ルビデ 17th Conference on Countermeasures to Combat Infectious Diseases in Asia Project

COVID-19 Response and Experience in Seoul



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Expanding the

Organization of

the Seoul Citizens' Health

01

Bureau to Effectively

Respond to COVID-19

Expanding the Organization of the Seoul Citizens' Health Bureau to Effectively Respond to COVID-19



Advancing Background

(https://m.newspim.com/news/view/20221227000666)

 \circ The cumulative number of COVID-19 cases in Seoul is close to 5.6 million.

Reinfection rates continue to increase and about 15% are now the largest epidemic in history.

The cumulative death toll stands at 6,023 as of Dec. 28, 2022

➡ In order to effectively cope with similar situations after COVID-19, the Seoul Metropolitan government had to strengthen organizational restructuring in all medical fields

Expansion of Organization of the Seoul Citizen's Health Bureau

- Citizens' Health Bureau: a key role in responding to COVID-19 in Seoul
 Reorganization of Citizen's Health Bureau by year
 - (2021) 1 bureau, 6 divisions, 1 center, 34 teams
 (2022) 1 bureau, 1 task force, 6 divisions, 1 center, 1 class, 36 teams



02





Evaluation of COVID-19

Situation in Seoul

and Implementation of

System Operation

Outline

Background:

With the recent shortening of the occurrence cycle of infectious diseases, it is necessary to conduct infectious disease information analysis and risk assessment to deal with infectious diseases

Objective:

To prevent the early spread of infectious diseases and provide infectious disease information to the public by analyzing infectious disease information

Expected results:

Through the analysis of infectious disease information and the construction of response system, we can establish countermeasures to prevent the spread of infectious diseases

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Cumulative status of COVID-19 confirmed cases (Dec. 12, 2022, 24:00)

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The main index trend of COVID-19 during the period when BA.5 was dominant $(11.10 \sim 12.7, 2022)$

Current Situation of COVID-19 in Seoul

The gender and age of COVID-19 cases based on cumulative data

Number of PCR tests conducted weekly and the percentage of confirmed cases by test for the past year

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COVID-19 Vaccination status (1st, 2nd, 3rd, 4th shot and additional winter shot)

Over the past year or more, the vaccination rate of Seoul citizens has been decreasing.

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Additional winter vaccination for people over 50 years old

Since the end of last year, the COVID-19 bivalent vaccine has been given mainly to the elderly, and residents of nursing hospitals and various facilities, and the vaccination rate has been gradually increasing.

Confirmed cases and deaths related to COVID-19 for the last 3 years (Dec. 31, 2022, 24:00)

Category	2020	2022	
Characteristics	The number of confirmed cas winter seasons	ses increased during fall and	Due to the spread of the omicron variant, the number of confirmed cases has increased in the spring
Maximum number of Confirmed cases per day	552 (Dec. 24, 2021)	<mark>3,165</mark> (Dec. 14, 2021)	128,342 (March 16, 2022)
Maximum number of Death cases per day	<mark>8</mark> (Dec. 21-28, 2020 <mark>3rd wave</mark>)	48 (Dec, 24, 2021 4 th wave)	<mark>68</mark> (April 4, 2022., 6 th wave)

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General characteristics of COVID-19 related death cases for the last 3 years (Dec. 31, 2022, 24:00)

			Cumulative Deaths		20	2021		2022		2020
То	tal	6,065	(100.0)	0.0) 182 (100.0) 1,631 (100.0)		(100.0)	4,252	(100.0)	3%	
Condor	Male	3,294	(54.3)	105	(57.7)	923	(56.6)	2,266	(53.3)	2021
Gender	Female	2,771	(45.7)	77	(42.3)	708	(43.4)	1,986	(46.7)	27% 2022
	≥59	484	(8.0)	69	(37.9)	119	(7.3)	356	(8.4)	70%
A = 0	60–69	865	(14.3)	20	(11.0)	287	(17.6)	558	(13.1)	
Age	70–79	1626	(26.8)	8	(4.4)	515	(31.6)	1043	(24.5)	
	80≤	3,090	(50.9)	85	(46.7)	710	(43.5)	2,295	(54.0)	<distribution covid-19<br="" of="">Deaths in Seoul by Year></distribution>

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Analysis of COVID-19 related deaths based on cumulative data

(Dec 31 2022 24.00)

