

# ELC ENHANCING DETECTION: RMI TESTING PLAN

## 2020 Overarching Jurisdictional SARS-COV-2 Testing Strategy

Jurisdiction:	RMI
Population Size:	53,000

### 1. Describe the overarching testing strategy in your state or jurisdiction.

The Republic of the Marshall Islands (RMI) is an isolated, sparsely populated, low-lying Pacific island country consisting of approximately 70 sq. miles of land spread out over 750,000 sq. miles of ocean just north of the equator and the closest point of the archipelago to the US is 2200 miles southeast of Hawaii. The population of RMI is distributed among 29 Atolls with the majority (~28,000) in the capital city on Majuro Atoll and another ~13,000 in Ebeye on Kwajalein Atoll with the remainder (~12,000) spread throughout the far-flung smaller atolls. Both Majuro and Ebeye communities are densely populated on narrow strips of land with households containing multiple extended family members. The predominant race/ethnicity is Marshallese (95%) with some other Asian/Pacific Islanders (Chinese, Kiribati, etc.) and about 2% Caucasians (US, Australia, etc.). Thus, most of the population is considered 'at risk', especially because the prevalence of diabetes mellitus is 25%. SARS-CoV-2 testing is currently available in the two major cities, Majuro and Ebeye. On February 7, 2020 the President of RMI announced a State of Health Emergency and established a travel advisory limiting the arrival of travelers by air and sea from mainland China, Macau and Hong Kong and establishing required 14-day quarantine for passengers. Successive limitations were implemented to include other countries where SARS-CoV-2 cases were occurring. By March 10, 2020 all incoming traffic by commercial air was halted and outgoing discouraged. Yachts were banned and only ships providing essential food, fuel and supplies were allowed with required 14-day prior open sea time. Some flights and essential staff are coming into Kwajalein Atoll for the US Army Garrison there, but are being strictly controlled with quarantine requirement. This nearly complete lockdown of the RMI borders has continued and will be maintained at least until August 5, 2022 but most likely will be extended further. Currently there are no cases of SARS-CoV-2 detected in RMI. a) There are no private, academic or commercial laboratories in RMI although confirmatory testing is available by sending specimens to Guam or Hawaii Public Health Laboratories or to a commercial laboratory (Diagnostic Laboratory Services, DLS) in Hawaii. Both Majuro Public Health Laboratory and Ebeye CHC-Hospital Laboratory are CLIA-waived but are under direction of the PH Laboratory Director who works closely with APJL and Guam and CNMI PH Laboratory Directors, Regular communication with these laboratories is done on a weekly basis through coordination of Pacific Island Health Officer Association (PIHOA) staff. SARS-CoV-2 rapid testing is done via the Abbott ID Now platform and the longer testing done with the Cepheid GeneXpert equipment. A new rapid test capability, the POCkit test, has been installed in Majuro PH laboratory. The RT-PCR testing with Roche Lifecycle 480 will be installed and ready for use once training is completed by August 3, 2020. Ebeye Laboratory will achieve RT-PCR capability once the PCR lab is completed as part of the new isolation facility, expected to be functional by end of August. Meanwhile, specimens can be sent to Majuro for confirmation. Although no person has been found meeting the case definition for COVID-19, preliminary testing has been done to ensure all staff and equipment are ready for a surge. A testing algorithm using Abbott ID Now is the predominant method as RMI currently has zero prevalence but follow-up of negatives can be done with the new rapid POCkit (GeneReach Biotechnology Corp, Taiwan) with 1.5 hour turn-around-time. The throughput achievable will thus be less than one day for

