



The Royal College of Pathologists of Australasia
Quality Assurance Programs

RCPAQAP Validator Application

User Guide

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1 Introduction

To standardise HL7 v2¹ messaging used in Pathology requesting and reporting in Australia, Australian Commission on Safety and Quality in Health Care regulations, the pathology messaging standard and the pathology peak body guidelines provide guidance on the expected structure and content of HL7 v2 messages to be exchanged between test requesters and test results providers. It is expected that the orders/requests and results messages conform to the expectations of the “National Pathology Accreditation Advisory Council Requirements for information communication and reporting, Fifth Edition”² (NPAAC RICR5), which require that orders and results messages conform to the expectations of the “Australian Diagnostics and Referral Messaging - Localisation of HL7 Version 2.4” standard³ and the Royal College of Pathologists of Australasia Standardised Pathology Informatics in Australia (SPIA), Guidelines v4.0 for e-Requesting⁴ and Reporting⁵ (where applicable to electronic communications).

The RCPAQAP developed a validation infrastructure to supports the industry in adoption of standards-based pathology orders and results messaging. This infrastructure consists of the backend service which accepts HL7 v2 messages for validation and produces validation reports, and the Web Browser-based application that allows a user to submit a HL7 v2 orders or results message and obtain a validation report that indicates whether the submitted message satisfies the expectations and provides detailed diagnostics if it does not.

This document is a user’s guide to this application.

¹ “HL7 Messaging Standard Version 2.4 – Product Brief”,
http://www.hl7.org/implement/standards/product_brief.cfm?product_id=142, Accessed: 16/07/2024

² Australian Commission on Safety and Quality in Health Care, “National Pathology Accreditation Advisory Council Requirements for information communication and reporting, Fifth Edition”
https://www.safetyandquality.gov.au/sites/default/files/2023-04/key_changes_-_requirements_for_information_communication_and_reporting.pdf, Accessed: 20/12/2024

³ “Australian Diagnostics and Referral Messaging - Localisation of HL7 Version 2.4 - HL7 Australia Standard Document - Normative Standard”,
<https://hl7v2wgau.atlassian.net/wiki/spaces/OOADRM20211/overview> (OOADRM20211), Accessed: 20/12/2024

⁴ “Royal College of Pathologists of Australasia Standardised Pathology Informatics in Australia (SPIA), Guidelines v4.0, e-Requesting, Section 2”, <https://www.rcpa.edu.au/getattachment/f306b1de-0ac5-411b-946e-fdeaccdd07c8/RCPA-SPIA-GUIDELINES-V4-0.aspx>, Accessed: 20/12/2024

⁵ “Royal College of Pathologists of Australasia Standardised Pathology Informatics in Australia (SPIA), Guidelines v4.0, Reporting, Sections 3, 5, 6 and 8”,
<https://www.rcpa.edu.au/getattachment/f306b1de-0ac5-411b-946e-fdeaccdd07c8/RCPA-SPIA-GUIDELINES-V4-0.aspx>, Accessed: 20/12/2024

2 Application Overview

2.1 Preliminaries

The application developed in this project enables a user to select a file containing a HL7 v2 Delimited message for validation for conformance with the expectations of the NPAAC Requirements for information communication and reporting, Fifth Edition (NPAAC RICR5), the ADRM 2021.1 Standard and the RCPA SPIA Guidelines v4.0 for e-Requesting and Reporting in areas where conformance can be verified.

As designed, the application is a Web Browser-based application. The distribution package in the form of a ZIP archive includes a HTML document, index.html, several standalone HTML documents and related JavaScript modules, and a few images and PDF documents including this User Guide. The application can be started by opening the index.html with a web browser of user's choice.

The essential pre-requisite for the application to get a message validated and get a validation report is the ability of the web browser in which it runs to connect to and submit a request to the external RCPAQAP validation service.

It has been tested on Windows and Linux. There is no reason to believe that it would not work on iOS but this has not been verified in practise.

If this application is started by navigating to an external web address, then the discussion in the callout above does not apply. The application user interface will be shown, and the backend validation service should be accessible.