				<u> </u>					
		Total De	atns	Ma	ale	Fen	nale	p-value	
Tot	al	6,065	(100.0)	3,294	(100.0)	2,771	(100.0)		
Age (average ± st	andard deviation)	77.8±12.7		75.3=	75.3±12.3		80.7±12.6		
	0–19	10	(0.2)	6	(0.2)	4	(0.1)	<.0001	
Age	20–59	474	(7.8)	308	(9.4)	166	(6.0)		
	60 and older	5,581	(92.0)	2,980	(90.5)	2,601	(93.9)		
Underlying Disease	Absent	1,321	(21.8)	708	(21.5)	613	(22.1)	0.5741	
Underlying Disease	Present	4,744	(78.2)	2,586	(78.5)	2,158	(77.9)		
	Before Delta	513	(8.5)	295	(9.0)	218	(7.9)	0.0347	
Time of	Delta	1,639	(27.0)	921	(28.0)	718	(25.9)		
Confirmation of	BA.1	1,591	(26.2)	826	(25.1)	765	(27.6)		
COVID-19	BA.2	1,308	(21.6)	688	(20.9)	620	(22.4)		
	BA.5	1,014	(16.7)	564	(17.1)	450	(16.2)		
	Unvaccinated	2,985	(49.2)	1,521	(46.2)	1,464	(52.8)	<.0001	
	First	220	(3.6)	127	(3.9)	93	(3.4)		
	Second	1,115	(18.4)	665	(20.2)	450	(16.2)		
No. of vaccinations	Third	1,387	(22.9)	785	(23.8)	602	(21.7)		
	Fourth	331	(5.5)	182	(5.5)	149	(5.4)		
-	Confirmation required	27	(0.5)	14	(0.4)	13	(0.5)		
(Items investigated with regards to underlying disease) Six items were investigated with regards to underlying conditions: (1) Hypertension (41.9%, 2,541 persons); (2) Diabetes (28.0%, 1,696 persons); (3) Dementia (16.1%, 978 persons); (4) Cancer (14.5%, 880 persons); (5) Kidney disease (10.6%, 634 persons); and (6) Other diseases (53%, 3.209 persons)									

COVID-19 related cases of critical illness and death for the last 4 months (September 1, 2022 – December 26, 2022)

+ (Severity rate) = (new cases of critical illness + death) / (confirmed cases)

‡ (Fatality rate) = (deaths) / (confirmed cases)

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% The number of confirmed cases is based on date of COVID-19 confirmation

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2. Analysis of the Current COVID-19 Situation (Dec. 27, 2022, 24:00)

Key indicators related to critical illness and death for the past 4 months (September 1, 2022 – December 26)

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COVID-19 related cases of critical illness and death for the last 4 months

(September 1, 2022 – December 26, 2022)

Cato		Numbor					
	gory	Number	Ma	e	Fem	p-value	
Tc	otal	1,136(100.0)	646	(100.0)	490	(100.0)	
Condor	Male	646(56.9)					
Genuer	Female	490(43.1)					
Averag	ge age⁺	73.7±16.7	70.	6±17.3	77	.7±14.9	<.0001*
	0-9	14(1.2)	11	(1.7)	3	(0.6)	<.0001
	10-19	9(0.8)	7	(1.1)	2	(0.4)	
	20-29	10(0.9)	7	(1.1)	3	(0.6)	
	30-39	12(1.1)	10	(1.6)	2	(0.4)	
Age	40-49	41(3.6)	27	(4.2)	14	(2.9)	
	50-59	78(6.9)	56	(8.7)	22	(4.5)	
	60-69	184(16.2)	116	(18.0)	68	(13.9)	
	70-79	284(25.0)	192	(29.7)	92	(18.8)	
	≥ 08	504(44.4)	220	(34.1)	284	(58.0)	

COVID-19 related cases of critical illness and death for the last 4 months

(September 1, 2022 – December 26, 2022)