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specimens taken in Majuro, Ebeye or Outer Islands. Testin guidelines prioritize persons with fever and respiratory illness among older adults with underlying conditions of diabetes mellitus, hypertension, cardiac onditions and immunosuppression medications. Health care workder and first responders have been surveyed initially and will be repeated if exposure occurs as a surge event. Persons identified in clinics with syndromic ILI are included and sentinel surveillance of asymptomatic persons in communities will be incorporated. b) There are additional Abbott ID NOW equipment set up for rapid poin-of-care testing at the alternative Care Facilities in both Majuro and Ebeye. There are two PH clinics located in more remote sections of Majuro (Laura Village) and Ebeye (Gugeegue clinic) that will be sites for community testing. At this time there are no other non-traditional sites for testing although the portability of the Abbott ID Now equipment will allow transporting it to community sites such as the College of the Marshall Islands (CMI), school gymnasiums, churches and the main retail grocery in Ebeye inorder to reach larger segments of the populations. Drive-through testing is not as feasible as the percentage of the poulationwith personal vehicles is small and there are not many locations on the atolls that could accommodate the process. However, the current process includes triage of patients outside of clinic entrances with health questionnaire and temperature taken. If elevated temperature and/or respiratory symptoms are noted an NP swab will be obtained by staff with appropriate PPE at that outside location. The Abbott machine is also being transported to the Outer Islands Atoll via Air Marshall Islands during the scheduled visits by the health team in the coming months to perform sentinel testing in those remote locations. There are no long-term healthcare facilities anywhere in RMI but special focus testing will be done at group living environments (college and school dormitories, jails) and occupationa sites (tuna packing factories). Once a PUI is identified and confirmed, contact tracing will include asymptomatic persons within the contact sphere. Viral testing began May 8, 2020 and to date we have tested 7 patients with low-level respiratory conditions, 24 citizens repatriated from a d COVID-free country and 43 health care workers. All have tested negative for SARS-CoV-2 virus. c) Serological testing is still in the planning stage. CoronaCheck rapid IfM/IgG test kits for Majuro and SGTI-flex COVID-19 rapid IgM/IgG (made by Sugentech) have been received but not implemented yet. These will mostly be used for sentinel surveillance testing among person that had traveled outside of RMI before the total ban on incoming passengers began on March 10, 2020 as otherwise exposure to SARS-CoV-2 in RMI has not occurred. Repatriation of citizens who have been delayed from returning to RMI is in the planning stage. Viral testing before and immediately upon arrival is planned as well as during the 210day quarantine period. Serological tests can also be used on tese person as they may have been asymptomatic cases during their stay in US or other countries. The first group of 30 persons are planned for arrival in July with another 30 in August and 60 more in September. Others will be considered once the process has proved to successfully avoid importation of SARS-CoV-2 virus. d) Testing capability is now being reamped up to achieve the coverage of at least 1% of the population by September (500 tests). Further increases will occur as the new laboratory serology staff are hired in August to focus on this testing. With the two major laboratories at full capacity it is expected that they can complete 70 to 90 full test profiles per day. Coordination of testing plans is carried out through communication between Majuro, Ebeye and Outer Island staff in virtual meetings held 2 times per week. A day-long workdshop was conducted on July 1, 2020 for MOHHS staff at both Majuro and Ebeye wihch developed plans for surge response. New laboratory administrative stff to be hired in August will provide monitoring test kit and reagent inventory. Assistance with procurement is provided by our partners including: PIHOA which has received funding to support all of the US Associated Pacific Islands (USAPI); The Secretariat of the Pacific Community (SPC); WHO; Republic of China (TAIWAN);

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CDC. Currently RMI has 5000 test kits with order pending to provide another 6000. A reserve capacity is being held by PIHOA in Hawaii for emergency release when needed. This will ensure that sentinel testing at approximately 2% of the population can continue while no cases are detected. If/when a case occurs and a surge is required the goal of testing for 2% or more of the population through December and into 2021 can be achieved. Currently data collection of laboratory data is done via Excel worksheets on an internal secure MOHHS shared server for both Majuro and Ebeye. These results are reviewed and analyzed by the Epidemiologist with a summary report to MOHHS Minister and Secretary of Health and RMI National Cabinet members. Manual entry into the NBS system for CDC reporting is performed by Surveillance staff. Purchase of a robust Laboratory Information Management System will eventually connect these separate systems into one. Development of a National Dashboard for presentation to the public is in process by the IT department in consultation with Inductive Health company staff.

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**Table #1a: Number of individuals planned to be tested, by month**

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Diagnostics*	30	30	100	200	500	1,000	1,000	1,000	3,860
Serology	0	0	50	150	150	150	150	150	800
TOTAL	30	30	150	350	650	1,150	1,150	1,150	

\*Each jurisdiction is expected to expand testing to reach a minimum of 2% of the jurisdictional population.