2.2 User Interface

2.2.1 Landing Page

Opening the index.html file in the distribution directory with the web browser or accessing the specific web address (URL) over the internet will display the one and only “web page”, like that shown in the image below.

RCPAQAP Pathology HL7 v2 Message Validator ▲
The Royal College of Pathologists of Australasia Quality Assurance Programs

This application allows a HL7 v2 Pathology message, orders or results, to be validated for conformance with one or more of the implemented conformance profiles. The implemented conformance profiles are NPAAC RICR5, ADRM 2021.1, RCPA SPIA Guidelines and RCPAQAP Rules for electronic submission of EQA Results. Which conformance profiles will be available for use and can be used in validation depends on the message type and options selection. See "Help" and "User Guide" for information on how to use this service.

Please note that while the operation of this application requires that the HL7 v2 messages you provide are sent to the backend server for analysis, they are not retained there. As the messages pass through various components of the infrastructure to reach the validation server and the results are returned to your browser for display, the messages are not retained in any of the components in the path. **We very strongly advise against validating HL7 v2 messages that contain Personally Identifiable Information using this service.**

Do not use this service to validate HL7 v2 messages containing Personally Identifiable Information.

Choose File No file chosen

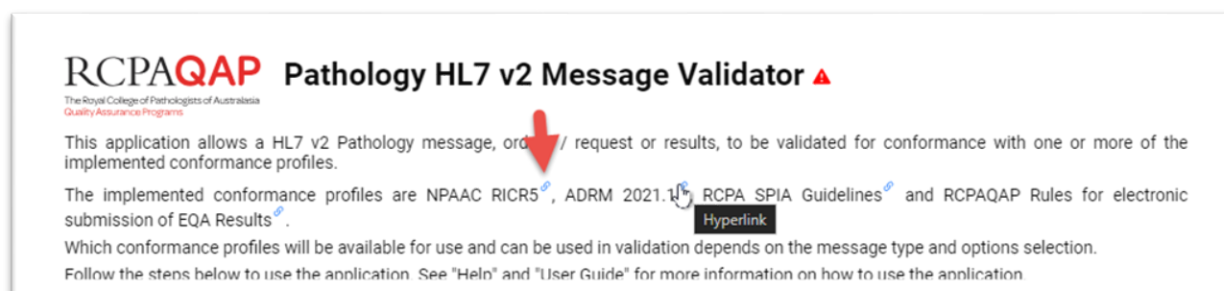
Clear Checked ☐ ADRM ☐ RCPA SPIA ☐ SPIA UoM ☐ QAP Ref Int ☐ QAP EQA ☐ EQA UoM ☐ EQA UCUM

Load Message Validate Message View Report Download Report About Report References Help User Guide

QAPValidationApp Release: 1.0.5 Build: 20250508_1301
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The landing page includes a brief description of the application, references to conformance profiles that the validation service implements, a brief operation workflow and a set of controls that allow a file to be selected, loaded and submitted for validation, and validation report to be reviewed and downloaded. Buttons providing access to the reference material are also included.

Links to reference materials are frequently displayed as clickable icons, as shown in the illustration below. Clicking on the “link” icon will open the reference material in a separate tab / window.

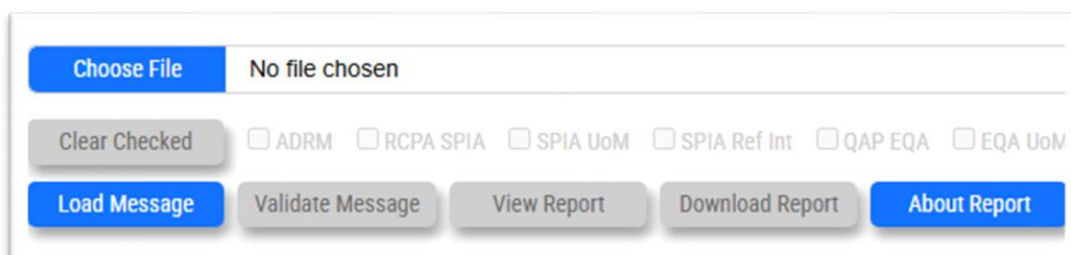


Please note that while the operation of this application requires that the HL7 v2 messages you provide are sent to the backend server for analysis, they are not retained there. As the messages pass through various components of the infrastructure to reach the validation server and the results are returned to your browser for display, the messages are not retained in any of the components in the path. **We very strongly advise against validating HL7 v2 messages that contain Personally Identifiable Information using this service.**