Cate	dony	Number	Ger	Gender			
Cate	gory	Number	Male	Female	p-value		
То	tal	1,136(100.0)	646(100.0)	490(100.0)			
	unvaccinated	110(9.7)	57(8.8)	53(10.8)			
	1	23(2.0)	13(2.0)	10(2.0)			
Number of	2	95(8.4)	66(10.2)	29(5.9)	0.1625		
vaccinations*	3	297(26.1)	168(26.0)	129(26.3)			
vaccinations	4	289(25.4)	158(24.5)	131(26.7)			
	currently vaccinating**	322(28.4)	184(28.5)	138(28.2)			
Dea	aths	270(23.8)	147(22.8)	123(25.1)	0.3954		
Number of days from com moderate severity symp	onfirmation until toms [‡]	-1.4±2.2	-1.4±2.1	-1.5±2.4	0.4232*		
Number of days from m symptoms until critical i	noderate severity Ilness‡	7.5±5.3	7.7±5.6	7.3±4.7	0.2900*		
Number of days from co illness‡	onfirmation until critical	6.1±5.3	6.2±5.4	6.1±5.2	0.6547*		
Number of days from cr death‡	ritically illness until	4.8±5.3	5.4±6.0	4.1±4.4	0.0293*		

*(Number of vaccinations) The proportion of unvaccinated people among all critically ill patients - 9.7% (110 people), the amount of women accounted for 10.8% and men for 8.8%, but the difference between genders was not statistically significant. However, currently 28.3% of the data is 'under investigation', and a new analysis is necessary to be conducted in the future. **Currently, 28.3% of the data is 'under investigation', and a new analysis is necessary to be conducted in the future, also an additional analysis of the relation between high women mortality among and non-vaccination rate among critically ill patients is needed. **(Under investigation) Currently under investigation, not available for analysis. Subject to change in the future. Out of 791 confirmed cases, in 771 cases the day of symptoms onset was confirmed and analyzed ||Analysis based on 270 death cases.

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Presumed reinfection cases in the last year

(Dec. 7, 2022, 24:00)

General characteristics of presumed COVID-19 second infection cases for the last 3 months (Dec. 7, 2022, 24:00)

			Octobe			November	-	December			
		Total confirmed cases	Presumed second infection cases		Total confirmed cases	Presume infectio	Presumed second infection cases		cases		
		n	n	%*	n	n	%*	n	n	%*	
Total		166,402	14,342	8.6%	303,516	35,237	11.6%	75,188	11,272	15.0%	
Condor	Male	71,004	5,774	8.1%	128,835	13,559	10.5%	32,186	4,503	14.0%	
Gender	Female	95,398	8,568	9.0%	174,681	21,678	12.4%	43,002	6,769	15.7%	
	0–9	8,938	1,929	21.6%	15,414	3,607	23.4%	3,869	987	25.5%	
	10–19	17,101	2,769	16.2%	28,587	5,591	19.6%	7,680	1,875	24.4%	
	20–29	25,577	2,152	8.4%	49,480	6,139	12.4%	12,721	2,093	16.5%	
	30–39	27,793	2,269	8.2%	52,274	5,947	11.4%	13,585	2,064	15.2%	
Age	40–49	24,856	1,753	7.1%	45,486	4,578	10.1%	11,404	1,539	13.5%	
	50–59	22,274	1,122	5.0%	41,183	3,187	7.7%	10,073	966	9.6%	
	60–69	20,838	1,333	6.4%	37,419	3,479	9.3%	8,580	981	11.4%	
	70–79	12,872	626	4.9%	22,228	1,675	7.5%	4,801	486	10.1%	
	80 and older	6,153	389	6.3%	11,445	1,034	9.0%	2,475	281	11.4%	
Facilities	Convalescen t hospital	442	123	27.8%	1,091	445	40.8%	230	112	48.7%	
infection	Convalescen t facilities	406	91	22.4%	942	316	33.5%	205	70	34.1%	

(%) The total number of confirmed cases, that is the row percentage, was calculated * Analysis was performed based on the data currently accessible; however, all analysis results are subject to change based on future epidemiological investigation findings. (The number of vaccinations will be continually updated and analyzed subsequently.)

General characteristics of presumed COVID-19 second infection cases for last

3 months (Dec. 7, 2022, 24:00)

