KCDC
Korea Centers for Disease Control & Prevention

FINDINGS FROM INVESTIGATION AND ANALYSIS OF RE-POSITIVE CASES

19 May 2020

SUMMARY

○ Epidemiological investigation and contact investigation have been completed for 285 (63.8%) of the total 447 re-positive cases (as of 15 May).

○ 59.6% were tested as a screening measure, and 37.5% were tested because of symptom onset. Of the 284 cases for which symptoms were investigated, 126 (44.7%) were symptomatic.

○ From the 285 re-positive cases, a total of 790 contacts were identified (351=family; 439=others). From the monitoring of contacts, as of now, no case has been found that was newly confirmed from exposure during re-positive period alone.

NOTE

○ In response to reports of multiple cases testing positive for SARS-CoV-2 after being discharged from isolation, on 14 April, KCDC began managing such cases with measures similar to those for confirmed cases, while further investigation, research and analysis continued. On 18 May, KCDC announced the findings and the conclusions of the advisory committee. The protocols for the management of such cases will be revised accordingly.

- Based on the findings, starting 0:00 of 19 May, KCDC has stopped applying the previous protocols for the management of confirmed cases after discharge from isolation and for the management of re-positive cases. Under the new protocols, no additional tests are required for cases that have been discharged from isolation.
- Reporting and investigation of re-positive cases and investigation of contacts of re-positive cases will be continued as before for the purposes of research and investigation. However, based on experts' recommendations, the terminology for referring to such cases will be changed from "re-positive" to "PCR re-detected after discharge from isolation".

○ In this document, "discharge" refers to discharge or release from isolation of confirmed cases after recovery and meeting all discharge criteria (in accordance with KCDC guidelines).

○ "Re-positive cases" are cases that test positive for SARS-CoV-2 after being discharged from isolation.

PROPORTION OF RE-POSITIVE CASES

○ Depending on the group, 25.9-48.9% of cases tested positive again after discharge.

Region	Group	Tested (n)		Re-positive (n)	(%)
Sejong City	All confirmed cases	27		7	25.9%
Daegu City	Confirmed cases related to schools (school staff, students)	Total	195	53	27.2%
		School staff	47	6	12.8%
		Students	148	47	31.8%
Gyeongbuk Province	Confirmed cases of Pureun Nursing Home	47		23	48.9%

