

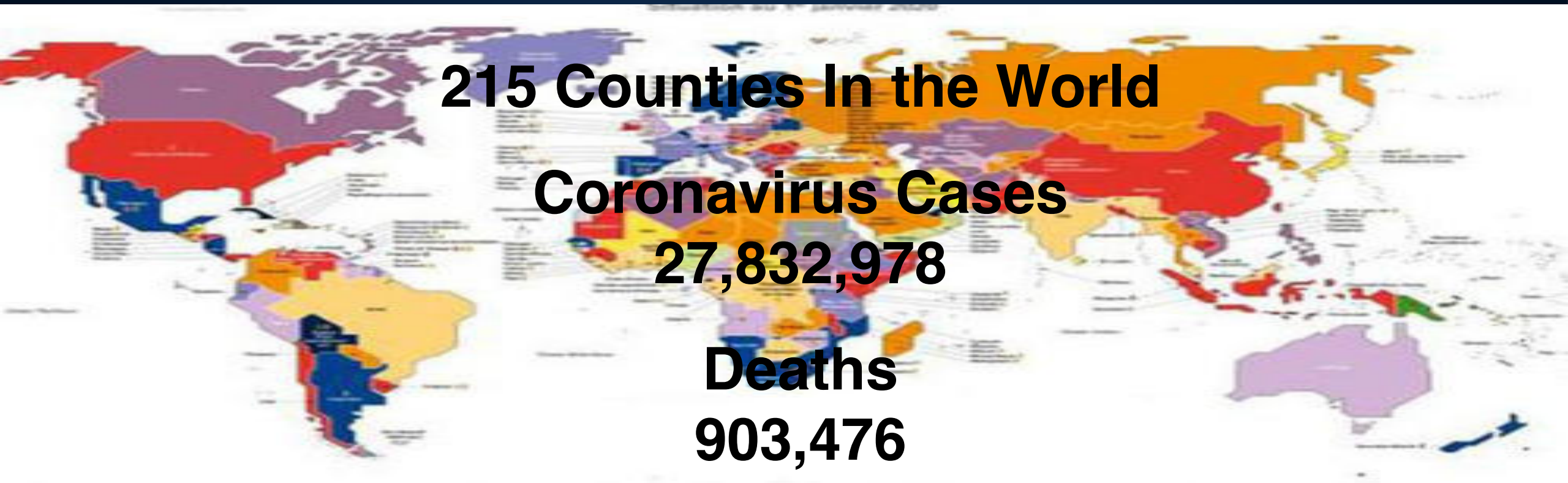
COVID-19 PANDEMIC : Evidence Based Medical Data Mining And Management Stratagem

Yafeng Dong Ph.D.