**Table #1b: Planned expansion of testing jurisdiction-wide**

Name of testing entity	Testing venue (select from drop down)	Performing Lab (if different from testing entity)	Daily diagnostic through-put	Daily serologic through-put	Specific at-risk populations targeted (list all)
Majuro Public Health Lab	Public health lab		30	10	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN), prisons, healthcare workers, congregate living settings (dormitories)
Ebeye CHC Clinic Lab	Federally Qualified Health Center		20	10	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN), prisons, healthcare workers, congregate living settings (dormitories)

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Name of testing entity	Testing venue (select from drop down)	Performing Lab (if different from testing entity)	Daily diagnostic through-put	Daily serologic through-put	Specific at-risk populations targeted (list all)
Arrak Alternative Care site	Hospitals or clinical facility	Arrak and Majuro PH Lab	10	5	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN), congregate living settings (quarantine)
College of Marshall Islands	Community-based	Majuro PH Lab	10	10	Racial/ethnic minorities, underlying comorbidities (DM, HTN), congregate living settings (dormitories)
Churches - Majuro	Community-based	Majuro PH Lab	10	20	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN)
Churches - Ebeye	Community-based	Ebeye Clinic Lab	10	20	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN)
Laura PH Clinic - Majuro	Community-based	Laura and Majuro	10	10	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN)
Outer Islands Health Centers: specific locations TBD	Hospitals or clinical facility	Majuro PH Lab	40	20	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN)
Tuna Packing Factories	Other	Majuro PH Lab	10	5	high risk of occupational contacts, racial and ethnic minorities
Jail - Majuro	Other	Majuro PH Lab	5	5	congregate living facility, racial and ethnic minorities

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Name of testing entity	Testing venue (select from drop down)	Performing Lab (if different from testing entity)	Daily diagnostic through-put	Daily serologic through-put	Specific at-risk populations targeted (list all)
Jail - Ebeye	Other	Ebeye Clinic Lab	5	5	congregate living facility, racial and ethnic minorities
Gugegue PH Clinic - Ebeye	Community-based	Gugegue and Ebeye Clinic Lab	10	5	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN)
Triple J General Store, Deli & grocery - Ebeye	Other	Ebeye Clinic Lab	10	5	Racial/ethnic minorities, Elderly, underlying comorbidities (DM, HTN)

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## 2020 Direct Expansion of SARS-COV-2 Testing by Health Departments

### **2. Describe your public health department's direct impact on testing expansion in your jurisdiction.**

a) RMI Ministry of Health and Human Services (MOHHS) has two main laboratories located in the two populated islands, Majuro and Ebeye. Majuro has completed renovation of the laboratory with a new bio-safety cabinet and PCR-clean environment. Ebeye is likewise renovating its laboratory to be completed in August. Both Majuro Public Health Laboratory and Ebeye CHC-Hospital Laboratory utilize SARS-CoV-2 rapid testing via the Abbott ID Now platform and slowr testing with the Cepheid GeneXpert equipment. The new RT-PCR testing with Roche Lightcycler 480 was received in June and has been installed in Majuro and ready for use once training is completed by August 3, 2020. Ebeye Laboratory will achieve RT-PCR capability once the PCR lab is completed but meanwhile specimens are sent to Majuro for confirmation. A new rapid test, POKKIT (GeneReach Biotechnology Corp, Taiwan) with 1.5 hour turn-around-time has been received in July and will be put into practice in Majuro by end of July. There are additional Abbott ID Now equipment set up for rapid point-of-care testing at the Alternative Care Sites in more remote sections of Majuro (Laura Village) and Ebeye (Gugeegue clinic) that will be sites for community testing. The Arrak Quarantine site where Persons Under Active Surveillance (quarantine) are housed is near the Laura Health Clinic which serves 30% of Majuro residents. The Abbott machine is also being transported to the Outer Atolls via Air Marshall Islands during the scheduled visits by the health team and being used to perform sentinel testing in those remote locations. Specimens are also brought back to Majuro for confirmatory testing. Another device platform is in the process of purchase. The Biofire instrument will be added for both Ebeye and Majuro laboratories and will be used as an adjunct to the existing Abbott and GeneXpert testing. . This will enable confirmation of SARS-CoV-2 virus or rule it out and provide testing for other respiratory viruses (influenza, RSV, etc.). These elements when completed are expected to be adequate for surge response if/when it occurs. b) There are no long-term health care facilities anywhere in RMI but special focus testing will be done at group living environments (college and school dormitories, jails) and occupational sites (tuna processing plants). There are no 'homeless' persons in RMI as families ensure all are housed at least at a basic level but households typically contain multiple extended family members. The predominant race/ethnicity is Marshallese (95%) with some other Asian/Pacific Islanders (Chinese, Kiribati, etc.) and about 2% Caucasians (US, Australia, etc.). Thus, most of the population is considered 'at risk', especially because the prevalence of diabetes mellitus is 25% among Marshallese. Testing guidelines prioritize persons with fever and respiratory illness among older adults with underlying conditions of diabetes, hypertension, cardiac conditions and immunosuppression medications. Health care workers and first responders have been surveyed intially and will be repeated if exposure occurs as a surge event. c) Barriers to efficient testing have occurred but have mostly been overcome. Test kits and reagents are now in place at sufficient level and a pipeline for future supplies has been developed through assistance with our partners, including PIHOA, The Secretariat of the Pacific Community (SPC), WHO, Republic of China (Taiwan), and CDC. MOHHS staff have developed an inventory and logistics system that ensures notification when re-supply level are reached. End-to-end process from testing to reporting is reasonable but being evaluated for potential gaps and improvement through weekly review. d) Serological testing is still in the planning stage. CoronaCheck rapid IgM/IgG test is available for Majuro and SGTi-flex rapid IgM/IgG (Sugentech) in stock in Ebeye but have not yet been implemented.