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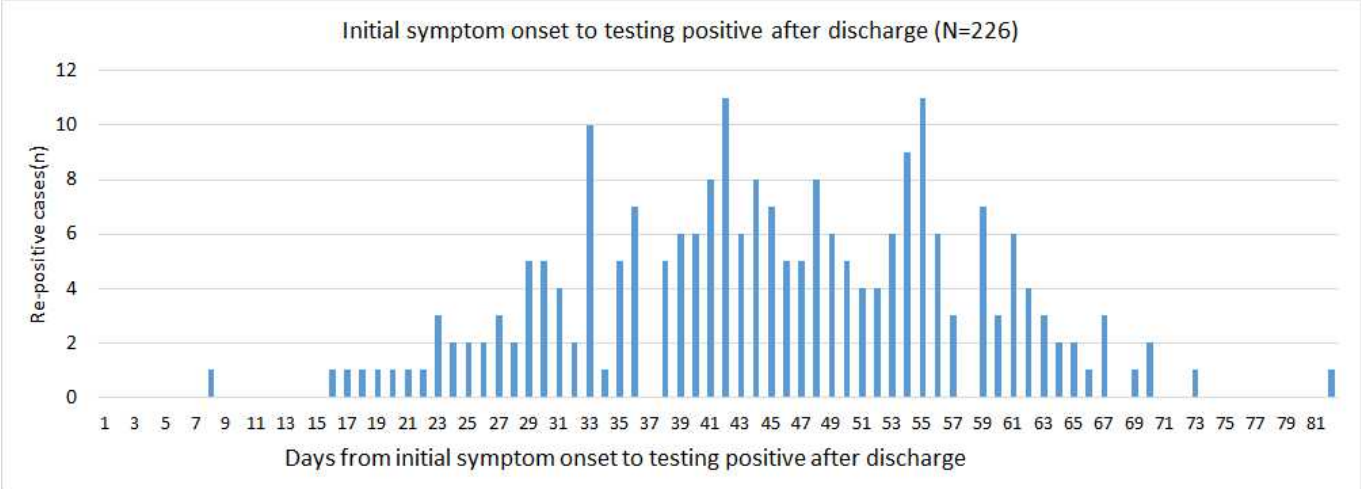
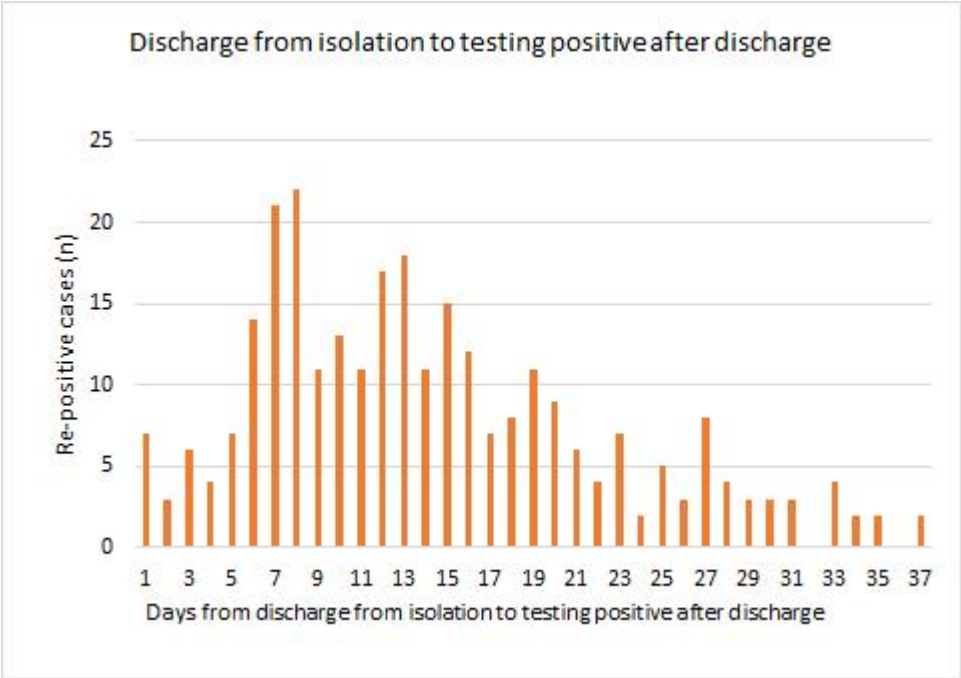
19 May 2020

TIMING OF TESTING RE-POSITIVE

○ On average, it took 44.9 days (range: 8-82 days) from initial symptom onset date to testing positive after discharge. (Based on 226 cases symptomatic at the time of initial confirmation)



○ On average, it took 14.3 days (range: 1-37 days) from discharge to testing positive. (Based on 285 cases)



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19 May 2020

SYMPTOMS AND TESTING OF RE-POSITIVE CASES

○ 59.6% of the re-positive cases were tested for screening, regardless of symptoms.

○ 44.7% of re-positive cases had symptoms such as coughs, sore throat, etc.

(n, %)

		Re-positive cases	
Total		285	
Reason for testing	Symptoms present	107	(37.5)
	Investigation	170	(59.6)
	Requested (by self or guardian)	8	(2.8)
Symptoms *284 cases for which symptoms were checked	Symptoms present	126	(44.7)
	Symptoms absent	158	(56.6)

FINDINGS FROM MONITORING OF CONTACTS OF RE-POSITIVE CASES

○ For the 285 re-positive cases investigated, 790 contacts were found in total. Minimum 14-day monitoring found 27 of the contacts to be positive, 24 of which were cases that were previously confirmed.

○ There were 3 newly confirmed cases from the 790 contacts of re-positive cases.

- Other than their exposure to the re-positive cases during their respective re-positive period, all of the 3 newly confirmed cases had history of contact with Shincheonji religious group or a confirmed case in their family.
- Virus isolation cell culture result was negative for 2 of the newly confirmed cases. (Viral cell culture test was not possible for 1 case as the PCR result was indeterminate.)
- In all re-positive cases and newly confirmed cases, neutralizing antibody production was found from the first serum.