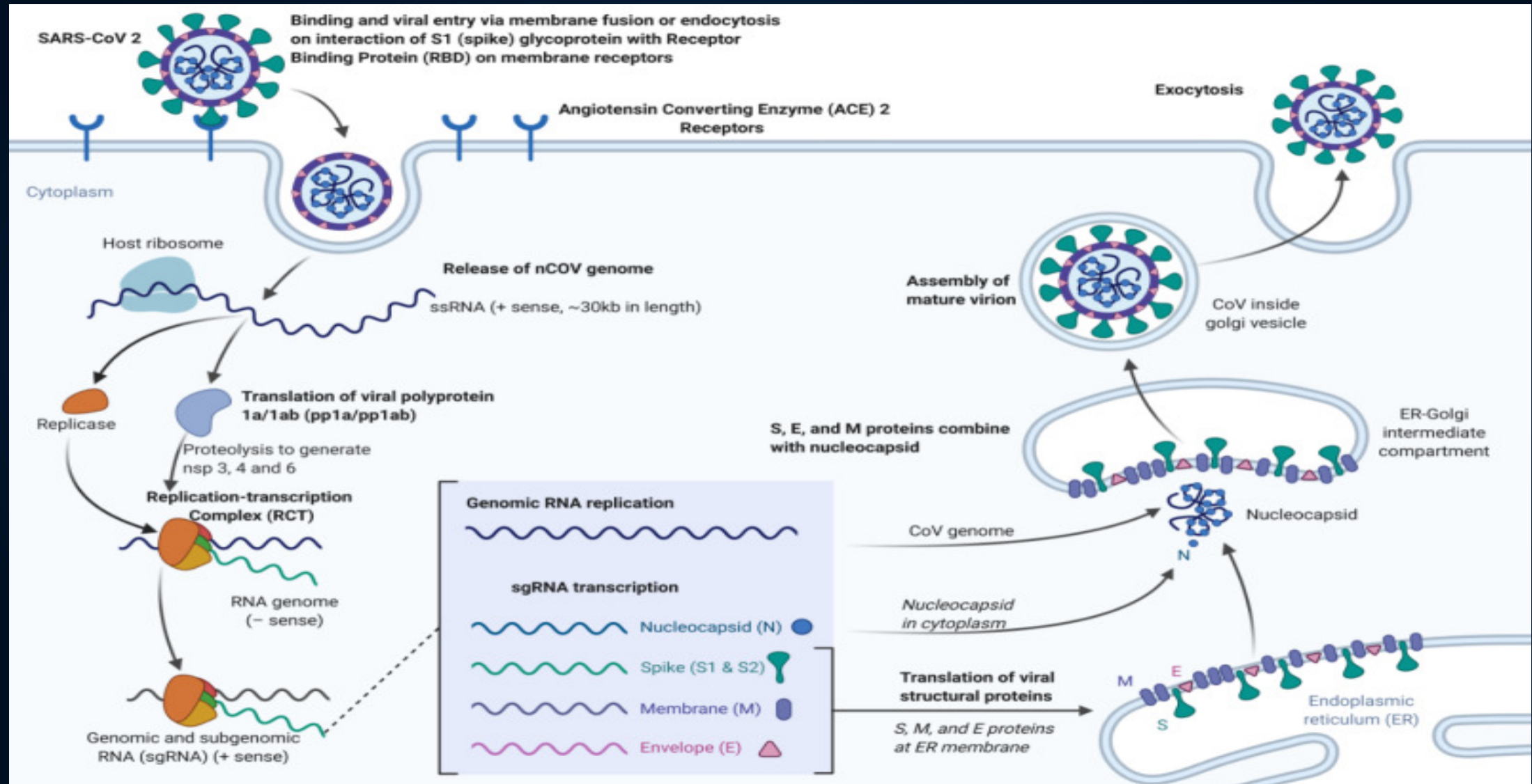
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COVID-19 CORONAVIRUS PANDEMIC

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COVID-19 CORONAVIRUS Replication



