Município da Estância Balneária de Praia Grande
Estado de São Paulo

Gabinete do Prefeito

Em 26 de junho de 2020.

OFÍCIO GP Nº 415/2020

A Sua Excelência o Senhor
EDNALDO DOS SANTOS PASSOS
Presidente da Câmara Municipal de Praia Grande
PRAIA GRANDE – SP

Senhor Presidente,

Em atenção aos questionamentos feitos por meio do **REQUERIMENTO Nº 136/2020**, de autoria do nobre vereador **ROBERTO ANDRADE E SILVA**, referentes aos testes de detecção do Coronavírus realizados no Município, ao impacto da pandemia na rede municipal de saúde e aos investimentos no combate à doença, encaminho anexa cópia da manifestação da área técnica da Secretaria de Saúde Pública (Sesap), recebida pelo Departamento de Processo Legislativo deste Gabinete, com os respectivos esclarecimentos, bem como do Memorando que trata do impacto gerado na rede de saúde (item 7).

Quanto ao item 8, a Divisão de Orçamento e Controle de Custos da Sesap esclareceu que até 18/06/2020 foram empenhados pela pasta R$ 22.115.503,30, sendo que deste montante já foram processados R$ 13.394. 503,52.

Sem mais para o momento, aproveito o ensejo para externar os meus protestos de elevada estima e apreço.

Atenciosamente,

ALBERTO PEREIRA MOURÃO
Prefeito

APM/ed

MUNICÍPIO DA ESTÂNCIA BALNEÁRIA DE PRAIA GRANDE

Estado de São Paulo

Papel para informação, rubricado como folha nº. _____

d _____ nº. _____ de _____ , ___/___/___ (a) _____

À
SESAP – 10.4
Sra. Subsecretária de Atenção à Saúde,

Conforme solicitado em tela pelo Nobre Edil Roberto Andrade e Silva, restituo informando:

1- São realizados exames moleculares – PCR-RT (swab) para todos os pacientes sintomáticos para Síndrome Gripal, tanto na Atenção Básica quanto no serviço de Urgência e Emergência, conforme diretrizes do Ministério da Saúde para as coletas. Os exames na Atenção Básica são agendados através do *Call Center*, 162, e instruídos e direcionados para a Unidade de Saúde da Família de referência do paciente. Os exames na Urgência e Emergência são apenas para pacientes internados e graves. Os pacientes são submetidos a avaliação clínica e a coleta quando necessário.
2- Laboratório Centro de Genomas.
3- Os resultados são liberados em até 72 horas, pelo laboratório responsável pela análise dos exames.
4- Todos os exames são recebidos pela equipe técnica do Departamento de Vigilância em Saúde e analisados, antes da alimentação do sistema.
5- Os exames são digitados conforme semana epidemiológica, data do início dos sintomas e data da coleta do exame, impedindo assim a duplicidade do exame no mesmo período.
6- Todas as unidades de saúde e demais serviços administrativos vinculados ao enfrentamento da pandemia, possuem acesso ao resultado dos exames.
7- Para Subsecretaria de Planejamento em Saúde.
8- Para Subsecretaria de Planejamento em Saúde.

Em 02 de junho de 2020.

Bruna Renó
Resp. pelo Deto de Vigilância em Saúde.

MEMORANDO Nº 017/2020/ SESAP 10.3

Praia Grande, 15 de maio de 2020.

À SESAP 10
Ilmo. Sr. Secretário,

Assunto: Pandemia - COVID 19: dimensionamento de leitos e gestão mortuária.

Mediante respeitosas saudações, em atenção ao tema em epígrafe, tem o presente o objetivo de avaliar o cenário epidemiológico de expansão da Pandemia por SARS-CoV-2 no município de Praia Grande nas competências março e abril de 2020 e refletir sobre a necessidade de ajustar a oferta de leitos de média e alta complexidade para o tratamento da patologia de importância internacional junto às competências maio e junho/2020, em um esforço conjunto com os Entes Estadual e Federal, bem como reflexões sobre os indicadores de mortalidade e gestão mortuária.

O avanço da pandemia nos primeiros 60 dias de acompanhamento no território municipal manteve-se dentro do intervalo de confiança da estimativa de casos graves e críticos previstos no modelo de predição apresentado no MEMORANDO nº. 009/2020-SESAP 10.3, de 13/03/2020.