		Re-positive cases	Contacts	Confirmed cases among contacts
Total		285	790	27* (3.4)
Presence of symptoms in re-positive cases * 284 cases for which symptoms were checked	Yes	126 (44.2)	431 (54.6)	18 (4.2)
	No	158 (55.4)	359 (45.4)	9 (2.5)
Type of contact	Family	-	351 (44.4)	26 (7.4)
	Other	-	439 (55.6)	1 (0.2)

*24 of the 27 are previously confirmed and re-positive cases (included in the re-positive cases)

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19 May 2020

VIRUS ISOLATION IN CELL CULTURE OF RE-POSITIVE CASES

○ Viral cell culture testing of 108 re-positive cases all had negative results. Basic analysis of 93 of the cases found the following results:

- From testing for 8 respiratory viruses, another respiratory virus was detected in 3 of the cases.
- The Ct values in real-time RT-PCR during re-positive period is found to be above 30 at 89.5%.

		N	(%)
Total		93	
Region	Seoul	2	(2.2)
	Daegu	47	(50.5)
	Incheon	7	(7.5)
	Sejong	2	(2.2)
	Gyeonggi	6	(6.5)
	Gangwon	4	(4.3)
	Gyeongbuk	22	(23.7)
	Gyeongnam	3	(3.2)
Sex	Male	31	(33.3)
	Female	62	(66.7)
Age	0-9	1	(1.1)
	10-19	4	(4.3)
	20-29	19	(20.4)
	30-39	10	(10.8)
	40-49	10	(10.8)
	50-59	18	(19.4)
	60-69	12	(12.9)
	70 or above	19	(20.4)
Symptoms	Symptoms present	45	(48.4)
	Symptoms absent	48	(51.6)
8 respiratory viruses*	Negative	90	(96.8)
	Adenovirus	2	(2.2)
	Bocavirus	1	(1.1)
Ct value in real-time RT-PCR** (RdRp gene)	25-30	8	(10.5)
	Above 30	68	(89.5)

* Influenza, parainfluenza, rhinovirus, metapneumovirus, human coronavirus, adenovirus, bocavirus, respiratory syncytial virus

** result upon testing re-positive (N=76)

FINDINGS FROM INVESTIGATION AND ANALYSIS OF RE-POSITIVE CASES

19 May 2020

RESULTS OF NEUTRALIZING ANTIBODY TESTING ON RE-POSITIVE CASES

○ Of the 23 re-positive cases from whom the first and the second serum samples were obtained, 96% were positive for neutralizing antibodies.

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FINDINGS FROM INVESTIGATION AND ANALYSIS OF RE-POSITIVE CASES

19 May 2020

[ATTACHMENT: EXPERT ADVISORY COMMITTEE RESULT ON RE-POSITIVE CASES]

FINDINGS FROM INVESTIGATION AND ANALYSIS OF RE-POSITIVE CASES

○ Based on active monitoring, epidemiological investigation, and laboratory testing of re-positive cases and their contacts, no evidence was found that indicated infectivity of re-positive cases.

- Of the 447 re-positive cases as of 15 May, epidemiological investigation was conducted on 285 cases and laboratory analysis on 108 cases. (*473 as of 18 May)
- From monitoring of 790 contacts of the 285 re-positive cases, no case was found that was newly infected solely from contact with re-positive cases during re-positive period.
- Virus isolation in cell culture of respiratory samples of 108 re-positive cases, all result was negative (i.e. virus not isolated).
- Of the 23 re-positive cases from which the first and the second serum samples were obtained, 96% were positive for neutralizing antibodies.

PROTOCOLS FOR MANAGEMENT OF CONFIRMED AND RE-POSITIVE CASES

○ Management of confirmed cases after discharge from isolation and management of re-positive cases will no longer be conducted. (Effective 0:00 of 19 May)

	Before	**After**
Management of confirmed cases after discharge from isolation	14 day self-isolation recommended after discharge from isolation	Not needed
	PCR test required if symptoms appear within 14 days of discharge from isolation	Not needed
Management of cases that test positive after discharge from isolation	Re-positive cases managed similar to management of confirmed cases (isolation)	Not needed
	Contacts managed similar to management of contacts of confirmed cases (quarantine)	Not needed
Investigation of re-positive cases	Reporting of re-positive cases and investigation	Same as before
	Investigation of contacts of re-positive cases	Same as before

* The new protocols will also be retroactively applied to the cases currently under management after discharge, re-positive cases currently under isolation, and contacts currently within monitoring period.