COVID-19 CORONAVIRUS SCREENING In PUBLIC and HOSPITAL

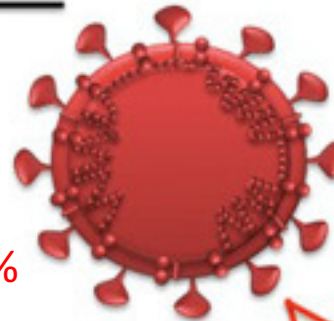
Fever, 98%

Real time-PCR

Conventional RT-PCR
Rapid RT-PCR devices

- Abbot ID Now
- GeneXpert

Sensitivities: 59-84.6%



SARS-COV-2



Human Lungs

Laboratory Evaluation

CBC	ESR
CRP	LFTs
Chest X-ray	CT- Scan
Myocardial enzymes	
Coagulation profile	

Immunoassays

ELISA based Ig detection techniques

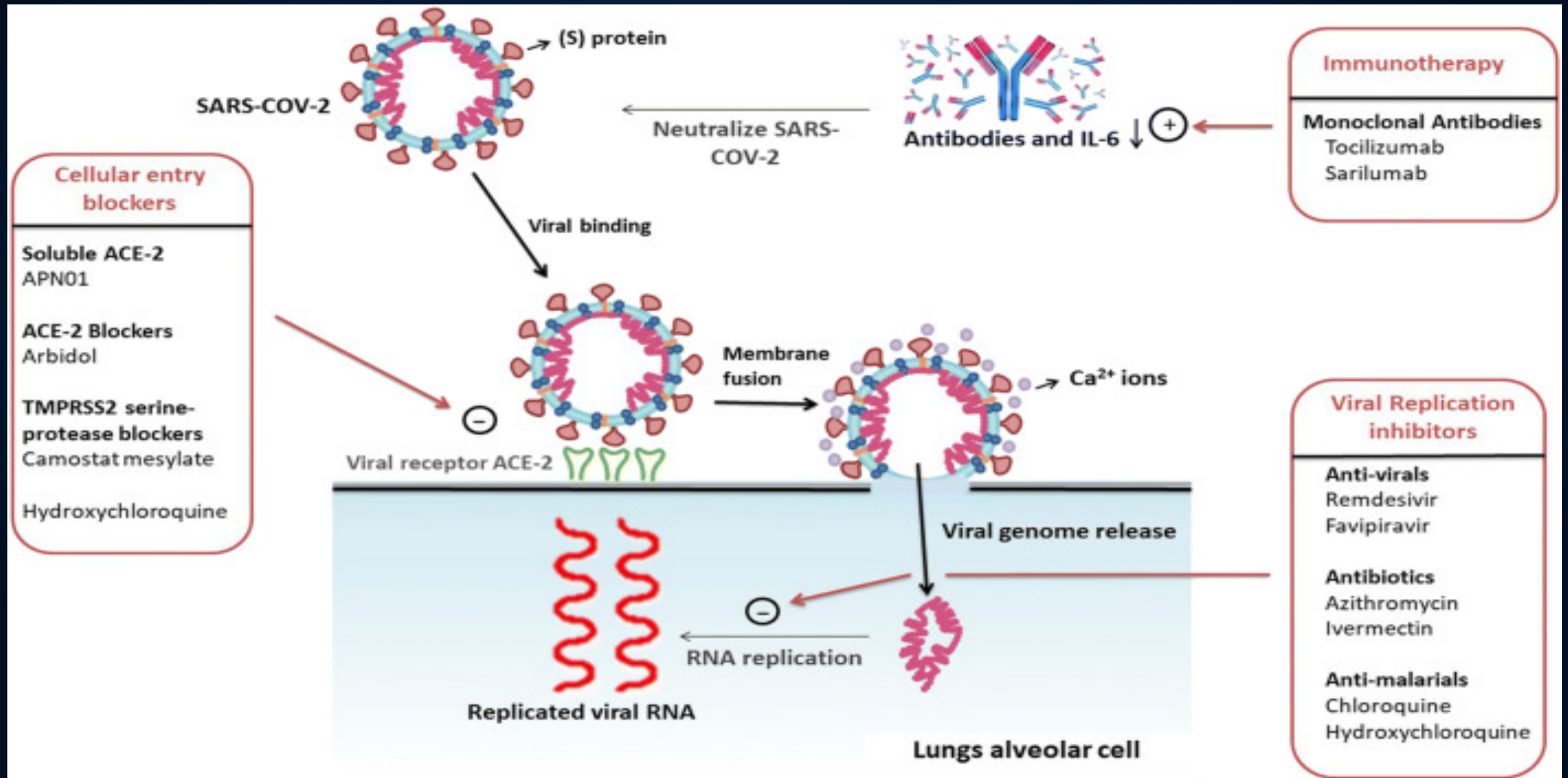
- FLIA
- CLIA

Table 1. Baseline Characteristics of Patients Infected With 2019-nCoV

	No. (%)			P Value ^a
	Total (N = 138)	ICU (n = 36)	Non-ICU (n = 102)	
Signs and symptoms				
Fever	136 (98.6)	36 (100)	100 (98.0)	>.99
Fatigue	96 (69.6)	29 (80.6)	67 (65.7)	.10
Dry cough	82 (59.4)	21 (58.3)	61 (59.8)	.88
Anorexia	55 (39.9)	24 (66.7)	31 (30.4)	<.001
