Updated: December 14, 2021

EMERGENCY USE AUTHORIZATION (EUA) SUMMARY
FOR THE QUEST DIAGNOSTICS RC SARS-COV-2 ASSAY
For *In vitro* Diagnostic Use
Rx Only
For use under Emergency Use Authorization (EUA) only

INTENDED USE

The Quest Diagnostics RC SARS-CoV-2 Assay is intended for the qualitative detection of nucleic acid from SARS-CoV-2 in anterior nasal swab specimens collected using the Quest Diagnostics Collection Kit for COVID-19 when used consistent with its authorization.

This assay is also intended for the qualitative detection of nucleic acids from SARS-CoV-2 in pooled samples containing up to six individual upper respiratory swab specimens (nasopharyngeal, mid-turbinate nasal, anterior nasal or oropharyngeal swabs) that were collected in individual vials containing transport media from individuals suspected of COVID-19 by their healthcare provider or with anterior nasal swab specimens collected using the Quest Diagnostics Collection Kit for COVID-19 when used consistent with its authorization.

Negative results from pooled samples should be treated as presumptive and, if inconsistent with clinical signs and symptoms or necessary for patient management, pooled samples should be tested individually. Specimens included in pools with a positive, presumptive positive, or invalid result must be tested individually prior to reporting a result. Specimens with low SARS-CoV-2 RNA concentrations may not be detected in sample pools due to the decreased sensitivity of pooled testing.

Testing is limited to laboratories designated by Quest Diagnostics that are certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, and meet requirements to perform high complexity tests.

Results are for the identification of SARS-CoV-2 RNA. The SARS-CoV-2 RNA is generally detectable in upper respiratory swab specimens during the acute phase of infection. Positive results are indicative of the presence of SARS-CoV-2 RNA; clinical correlation with patient history and other diagnostic information is necessary to determine patient infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definite cause of disease. Laboratories within the United States and its territories are required to report all SARS-Cov-2 results to the appropriate public health authorities.

Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. Negative results must be combined with clinical observations, patient history, and epidemiological information. Specimens that are collected will not be tested with an internal control to confirm that the specimen was properly collected. Collected specimens from SARS-CoV-2 positive individuals may yield negative results if the specimen was not collected properly.

Testing with the Quest Diagnostics RC SARS-CoV-2 Assay is intended for use by qualified and trained laboratory personnel specifically instructed and trained in the molecular testing and in vitro diagnostic procedures. The Quest Diagnostics RC SARS-CoV-2 Assay and the Quest Diagnostics Collection Kit for COVID-19 are only for use under the Food and Drug Administration's Emergency Use Authorization.

DEVICE DESCRIPTION AND TEST PRINCIPLE

1) ***Device Description:***

The Quest Diagnostics RC SARS-CoV-2 Assay for use with the Quest Diagnostics Collection Kit for COVID-19 which enables the collection of an anterior nasal swab specimen when used consistent with its authorization. This specimen is then transported to a laboratory designated by Quest Diagnostics for SARS-CoV-2 testing using the Quest Diagnostics RC SARS-CoV-2 Assay.

This assay is also intended for the qualitative detection of nucleic acids from SARS-CoV-2 in pooled samples containing up to six individual upper respiratory swab specimens (nasopharyngeal, mid-turbinate nasal, anterior nasal or oropharyngeal swabs) that were collected in individual vials containing transport media from individuals suspected of COVID-19 by their healthcare provider or with anterior nasal swab specimens collected using the Quest Diagnostics Collection Kit for COVID-19 when used consistent with its authorization.

2) ***Test Principle:***

The Quest Diagnostics RC SARS-CoV-2 Assay is only used for patients who have been previously qualified by their healthcare provider as needing SARS-CoV-2 testing based on the provider's medical judgement regarding symptoms, exposure, and risk factors. A healthcare provider qualifies a patient for testing using the Quest Diagnostics Collection Kit for COVID-19 when used consistent with its authorization.

Specimens received at the laboratory designated by Quest Diagnostics will undergo review for integrity of packaging, adequacy of sample, verification of patient information, and acceptable time window between specimen collection and receipt at the laboratory prior to acceptance for testing.

In sample pooling, specimens are identified from populations based on positivity rate (for example, by county, zip code or by client). The positivity rate will be used to determine the pool size that provides the maximum testing efficiency. The assay is validated for up to six sample pooling, however, in practice, the pool size will not exceed four samples. If the pool is positive or inconclusive or invalid, then each of the constituent samples is re-tested as a separate individual specimen. If the pool is negative, then each constituent sample is reported as negative.