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These will mostly be used for sentinel surveillance testing among person that had traveled outside of RMI before the total ban on incoming passengers began on March 10, 2020 as other wise exposure to SARS-CoV-2 in RMI has not occurred. Serological tests may also be used for repatriated citizens as they may have been asymptomatic cases during their stay in the US or other countries. e) The RMI Cabinet and National Disaster Committee have developed the COVID-19 Response Plan that includes the prevention through extension of the border closure and mitigation through containment processes of case identification and contact tracing. This will include sentinel surveillance of at-risk populations in clinic settings as well as vulnerable populations in community settings. f) Existing human resources have been identified but additional personnel will be added to supplement these activities. Laboratory staffing will be increased with the hiring of 4 Medical Laboratory Scientists on contract (3 for Majuro, 1 for Ebeye); 4 Laboratory Assistants (2 each Majuro and Ebeye); 2 Laboratory Administrative Assistants for inventory and procurement (1 each Majuro and Ebeye) and 2 Phlebotomists (1 each Majuro and Ebeye). RMI is working on a contract with PIHOA to assist us in hiring the specialists so that the process can be expedited. In addition to laboratory staffing, surveillance positions will include an additional Epidemiologists on contract for Ebeye and 4 Surveillance Specialists (2 each for Majuro and Ebeye). Supplies ordering for the expansion of testing will continue to be assisted by CDC and PIHOA for procurement and shipment and we will work with our known vendors to purchase some supplies directly. These will include the reagents for the new Biofire instrument and the POCCKIT instrument.



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**Table #2: Planned expansion of testing driven by public health departments**

BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Number of additional* staff to meet planned testing levels	0	2	4	6	0	0	0	0	12
FOR DIAGNOSTIC TESTING									
How many additional* testing equipment/ devices are needed to meet planned testing levels? (provide an estimated number, and include platform details in narrative above)	0	2	2	2	0	0	0	0	6

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BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Volume of additional swabs needed to meet planned testing levels <sup>++</sup>	60	400	0	200	0	500	500	500	2,160
Volume of additional media (VTM, MTM, saline, etc.) needed to meet planned testing levels <sup>++</sup>	0	400	0	200	0	500	500	500	2,100

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BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Volume of additional reagents needed to meet planned testing levels, by testing unit and platform (i.e. 100K/day - Hologic panther; 100k/day - Thermofisher)	0	0	0	600	0	0	600	0	1200
FOR SEROLOGIC TESTING									
Number of additional* equipment and devices to meet planned testing levels	0	1	0	0	0	0	0	0	1

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BY MONTH:	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	TOTAL
Volume of additional reagents needed to meet planned testing levels, by testing unit and platform (i.e. 100K/day - Hologic panther; 100k/day - Thermofisher)	0	400	0	0	400	0	0	400	1200

\* Report new monthly additions only, not cumulative levels

++ For May and June, only include needs beyond the supplies provided by FEMA. Report new monthly additions only, not cumulative levels.