Guidance for HL7 RSP Messages to Support Interoperability

Background

Release 1.5 of the National HL7 Implementation Guide (IG) documents the possible responses to a QBP query message. However, implementation of this IG has raised multiple questions about how populate various fields related to the messaging of the outcome of processing the initial message. This guidance document seeks to clarify how to populate the Acknowledgment Code (MSA-1), the Query Response Status (QAK-2) and the Error Severity (ERR-4) to ensure that all values are in agreement and are appropriate for the outcomes of the processing of the initial message. Consistency in message content is important because querying systems often cross IIS jurisdictional boundaries, and need a single standard with which to comply. Further conformance clarifications will be needed in a future release of the National IG.

Scope of Guidance

In Scope

Responding to a QBP query message is complex, as multiple outcomes are possible ranging from the outright rejection of the message to a successful search resulting in one or more matching records. The message profile, Acknowledgment Code, Query Response Status and Error Severity are all dependent upon the outcome of processing the query message. As well, multiple response profiles are valid depending on the profile of the query and the outcome processing the query. This document aims to provide guidance on how to populate MSA-1, QAK-2 and ERR-4.

Out of Scope

The RSP message also contains other important fields. Those fields will not be discussed in this guidance document. Please consult the National IG on other fields.

Please see the Guidance for HL7 ACK Messages document for additional clarification on constructing acknowledgement messages for VXU submission messages.

Caveats

The Guidance for HL7 ACK Messages document for use with ACK messages describes the meaning of error severities code messaged in ERR-4. Those definitions also apply to the query responses described in this document.

Keep in mind that RSP^K11 message may contain only a single ERR segment. When multiple errors are encountered when processing a single message, it is left to the responding system to select the most salient error to return in the response message.

Query Response Guidance

Below, three basic outcomes from query message processing are outlined along with guidance on appropriately populating key elements of the response message.

- Message is rejected
    - Occurs when any of the following conditions are met
        - The message is of an unsupported message type (MSH-9)
        - The message has an unsupported event code (MSH-9)
        - The message has an unsupported processing ID (MSH-11)
        - The message has an unsupported version ID (MSH-12)
        - The message is unable to be processed for reasons unrelated to format or content
    - Z23 (ACK) profile is the appropriate response profile
    - MSA-1 must be AR and an ERR segment must be present
    - ERR-4 must be E indicating that the originating system should investigate/correct the issue and resubmit the message
    - The Z23 (ACK) profile message does not include a QAK segment
- An error is encountered which prevents successful execution of the query
    - Occurs when the query fails for a reason other than the conditions outlined above
    - The Z33 profile is the appropriate response profile
    - MSA-1 must be AE
    - QAK-2 must be AE
        - QAK-2 may not be AR as that indicates failure due to one of the five conditions described above which requires the use of the Z23 profile
        - QAK-2 may not be OK, TM or NF as those indicate a successful query outcome
    - ERR-4 must be E indicating that the originating system should investigate/correct the issue and resubmit the message
- Query is successfully processed
    - Occurs when the query is successfully processed, regardless of the number of matching patients found (i.e., finding 0 or more than 1 matching patients is considered a "successful" query if the search executes and completes)
    - The Z31, Z32, Z33 or Z42 profiles may be used depending on the profile of the query and the outcome of the search
        - Regardless of which profile is used for the response message, the same guidance applies
    - MSA-1 will be AA if no errors are encountered (i.e., the message does not contain an ERR segment)
    - MSA-1 may also be AA if an ERR segment where ERR-4 is equal to I is included
    - MSA-1 will be AE if one or more errors are encountered but none are severe enough to prevent the successful completion of the search (regardless of the outcome of the search)
        - The message must contain an ERR segment with ERR-4 equal to W
        - ERR-4 may not be E as that indicates a severe enough error that the originating system must resubmit the query message

- o QAK-2 should always reflect the outcome of the query and is independent of the Acknowledgement Code in MSA-1
  - QAK-2 may not be AR as that indicates failure due to one of the five conditions described above which requires the use of the Z23 profile
  - QAK-2 may not be AE as that indicates a severe enough error to prevent the search from successfully executing (see previous scenario)

Summary

The Acknowledgment Code (MSA-1) and Query Response Status (QAK-2) are independent of each other as they represent the outcome of technical processing the message and results of the query search respectively. However, the values that are appropriate to use in these fields are constrained by the outcome of the processing of the message and the execution of the search query. The tables below summarize the appropriate values by outcome. Keep in mind that in an RSP response message, only a single ERR segment is allowed due to constraints on the message structure imposed by the v2.5.1 base HL7 standard.

Table 1: Summary of Acknowledgement Code by Error Condition

Outcome of Processing	Z34 or Z42 Query
Rejection error encountered for MSH-9, -11 or -12, or reason unrelated for format or content	MSA-1 = AR; ERR-4 = E
Fatal error encountered	MSA-1 = AE; ERR-4 = E
Warning error encountered	MSA-1 = AE; ERR-4 = W
Informational error encountered	MSA-1 = AA; ERR-4 = I
No error encountered	MSA-1 = AA; No ERR segment

Table 2: Summary of Profile and Query Response Status by Query Outcome

Outcome of Query	Z34 Query	Z44 Query
Message rejection error	Z23 (no QAK segment)	Z23 (no QAK segment)
Message processing error	Z33 (QAK-2 = AE)	Z33 (QAK-2 = AE)
No match found	Z33 (QAK-2 = NF)	Z33 (QAK-2 = NF)
One match found	Z32 (QAK-2 = OK)	Z42 (QAK-2 = OK)
Multiple matches found (but less than the maximum allowed)	Z31 (QAK-2 = OK) or Z33 (QAK-2 = NF)	Z33 (QAK-2 = NF or TM)
More than the maximum number of allowed matches found[1]	Z33 (QAK-2 = NF or TM)	Z33 (QAK-2 = NF or TM)

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[1] The preference is to return TM in this scenario as it provides the most specific information to the initiating system. However if local law, policy or regulation prevent the responding system from indicating multiple matching patients, NF may be used to indicate that a single high-threshold match could not be found.