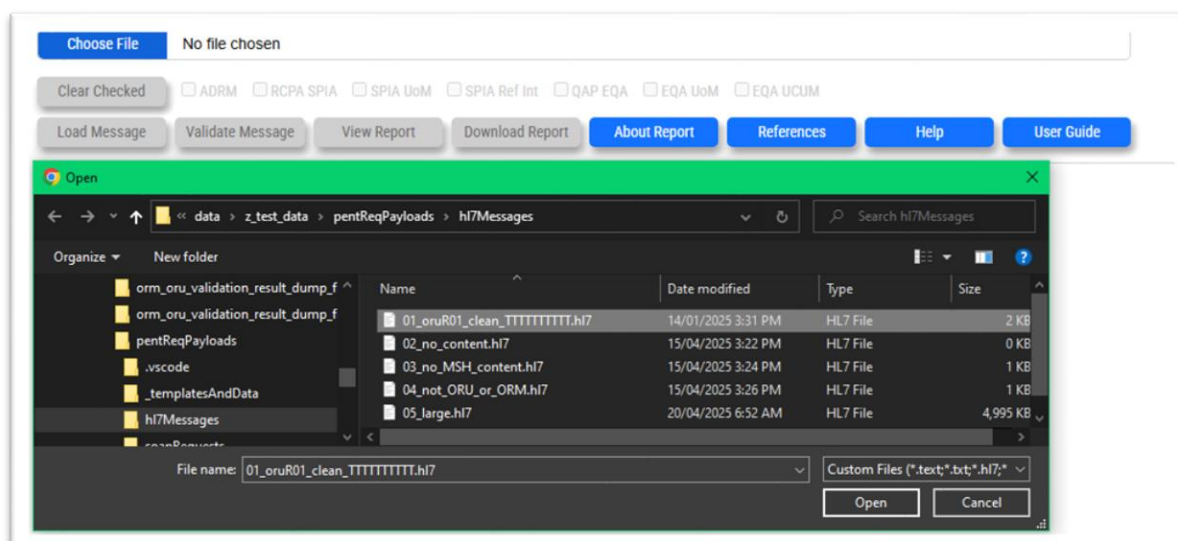
Do not use this service to validate HL7 v2 messages containing Personally Identifiable Information.

2.2.2 Choosing a File to Validate

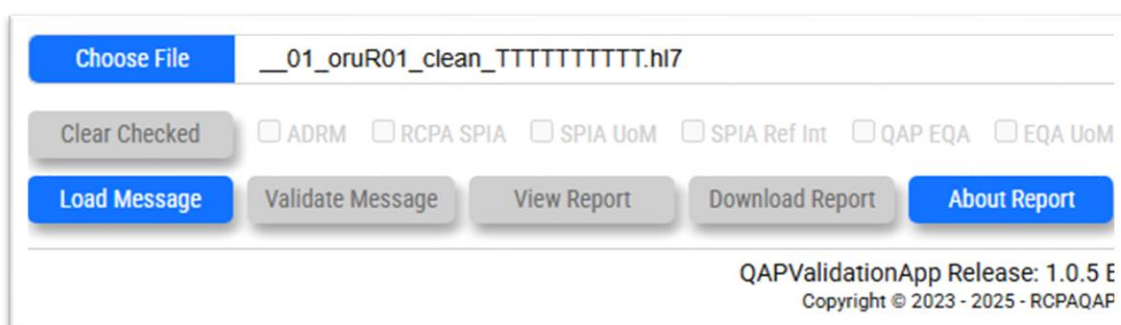
The controls in the illustration below allow the user to choose a HL7v 2 delimiter orders or results file, load it into the browser, submit it for validation and view and download the validation report. Initially these buttons are disabled.