	Tot				N	ovember		December			
		Total confirmed cases	Presumed second infection cases		Total confirmed cases	Presumed second infection cases		Total confirmed cases	Presume infectio	d second n cases	
		n	n	<u>%*</u>	n	n	<u>%</u> *	n	n	<u>%</u> *	
Total		166,402	14,342	8.60%	303,516	35,237	11.60%	75,188	11,272	15.00%	
Dea	aths	15 103 8 7.8% 207 22		22	10.6%	9	3	33.3%			
	Unvaccinated	11,203	2,558	22.8%	7,824	1,864	23.8%	0			
No of	First	1,296	188	14.5%	2,498	454	18.2%	0			
INO. OF	Second	33,507	2,962	8.8%	57,289	7,168	12.5%	0			
vaccination	Third	82,868	5,384	6.5%	141,568	13,675	9.7%	0			
5	Fourth	20,451	983	4.8%	35,379	2,669	7.5%	0			
						4		U 7E 100			
	Inteview	10,002	2,255	13.4%	J0,0UZ	9,403	10.0%	75,100		100.00/	
10	tal		14,342	100.0%		35,237	100.0%		11,2/2	100.0%	
	Before Delta		360	2.5%		726	2.1%		189	1.7%	
Time of	Delta		1,520	10.6%		3,004	8.5%		814	7.2%	
initial	BA.1		8,389	58.5%		19,946	56.6%		6,149	54.6%	
Infection	BA.2		3,798	26.5%		10,516	29.8%		3,696	32.8%	
BA.5			275	1.9%		1,045	3.0%		424	3.8%	
Time of reinfection (average ± standard deviation)			242.2±	=85.2		263.6	5±80.3		275.0	±78.3	

* (%*) The total number of confirmed cases, that is the row percentage, was determined * Analysis was performed based on the data currently accessible; however, all analysis results are subject to change based on future epidemiological investigation findings. (The number of vaccinations will be continually updated and analyzed subsequently.)

In-depth analysis of presumed COVID-19 reinfection cases based on cumulative 160,415 cases (Dec. 7, 2022, 24:00)

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Status of Outbreaks in Nursing Hospitals and Facilities (Dec. 19, 2022, 24:00)

		Cumulative	confirmed					
		cases over th	ne past three	Nursing	hospital	Nursing facilities		
		mon	iths					
	Fotal	687,719	(100.0)	2,336	(100.0)	1,759	(100.0)	
Condor	Male	292,893	(42.6)	950	(40.7)	264	(15.0)	
Genuer	Female	394,826	(57.4)	1,386	(59.3)	1,495	(85.0)	
Age (Mea	n±SD [*] , Years)	41.9±	20.7	71.3±	14.8	78.1	£14.6	
	0–9	35,356	(5.1)	0	(0.0)	0	(0.0)	
	10–19	66,996	(9.7)	2	(0.1)	0	(0.0)	
	20–29	111,374	(16.2)	37	(1.6)	15	(0.9)	
	30–39	119,982	(17.5)	39	(1.7)	17	(1.0)	
Age	40–49	103,470	(15.1)	85	(3.6)	38	(2.2)	
	50–59	93,030	(13.5)	283	(12.1)	171	(9.7)	
	60–69	83,786	(12.2)	572	(24.5)	216	(12.3)	
	70–79	49,235	(7.2)	503	(21.5)	224	(12.7)	
	80 and older	24,490	(3.6)	815	(34.9)	1,078	(61.3)	
Asympto	omatic cases	176,568	(25.7)	864	(37.0)	711	(40.4)	
D	Deaths		(0.1)	46	(2.0)	17	(1.0)	

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Characteristics of Confirmed Patients in Nursing Hospitals and Nursing Facilities (Oct. 1 – Dec. 19, 2022)

		Octo	ober	Nove	ember	December (Dec. 1 - Dec. 19)		
٦	⁻ otal	924	(100.0)	2,096	(100.0)	1,075	(100.0)	
Institution	Nursing hospital	483	(52.3)	1,141	(54.4)	712	(66.2)	
mstitution	Nursing facilities	441	(47.7)	955	(45.6)	363	(33.8)	
Condor	Male	225	(24.4)	592	(28.2)	397	(36.9)	
Gender	Female	699	(75.7)	1,504	(71.8)	678	(63.1)	
	<60	156	(16.9)	347	(16.6)	184	(17.1)	
	60–69	159	(17.2)	411	(19.6)	218	(20.3)	
Age	70–79	161	(17.4)	332	(15.8)	234	(21.8)	
	80-89	310	(33.6)	707	(33.7)	291	(27.1)	
	90≤	138	(14.9)	299	(14.3)	148	(13.8)	
Classification	Patients and residents	652	(70.6)	1,585	(75.6)	794	(73.9)	
Classification	Staff	238	(25.8)	511	(24.4)	280	(26.1)	
	Other	34	(3.7)	0	(0.0)	1	(0.1)	
Asympto	matic cases	339	(36.7)	814	(38.8)	422	(39.3)	
D	eaths	15	(1.6)	41	(2.0)	7	(0.7)	

Provision of Information about Current Situation of COVID-19 in Seoul

- Type: The Weekly News Report / The Daily News Report
- **Recipients**: Various bureaus in Seoul, public health centers, municipal hospitals, school authorities, infection experts, etc. in Seoul, etc.