Myalgia	48 (34.8)	12 (33.3)	36 (35.3)	.83
Dyspnea	43 (31.2)	23 (63.9)	20 (19.6)	<.001
Expectoration	37 (26.8)	8 (22.2)	29 (28.4)	.35
Pharyngalgia	24 (17.4)	12 (33.3)	12 (11.8)	.003
Diarrhea	14 (10.1)	6 (16.7)	8 (7.8)	.20
Nausea	14 (10.1)	4 (11.1)	10 (9.8)	>.99
Dizziness	13 (9.4)	8 (22.2)	5 (4.9)	.007
Headache	9 (6.5)	3 (8.3)	6 (5.9)	.70
Vomiting	5 (3.6)	3 (8.3)	2 (2.0)	.13
Abdominal pain	3 (2.2)	3 (8.3)	0 (0)	.02
Onset of symptom to, median (IQR), d				
Hospital admission	7.0 (4.0-8.0)	8.0 (4.5-10.0)	6.0 (3.0-7.0)	.009
Dyspnea	5.0 (1.0-10.0)	6.5 (3.0-10.8)	2.5 (0.0-7.3)	.02
ARDS	8.0 (6.0-12.0)	8.0 (6.0-12.0)	8.0 (6.3-11.3)	.97

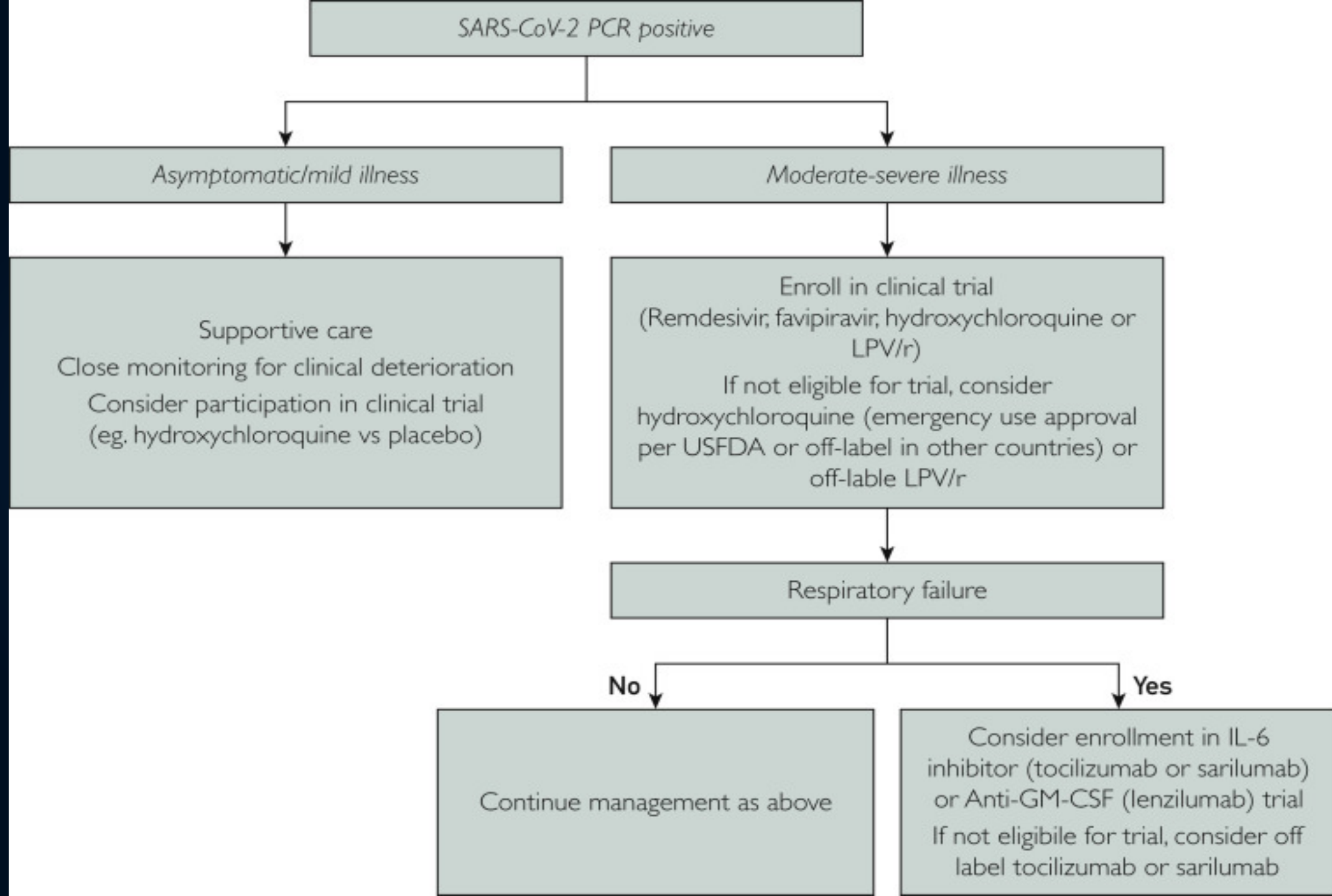
Wang et al study published on JAMA and based on 138 hospitalized patients

