|1010.1^Body Weight||80.74|KG| OBX|2|ST|1010.3^Height||166.37|CM| AL1|1|FA|^MILK ^||NAUSEA/VOMITING|| AL1|2||^^||Tongue swells|| AL1|3|MA|^LATEX^||RASH|| PV1|1|I |E ^301 ^1 ^CPOE HOSPITAL^A|3|||BIRDC^BIRD^CHEERY^F|FreeP^FREESTONE^PEACH^A|^^^|OS ||||1|||BIRDC^BIRD^CHEERY^F|020|1|||||||||||||||||||CPOE HOSPITAL|||||20080221055400|||||||| PV2||||RT TOTAL KNEE|||||||||||||||||||||||||||||||| ORC|NW|342974^CPOESYS|^||||1&MCG^Once&^D30^20060221055800^^ROUTINE^ROUTINE^^^||20080221060005|||LINDJ^LIND^JENNY^EDELWEISS|||||| RXO|327000510^FENTANYL INJ^CDM|50||MCG|INJECTABLE||||||1&MCG||||||D30|50|MCG|||| RXR|IV ^Intravenous||||

Sample Perfected Outbound Order Message:

MSH|^~\&|ASCEND|SITEA|CPOE1|SITEA|200802210814||RDE^O01|RDE157750|P|2.3|||||| PID|||16095||WILLY^CHILLY||19361206|M|||13901 ICEFLOW ST^^FARGO^ND^99999^^R||||||110151001|222222222|||||||||| PV1||020|E^301^301||||BIRDC^BIRD^CHEERY||||||||||020|||||||||||||||||||||||200802210554|||||| OBX|1|ST|1010.3^HEIGHT^AS4||165.0|CM|||||M|||||| OBX|2|ST|1010.1^BODY WEIGHT^AS4||81.2|KG|||||M|||||| AL1|1|MA|^MILK||| AL1|2|MA|^LATEX||| AL1|3|MA|^COD||| AL1|4|MA|^SULFA||| ORC|NW|342974|203432||||^ONCE^^200802210558^200802210558^ROUTINE||200802210601||^FARMCIST^JOE|LINDJ^Lind^Jenny|PHARMACY||200802210558|||| RXE|^ONCE^^200802210558^200802210558^ROUTINE|327000510^FENTANYL INJ^CHARGE_CODE|50||MCG|BOTTLE^BOTTLE|^Once ROUTINE ; X 30 Days|||1|||||||||||||||||| RXR|IV^intravenous||| RXC|A|327000510^FENTANYL INJ|50|MCG||

Sample RAS Message:

MSH|^~\&|OPUS|0020|HOS|0020|20111111112328-0600||RAS^O17^RAS_O17|DF0BAD8A-0C89-11E1-A15F-C09F5BD55015|P|2.3.1| PID|1|123456789|BC888888||TESTBOY^JIMMY^^^||19820805|M||N|123 4TH STREET^^LOS ANGELES^CA^90023^^^||(323)555-7711||ENG|M|CAT|DV7020799|512278411|||||||||||| PV1||O|DIVC^IVC^01^0006|2|||37663^JONES^STEVEN^M|||IVC||||1|||08110^MORANS^ELLIOT^G^^|A||6002|||||||^WXYZ||||||||||||F|||201104281426|||||||| ORC|RE|1288|4513|||||||||||||||||||| RXA|0|1|201201122200|201201110900|00029600732^Amoxil 500mg^^00093226801^Amoxicillin 500mg|500|MG||^NOTES1|NOTES2|||||||||CP^Complete||201101121700| ZXA|201201130915|PJACKS^Jacks^Paul|

Non-HL7 Features - Notification

You can write an application to check the status of the interface. There are three values available: LastMessageReceived, LastConnectionTime and LastProgramTime. These values are stored in the INTERFACE.INI file located in the same directory as the interface application. They are stored in the [CONNECTION] section of the file.

LastMessageReceived is the last date/time an inbound message was received from the interface. The value is in mm/dd/yyyy hh:nn format.

LastConnectionTime is the last date/time a connection was confirmed and is updated every 60 seconds. The value is in mm/dd/yyyy hh:nn format.

LastProgramCheck is the last date/time the interface application was running and is updated every 60 seconds. NOTE: This does not mean the interface was connected and receiving transmission, only that the application was alive. The value is in mm/dd/yyyy hh:nn format.

Non-HL7 Features – Dynamic Fields

If a field is labeled "dynamic", it means that the value for that field from the HL7 is used to create a record for that value in the appropriate table, if that value is not already present. For example, if data is sent in the ORC.12 - Ordering Provider field and the ID and/or name of that provider is not already in the Doctors table, a record for that physician will be created dynamically.

Facilities

Facility identification can be sent in any field in the HL7 message, as long as the interface is configured as to where to look for them.