The “Choose File” button will open the operating system’s file choose control and allow the user to browse for and select a file which to process. The Microsoft Windows OS example is shown in the illustration below.



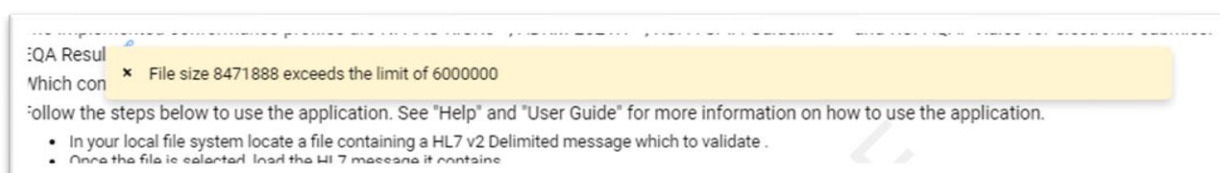
Once the file is selected, the “Load Message” button will be enabled.



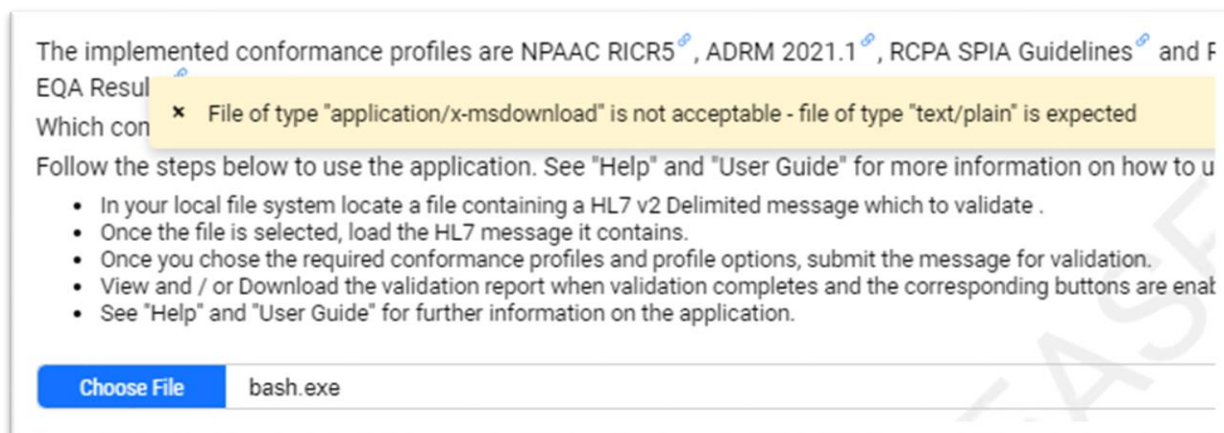
Click that button to load the file for processing.

2.2.3 File Selection Errors

If the chosen file exceeds pre-defined size, it will be rejected with an error message like that shown in the illustration below, which will be shown for a few seconds or until dismissed, whichever is the sooner.



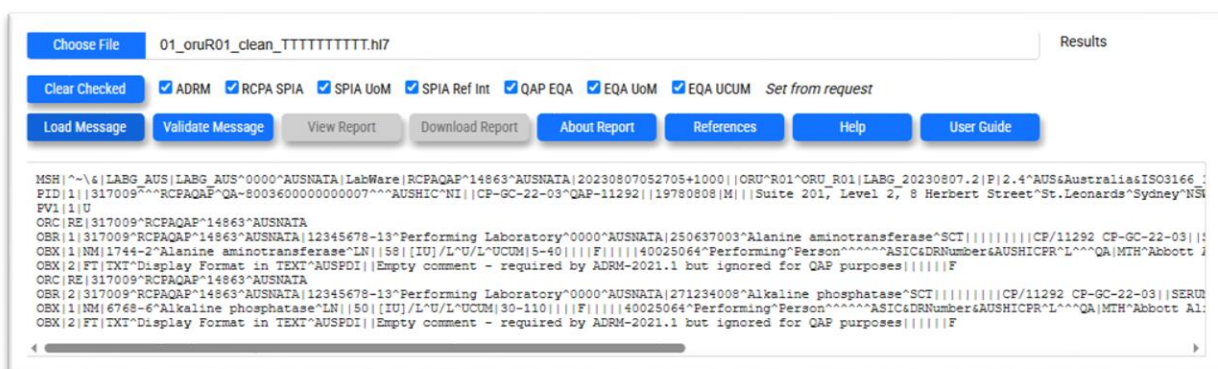
If the chosen file is not a text file, which HL7 v2 message files are expected to be, a warning message will be shown for a few seconds or until dismissed, whichever is the sooner, and the file will not be loaded. See the illustration below.