Mechanism of action of major repurposing agents against COVID-19



Does the Treatment works for Covid-19?

Patient NO. Ranking	Country	Total Cases	Total Deaths	Mortality	Mortality Ranking
	World	27,832,978	903,476	3.25%	
1	USA	6,520,892	194,381	2.98%	64
2	India	4,417,550	74,367	1.68%	121
3	Brazil	4,165,124	127,517	3.06%	57
4	Russia	1,041,007	18,135	1.74%	118
5	Peru	696,190	30,123	4.33%	32
6	Colombia	679,513	21,817	3.21%	53
7	Mexico	642,860	68,484	10.65%	6
8	South Africa	640,441	15,086	2.36%	88
9	Spain	534,513	29,594	5.54%	27
10	Argentina	500,034	10,457	2.09%	97
13	UK	355,219	41,594	11.71%	4
14	France	335,524	30,764	9.17%	9
19	Italy	281,583	35,577	12.63%	3
21	Germany	255,267	9,409	3.69%	45
39	China	85,146	4,634	5.44%	28
45	Japan	72,234	1,377	1.91%	111
50	Singapore	57,166	27	0.05%	191
75	S. Korea	21,588	344	1.59%	127



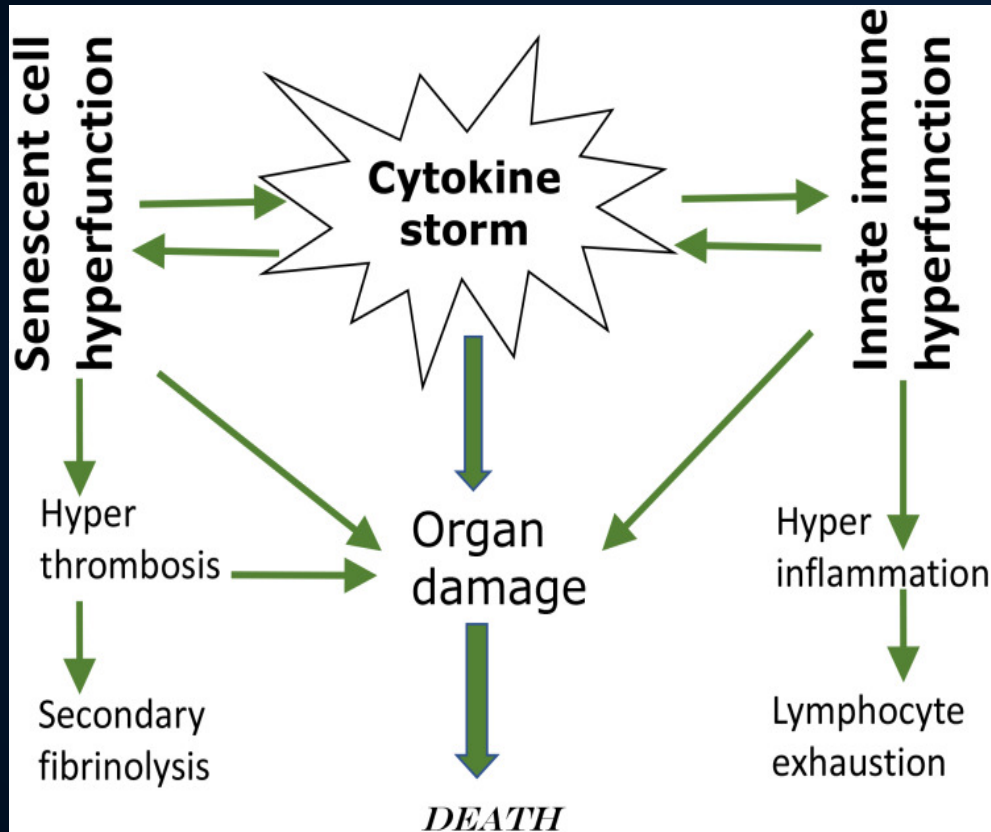
The More Covid19 Detection, The More Protection?