Contents:

- Recent COVID-19 outbreaks in Seoul
- In-depth analysis of COVID-19 hot issues
- Reports on COVID-19 trends at home and abroad
- Legal infectious diseases other than COVID-19
- Introduction of infectious diseases selected this week
- Current infection diseases related news at home and abroad
- Promotional materials.

Introduction of RPA-based Work Automation System

Outline

RPA (Robotic Process Automation)

Technology that handles formal and repetitive tasks using robots, software, etc.

- Purpose: With the number of COVID-19 confirmed cases approaching 6 million, the relevant data is vast, and it takes a lot of time and effort for humans to refine the data.
- Working principle: The robot automatically operates according to the RPA task schedule or algorithm
- Progress: A total of seven automated work systems have been developed, and as the work progresses, checks for malfunctions are underway.

Expected effectiveness: 429 hours are saved per month by RPA

► (Daily workload comparison) Staff 800/8hr vs RPA 1,200/24hr ⇒ More than 3x faster data cleaning compared to humans

Introduction of RPA-based Work Automation System

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Demonstration video

Project Introduction

- System domain: <u>https://sims.sidrec.go.kr</u>
- Purpose: Comprehensive collection and management of information on COVID-19
 confirmed patients in Seoul, which had been managed in segments, so that infectious
 disease-related personnel can easily access
 the information and respond quickly.

The personal information of the confirmed patient, symptoms, death, vaccination history, adverse events of vaccine, and bed allocation information can be viewed in a row in Excel.

Future plans: Additional major infectious diseases such as waterborne diseases and tuberculosis will be included in the system.

Seoul City Builds Database Of COVID-19 Patients Building Large-Capacity Data Processing & Analysis Tools

Trend analysis of Overseas Infectious Diseases

System Main Page (Detail)

[Bulletin board] The status of COVID-19 confirmed patients in Seoul in real time, COVID-19 situation in 25 districts, and information on epidemic overseas infectious diseases is quickly provided.

	Y 시 윤시 김영영 동합관리 시스템 김영영현						입병현황 확진자장	보문식			ee guest 👻				
/VID-19															
코로나19 발생현황											○ 해외 질병 동향				
·[울시 COVID-19	실사간 발생원활 10,93	358				(23.01.01 7)歪)	전국 헌황			(23.01.01.7(臣)	다빈도순(한달간)	관침 질병 정보			
	약된자			사망자		D(4).21	٩	9전시		1양사	1 2040	사금 연색상구금 - 2022년 12월 8일 기준으로 유럽지역의 직소 5개 회원국에서 WHO에 칭습성 A근 인쇄상			
신규 학진자	진말 대비	누히	탄열 사망자	누적	지명률(%)	PEC / BA	신규 확진자	누제	당일 사인자	누리	2 K2 24872	구군(IGAS) 정변 및 전우에 따라 성종열 시례가 증가했다고 보고했습니다. 원보 국가에서는 IGAS 관련 시망 이 증가한 것으로 보고되었습니다. 10세 미만의 이란이가 가장 영향을 많이 받는 연령대입니다.			
3,304	-6,686	5,676,545	10	6,075	0.11 %	0.99(-0.01)	22,735	29,139,535	53	32,272	 ▲ ▲	그룹 A 면해구관(GAS) 강영은 별만하으로 만두신함, 친구함, 친구권, 친구권, 친조권 및 신충연구관은 기비용 원 위를 유보된다. 17.11 - 도울비 GAS 강성은 세력을 의해하는 사람을 유보된 소 한는 지수를 GAS은 000원			
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[Data Supply And Demand] The KDCA's hub system is connected to the Seoul's integrated management system in a DB to DB method to deliver COVID-19 confirmed patients in real time.

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* KDCA: Korea Disease Control and Prevention Agency

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[Collection of in-depth epidemiological investigations document data] Construction of in-depth epidemiological investigations document(pdf file) database and pdf file download of confirmed cases

Based on this, it can be used to respond to new infectious diseases in the future through spatial research related to the spread of infection in the local community by tracking the movement of confirmed patients.

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[Integration of confirmed patient data] hub system + confirmed case ledger + vaccination status + vaccine=related adverse reaction + death situation + bed assignment + in-depth epidemiological investigation note

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