The size limit may vary from that shown in the illustration.

2.2.4 Once the File is Loaded

If the file is a text file, whether it is a HL7 v2 message or not, it will be loaded and shown in a scrollable text box for inspection.



2.2.5 Validation Options

Once the file is loaded, the “Validate Message” button will be enabled. As shown in the illustration above, a “Clear Checked” button and a collection of checkboxes will be enabled. Depending on the HL7 v2 message type and the content of the MSH-21 field, some of the checkboxes may be automatically checked.

The button with the “Clear Checked” label is a 3-state toggle. The label changes depending on what action will be taken when the button is clicked. Clicking the button will cause the action indicated by the label to be performed and the label to change indicating what action will be performed next time the button is clicked. The actions are:

1. Clear Checkboxes – which will uncheck all the checkboxes
2. Check Applicable – which will cause all checkboxes applicable to the message type to be checked (For Order messages EQA, units of measure and reference intervals checkboxes are not applicable)
3. Check Requested – which will re-set the checkboxes to the state they were when the message was loaded

Hover over a checkbox or its label to get a brief description of the checkbox and its function.

The checkboxes are:

- **ADRM:** Perform validation for conformance with the expectations of the ADRM 2021.1 Standard (See References for details)
- **RCPA SPIA:** Perform validation for conformance with the expectation of the RCPA SPIA Guidelines with respect to Codes and Terms to be used in Orders and Results messages (See References for details)
- **SPIA UoM:** Perform validation for conformance with the expectation of the RCPA SPIA Guidelines with respect to Units of Measure to be used in Results messages (See References for details)
- **SPIA Ref Int:** Perform validation for conformance with the expectation of the RCPA SPIA Guidelines with respect to Reference Intervals, where defined, to be used in Results messages (See References for details)
- **QAP EQA:** Perform validation for conformance with the expectation of the RCPA QAP with respect to Results messages acceptable for electronic submission of EQA results (See References for details)
- **EQA UoM:** Perform validation for conformance with the expectation of the RCPA QAP with respect to Results messages including Units of Measure for numeric results (See References for details)
- **EQA UCUM:** Perform validation for conformance with the expectation of the RCPA QAP with respect to Results messages using the UCUM Units of Measure for numeric results (See References for details)

The “SPIA UoM” and “SPIA Ref Int.” checkboxes are subordinate to the “RCPA SPIA” checkbox. If the “RCPA SPIA” checkbox is not checked the two dependent checkboxes will be disabled. If all three “SPIA” checkboxes are checked and subsequently the “RCPA SPIA” checkbox is unchecked, all three checkboxes will be unchecked.

The “EQA UoM” and “EQA UCUM” checkboxes are subordinate to the “QAP EQA” checkbox. If the “QAP EQA” checkbox is not checked the two dependent checkboxes will be disabled. If all three “EQA” checkboxes are checked and subsequently the “QAP EQA” checkbox is unchecked, then all three checkboxes will be unchecked.