Patient No.						
Ranking	Country	Total Cases	Total Tests	Total Test Ranking	Tests/1M Pop	Tests/1M Pop ranking
1	USA	6,520,892	88,725,262	2	267,751	18
2	India	4,417,550	51,804,677	3	37,470	119
3	Brazil	4,165,124	14,408,116	6	67,692	81
4	Russia	1,041,007	39,289,176	4	269,203	17
5	Peru	696,190	3,403,397	18	102,953	64
6	Colombia	679,511	2,996,111	19	58,780	92
7	Mexico	642,809	1,451,397	42	11,227	154
8	South Africa	640,441	3,821,162	16	64,276	86
9	Spain	534,519	9,981,326	8	213,595	26
10	Argentina	500,011	1,458,611	41	32,217	127
13	UK	355,219	17,619,897	5	259,291	20
14	France	335,524	8,500,000	10	130,166	51
19	Italy	281,583	9,460,203	9	156,510	38
21	Germany	255,267	12,383,035	7	147,707	42
39	China	85,146	160,000,000	1	111,163	59
45	Japan	72,234	1,622,149	39	12,833	151
50	Singapore	57,166	2,281,104	29	389,328	15
75	S. Korea	21,588	2,082,234	32	40,607	113

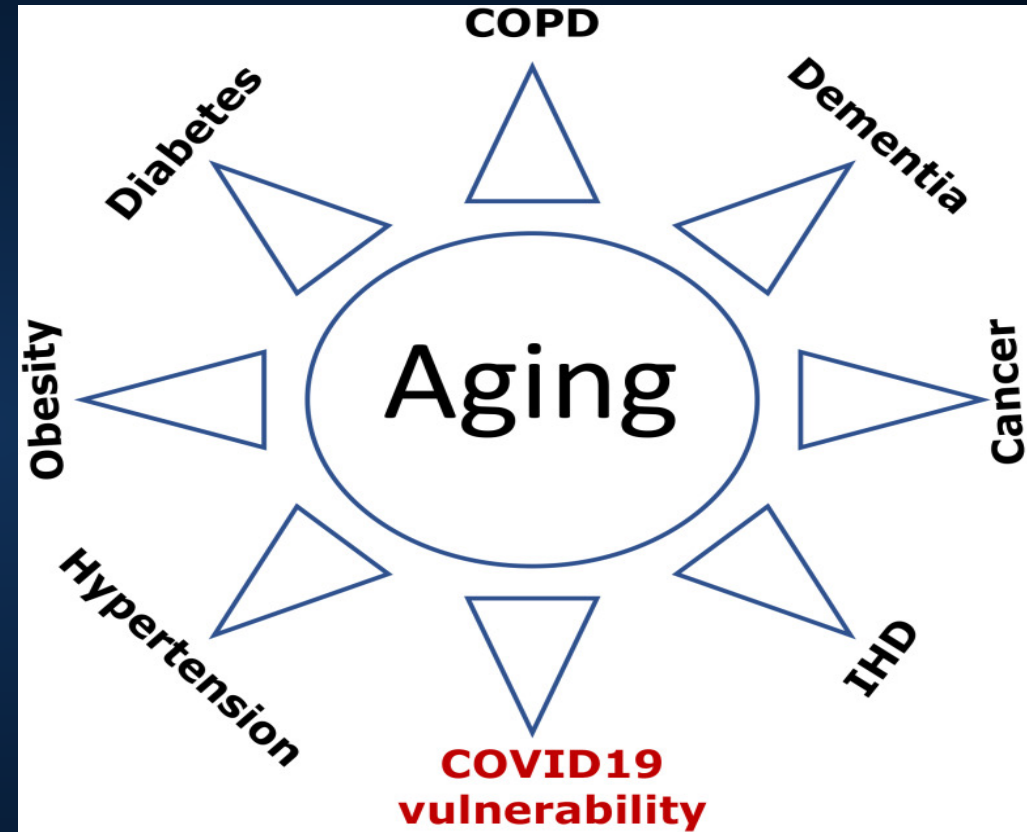
The Mobility and Mortality Is Conflict?