Laboratories designated by Quest Diagnostics are certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, and meet the requirements to perform high complexity tests using an FDA authorized NAAT test per the Instructions for Use.

3) ***Medical Oversight and Process to be Used:***

Medical oversight of the process is provided by the healthcare provider who is ordering the test.

4) ***Procedure, Test results and interpretation***

Procedure

Quest Diagnostics and laboratories designated by Quest Diagnostics will perform the procedure as described in the manufacturer's instructions, except for sample pooling:

- When performing pooling, laboratories will monitor sample pooling in accordance with Roche cobas SARS-Cov-2 assay Protocol for Monitoring of Sample Pooling Testing Strategies.

In preparing sample pools combine and mix equal amounts of each specimen (e.g., for 4 specimens, combine 200 µL) for a total pool sample volume of 0.8 mL in the cobas omni secondary tube. Following the addition of the last specimen, mix by pipetting the pool up and down in the cobas omni secondary tube.

CONTROLS TO BE USED WITH QUEST DIAGNOSTICS RC SARS-COV-2 ASSAY

Controls used with the Quest Diagnostics RC SARS-CoV-2 Assay preformed using the Roche cobas SARS-CoV-2 Assay include an internal control, positive control, and negative control, and are used in accordance with the package insert.

The Roche assay requires a separate control kit that is not provided in the assay kit. The control kit includes the positive controls and negative controls, and the controls are ready-to-use. The instrument assesses the validity of the run and will not run patient samples until valid results are achieved.

INTERPRETATION OF RESULTS

All test controls should be examined prior to interpretation of patient results. If the controls are not valid, the patient results cannot be interpreted. Results are reported as Positive, Presumptive Positive, Negative, or Invalid.

The Quest Diagnostics RC SARS-CoV-2 Assay will follow the result interpretation displayed in the tables below:

Specimen Result Interpretation for Unpooled Specimens

Target 1	Target 2	Result	Interpretation
Positive	Positive	Positive	Result for SARS-CoV-2 RNA is Detected
Positive	Negative	Positive	Result for SARS-CoV-2 RNA is Detected. A positive Target 1 result and a negative Target 2 result is suggestive of 1) a sample at concentrations near or below the limit of detection of the test, 2) a mutation inthe Target 2, target region, or 3) other factors.
Negative	Positive	Presumptive Positive	Result for SARS-CoV-2 RNA is Presumptive Positive. A negative Target 1 result and a positive Target 2 result is suggestive of 1) a sample at concentrations near or below the limit of detection of the test, 2) a mutation in the Target 1 target region in the oligo binding sites, or 3) infection with some other Sarbecovirus (e.g., SARS-CoV or some other Sarbecovirus previously unknown to infect humans), or 4) other factors. For samples with a Presumptive Positive result, additional confirmatory testing may be conducted, if it is necessary to differentiate between SARS-CoV-2 and SARS-CoV-1 or other Sarbecovirus currently unknown to infect humans, for epidemiological purposes or clinical management.
Negative	Negative	Negative	Result for SARS-CoV-2 RNA is Not Detected
Positive	Invalid	Positive	Result for SARS-CoV-2 RNA is Detected
Invalid	Positive	Presumptive Positive	Result for SARS-CoV-2 is Presumptive Positive. For samples with a Presumptive Positive Result, additional confirmatory testing may be conducted, if it is necessary to differentiate between SARS-CoV-2 and SARS-CoV-1 or other Sarbecovirus currently unknown to infect humans, for epidemiological purposes or clinical management.
Negative	Invalid	Invalid	Sample should be retested. If the result is still invalid, a new specimen should be obtained.
Invalid	Negative	Invalid	Sample should be retested. If the result is still invalid, a new specimen should be obtained.
Invalid	Invalid	Invalid	Sample should be retested. If the result is still invalid, a new specimen should be obtained.

If a result for a specimen collected using the Quest Diagnostics Collection Kit for COVID-19 when used consistent with its authorization (that is unobserved by a healthcare provider) is invalid, then the assay will be repeated if adequate specimen is available. If on repeat the specimen is still invalid, then Quest Diagnostics will offer the patient one or both of the following options: the opportunity to collect a second specimen at no additional cost and/or a refund of their purchase minus the ordering provider's fee.