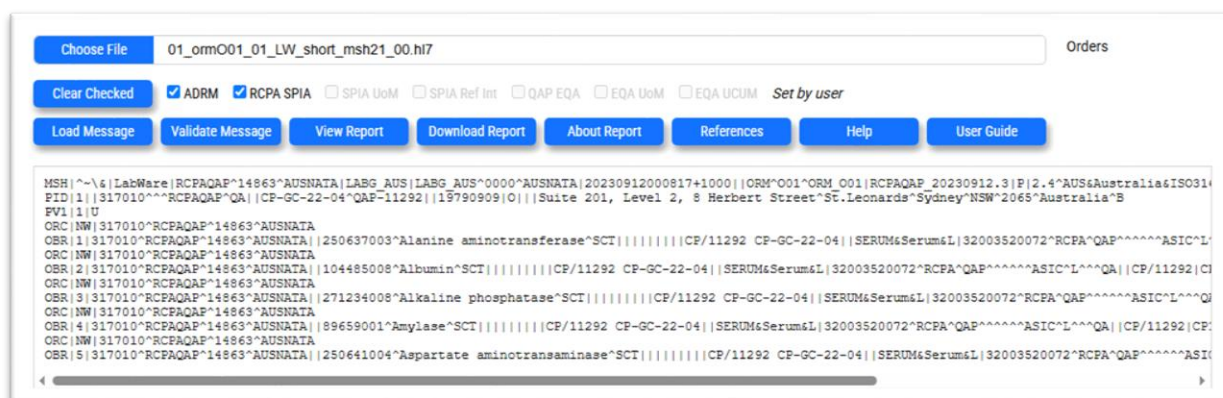
For Orders messages, checkboxes which are applicable only to Results messages will be disabled, as shown in the illustration below for an orders message.

The screenshot shows the application interface for an 'Orders' message. At the top, there is a 'Choose File' button and a text field containing the filename '01_ormO01_01_LW_short_msh21_00.hl7'. Below this is a 'Clear Checked' button. A row of checkboxes follows: ☒ ADRM, ☒ RCPA SPIA, ☐ SPIA UoM, ☐ SPIA Ref Int, ☐ QAP EQA, ☐ EQA UoM, and ☐ EQA UCUM. The text 'Set by user' is positioned to the right of these checkboxes. At the bottom, there is a row of buttons: 'Load Message', 'Validate Message', 'View Report', 'Download Report', 'About Report', 'References', 'Help', and 'User Guide'.

2.2.6 Validating Message

Click the “Validate Message” button to submit the message for validation.

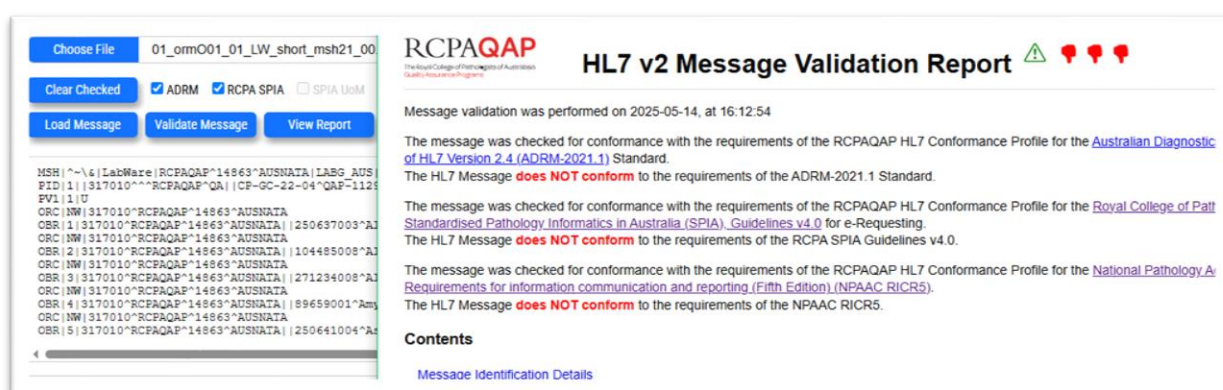
Note that once validation completes the “View Report” and the “Download Report” buttons will be enabled. See the illustration below.