Patient No.					
Ranking	Country	Mortality	Mortality Ranking	Tot Cases/1M Pop	Tot Cases/1M Pop ranking
1	USA	2.98%	64	19,678	10
2	India	1.68%	121	3,195	87
3	Brazil	3.06%	57	19,569	11
4	Russia	1.74%	118	7,133	42
5	Peru	4.33%	32	21,060	9
6	Colombia	3.21%	53	13,328	19
7	Mexico	10.65%	6	4,976	60
8	South Africa	2.36%	88	10,773	25
9	Spain	5.54%	27	11,431	22
10	Argentina	2.09%	97	11,045	24
13	UK	11.71%	4	5,227	57
14	France	9.17%	9	5,138	58
19	Italy	12.63%	3	4,659	63
21	Germany	3.69%	45	3,045	91
39	China	5.44%	28	59	200
45	Japan	1.91%	111	571	152
50	Singapore	0.05%	191	9,757	29
75	S. Korea	1.59%	127	421	162

Nursing Home: the aged adult with pre-existing condition is more victim



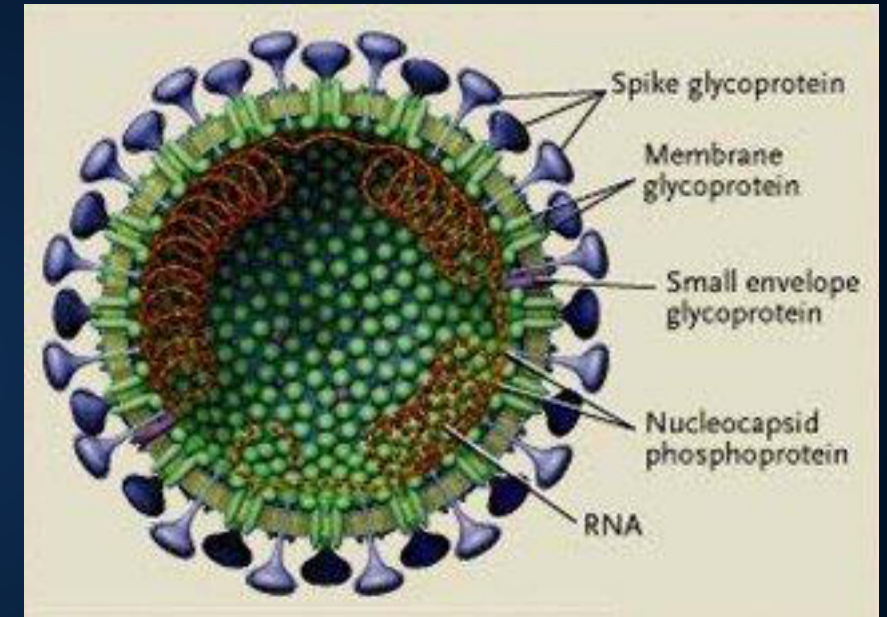
Cytokine Storm as a Systemic Hyperfunction



Covid-19 Vulnerability as age-Related Disease

Challenges and prospects of COVID-19 vaccine development

- Possible Vaccine Candidates for Covid-19
 - Whole Cell Antigen
 - Spike Protein (S)
 - Nucleocapsid Protein (N)
 - Membrane Protein(M)
 - Envelop Protein(E)
 - T / B Cell epitopes as target vaccine candidates
- Vaccine Strategies Against Covid-19
 - Whole Virus Vaccines
 - Subunit Vaccines
 - mRNA Vaccines
 - DNA Vaccines
 - Live Vector Vaccines



Hong Kong Reinfection Case

Will we see protection or reinfection in COVID-19?

Shelter Hospital : A good Stratagem for Covid-19 Pandemic



Transportation Tracker System In China



Thank you