Specimen Result Interpretation for Pooled Specimens

Target 1	Target 2	Result	Interpretation
Positive	Positive	**POOLED POSITIVE – DO NOT REPORT**	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Positive	Negative	**POOLED POSITIVE – DO NOT REPORT**	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Negative	Positive	**POOLED POSITIVE – DO NOT REPORT**	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Negative	Negative	Negative	Result for SARS-CoV-2 RNA is Not Detected
Positive	Invalid	**POOLED POSITIVE – DO NOT REPORT**	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Invalid	Positive	**POOLED POSITIVE – DO NOT REPORT**	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Negative	Invalid	Invalid	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Invalid	Negative	Invalid	Repeat each constituent specimen in the pool as a separate unpooled specimen.
Invalid	Invalid	Invalid	Repeat each constituent specimen in the pool as a separate unpooled specimen.

All results are delivered electronically to the healthcare provider and the patient.

PERFORMANCE EVALUATION

1) Quest Diagnostics Collection Kit for COVID-19 Studies:

The Quest Diagnostics RC SARS-CoV-2 Assay is performed using anterior nasal swabs collected with the Quest Diagnostics Collection Kit for COVID-19 when used consistent with its authorization. The Quest Diagnostics Collection Kit for COVID-19 was authorized as a standalone EUA on October 8, 2021. Sample stability studies, human usability studies and studies to support removal of the RNase P control are described in the Quest Diagnostics Collection Kit for COVID-19 submission authorized on October 8, 2021.

2) Quest Diagnostics RC SARS-CoV-2 Assay Analytical and Clinical Performance Evaluation:

The Quest Diagnostics RC SARS-CoV-2 Assay is performed on the Roche cobas SARS-CoV-2 Assay on the cobas 6800/8800 systems using anterior nasal swabs collected with the Quest Diagnostics Collection Kit for COVID-19. The analytical and clinical performance of the Roche cobas SARS-CoV-2 Assay has been demonstrated by Roche in the Emergency Use Authorization submission originally authorized on 03/12/2020. The EUA was re-authorized to allow testing of up to and including 6-sample pools on 10/15/2020. The details of the performance of the authorized Roche cobas SARS-CoV-2 test can be found here:

https://www.fda.gov/media/136049/download. Roche granted Right of Reference to Quest Diagnostics for Roche's authorized Roche cobas SARS-CoV-2 test.

3) Quest Diagnostics RC SARS-CoV-2 Assay Pooling Performance Evaluation:

The Quest Diagnostics RC SARS-CoV-2 Assay is performed on the Roche cobas SARS-CoV-2 Assay on the cobas 6800/8800 systems using anterior nasal swabs collected with the Quest Diagnostics Collection Kit for COVID-19. Roche demonstrated in their Emergency Use Authorization submission originally authorized on 03/12/2020 and reissued on 10/15/2020, detection of nucleic acids from SARS-CoV-2 in pooled samples containing up to and including six individual samples from clinician-instructed self-collected anterior nasal swab specimens (collected on site), or clinician-collected anterior nasal, nasopharyngeal, and oropharyngeal swab specimens. The details of the performance of the authorized Roche cobas SARS-CoV-2 test can be found here: https://www.fda.gov/media/136049/download. Roche granted Right of Reference to Quest Diagnostics for Roche's authorized Roche cobas SARS-CoV-2 test.

Based on data demonstrating similar performance for the detection of SARS-CoV-2 RNA between HCP collected nasopharyngeal samples and unsupervised, self-collected anterior nasal swab samples and the RNase P study demonstrating that nearly all participants were able to self-collect an adequate anterior nasal swab specimen without observation, and the sample pooling validation conducted by Roche to assess the risk of reduced sensitivity due to the dilution effect, no additional validation studies were needed to support the pooling of home collected samples when tested with Quest Diagnostics RC SARS-CoV-2 Assay.

Limitations:

- Some positive samples may not be detected when diluted and tested in pools. SARS-CoV-2 RNA concentration is reduced when a positive sample is pooled with other samples, and the reduction corresponds inversely to the pool size. For example, if there is only one positive sample in a pool of 6, the concentration in the original sample would need to be 6 times the assay limit of detection in order for the concentration in the pool to be at the limit of detection.
- The performance of this test was established based on the evaluation of a limited number of clinical specimens. Clinical performance has not been established with all circulating variants but is anticipated to be reflective of the prevalent variants in circulation at the time and location of the clinical evaluation. Performance at the time of testing may vary depending on the variants circulating, including newly emerging strains of SARS-CoV-2 and their prevalence, which change over time.

Warnings:

- This product has not been FDA cleared or approved, but has been authorized by FDA under an EUA for use by authorized laboratories; laboratories designated by Quest Diagnostics that are certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, and meet the requirements to perform high complexity tests;

- This product has been authorized only for the detection of nucleic acid from SARS-CoV-2, not for any other viruses or pathogens; and
- The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostics for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.