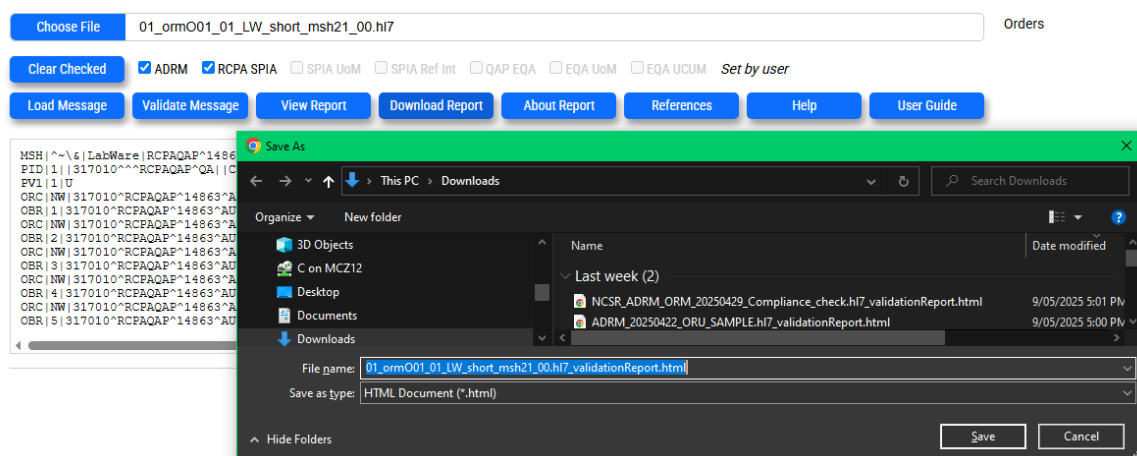
2.2.7 View and Download Report

Clicking on the “View Report” button will open the validation report in a new browser window.

Clicking in the “Close Report” button will close the validation report window.

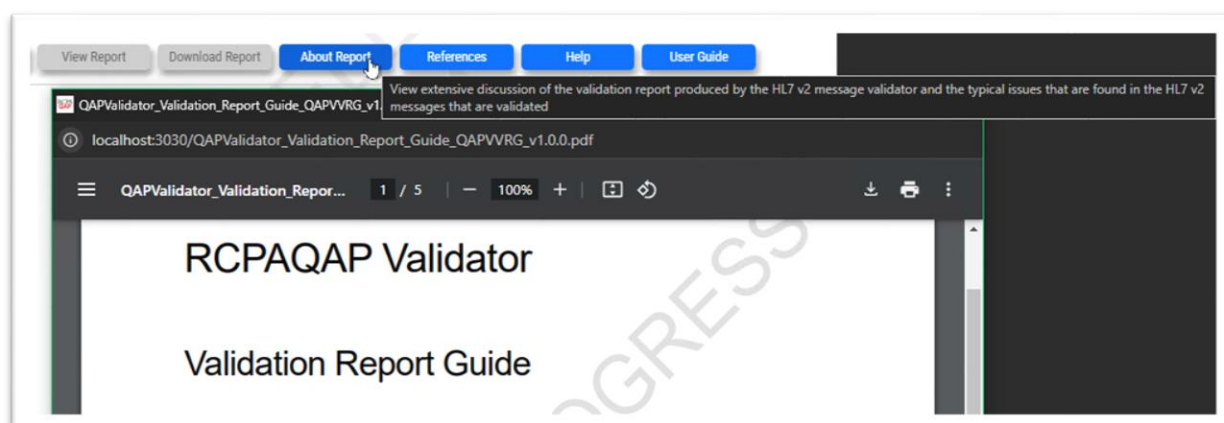


Clicking on the “Download Report” button will open the operating system specific “Save File” dialogue box. The illustration below shows what one looks like on the Microsoft Windows.



2.2.8 Report Interpretation Material

The “About Report” button is always enabled. Clicking that button opens a new browser window displaying a document that discusses, at some length, the diagnostics messages that can be generated by the validator when validating orders or results messages.

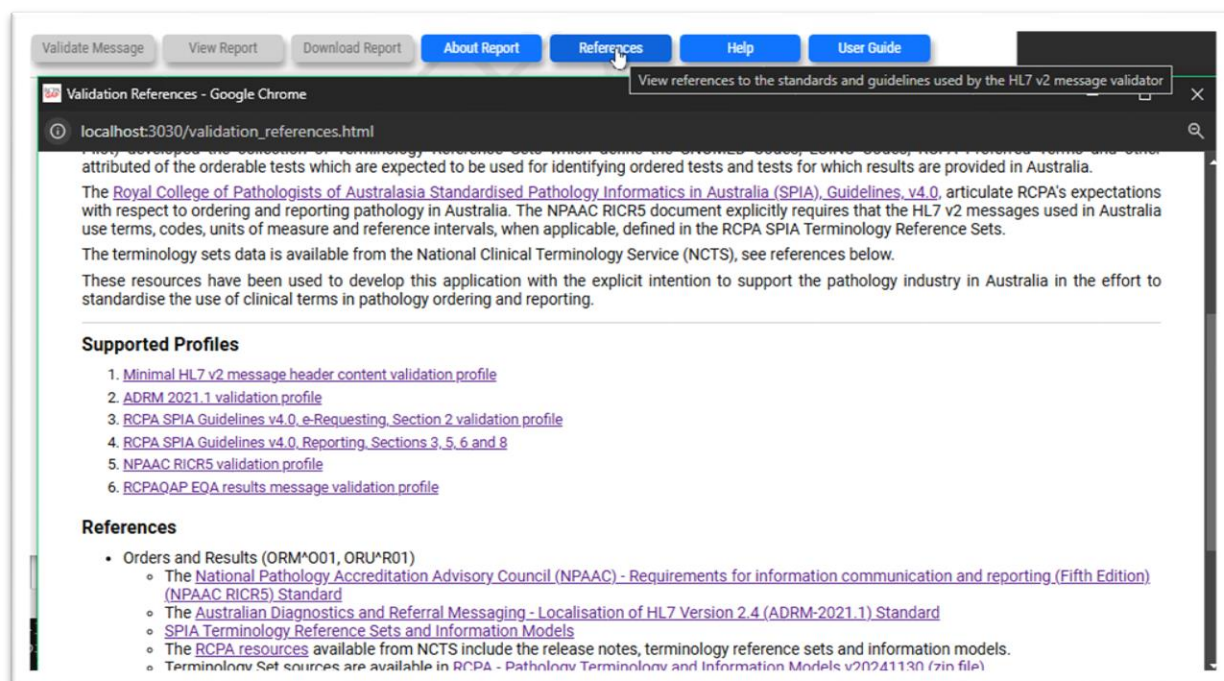


This document, the “Validation Report Guide”, does not discuss the validation report generated for the specific message, but rather provides the overview of a validation report and discusses the various issues that were identified in the collections of messages validated in the past, including discussion of the actions that might be taken to resolve specific kinds of issues.

2.2.9 References

The “References” button is always enabled. Clicking that button opens a new browser window displaying a document that collects links to all reference materials that are scattered across multiple documents.

The document includes the introduction that provides the context to the message conformance expectations and the standards and guidelines in which the expectations are articulated, the list of supported conformance profiles with links to the validation rules each implements, and the links to the original standards, guidelines and most importantly, RCPA SPIA metadata sources whose data is used in validation.



2.2.10 Application Help

Clicking the “Help” button opens a dialogue box with a somewhat more detailed validation workflow that this application supports, including a brief introduction, the workflow overview

with somewhat more detailed discussion than that provided directly on the landing page, and the somewhat more detailed discussion of the reference materials that are available.

2.2.11 User Guide

Clicking the “User Guide” button opens a new browser window whose content displays the User Guide - this document.

3 Application Environment Expectations

The application has not been designed to operate on mobile devices and has not been tested on such devices.

The application requires that JavaScript is enabled in the web browser. If this is not the case the application will be unable to perform its functions and the warning message shown in the illustration below will be presented to the user:

The application expects that the operating environment capabilities are adequate to perform its functions. Specifically, the underlying Operating System must allow the user to save a generated HL7 v2 message file to its File System and conveniently access the saved file outside the web browser if the “Download Report” functionality is to be used. The application has no means to verify that the user has access to the file system.