Plano de Contingência de leitos hospitalares para pandemia COVID – 2019 Complexo Hospitalar Irmã Dulce – predição em competências março e abril/2020			
Parâmetro (modelo probabilístico de Du et al., 2020)	$\lambda - Z_{\alpha/2}\sqrt{\frac{\lambda}{n}}$;	$\overline{X}$	$\lambda + Z_{\alpha/2}\sqrt{\frac{\lambda}{n}}$
Tempo de Duplicação (dias)	6,26	7,31	9,66
Estimativa de casos, próximos 60 dias, a partir do índice	768	295	74
Estimativa de casos graves (14%)	107,5	41,4	10,4
Estimativa de casos críticos (5%)	38,4	14,8	3,7

Fonte: MEMORANDO nº. 009/2020/SESAP 10.3

Durante as competências março e abril/2020, a municipalidade testemunhou 53 internações de casos graves confirmados com a doença (CID: B.34.2) em leitos de média

complexidade (somados a mais 34 casos ainda aguardando confirmação com quadro de SRAG) e 14 internações em leitos complementares de UTI II adulto confirmados com a doença (somados a mais 2 casos aguardando confirmação com evolução para óbito). Este quantitativo manteve-se no intervalo de confiança do modelo de predição adotado.

Internações de Média e Alta Complexidade: competências março e abril de 2020		
	Internações Executadas*	Internações preditas
Média Complexidade	53	Média = 41,4 I.C. 95% [10,4 - 107,5]
UTI Tipo II	14	Média = 14,8 I.C. 95% [3,7 - 38,4]

Fonte: Departamento de Vigilância em Saúde.
*casos confirmados de SARS-CoV-2.

Para a predição fora adotado prévio estudo publicado no *Emerging Infectious Diseases*® pelo *Centers for Disease Control e Prevention* dos autores DU et al.(2020), conforme modelo probabilístico abaixo:

$$1-\exp\left[-\int_{u=t_0}^{t}(\gamma_{j,u}+\Psi_{j,u})du\right]$$

De acordo com o estudo, o tempo de duplicação apresentado pelo modelo foi de 7,31 dias (I.C. 95% [6,26-9,66]). Esta taxa foi corroborada pelo *StatPearls Publishing LLC*® da *National Center for Biotechnology Information, U.S. National Library of Medicine*, publicada em 08 de março de 2020 (Cascella M, Rajnik M, Cuomo A, et al, 2020). Em atualização, realizada em 06 de abril de 2020, foi ratificada a taxa de duplicação em aproximadamente 7 dias com um número reprodutivo básico de 2,2 (R0 – R *naught*) e taxa de letalidade de 2,3% (anexo I).

Segundo as estatísticas oficiais do município, em seu Boletim Epidemiológico de Coronavírus, de 01 de maio de 2020, a competência abril encerrou-se com 27 pacientes ainda internados em leitos de média complexidade e 04 pacientes em leitos complementares de UTI Tipo II adulto (anexo II), em uma situação de utilização da capacidade instalada de média e alta complexidade total planejada em 11,35% e, na que já se encontra em operação, de 40,25%.

Ao final desta competência mensal, iniciativa inédita no Estado de São Paulo foi deflagrada pelo comitê de Prefeitos da Baixada Santista durante a 36ª reunião extraordinária do

Conselho de Desenvolvimento da Baixada Santista (CONDESB), ocorrida em 22 de abril de 2020, na Agência Metropolitana da Baixada Santista, onde recursos do Fundo Metropolitano de Desenvolvimento foram utilizados no financiamento de um estudo epidemiológico sobre o alcance da infecção pelo novo coronavírus nesta região metropolitana (anexo III). Protagonizado pelo pesquisador Marcos Montani Caseiro, o Estudo EPICOBS busca estimar a prevalência de infecção por SARS-CoV-2 na população da Baixada Santista, através de inquérito sorológico seriado em amostragem populacional estratificada por sorteio aleatório e coleta Domiciliar. Constituindo-se em uma pesquisa de base populacional para infecção por SARS-CoV-2 e teve por objetivos: (1) estimar a prevalência de Anticorpos contra o SARS-CoV-2 na população da Baixada Santista, distribuída por Sexo, faixa etária e município de moradia, (2) determinar o aumento do número de infectados ao longo do tempo, (3) obter cálculos mais precisos de letalidade e (4) avaliar o conhecimento da população sobre as medidas de isolamento social e riscos de transmissão. A tabela abaixo apresenta os resultados parciais da pesquisa quanto à prevalência de testes positivos na população, quando aplicado a estimativa de população atualizada pelos dados do TCU 2019.

Município	População	% da População com teste positivo	Estimativa do número de infectados	Número de casos notificados oficialmente
Bertioga	63.290	0,00	não detectado	7
Cubatão	129.145	0,00	não detectado	69
Guarujá	316.405	1,80	5.695	223
Itanhaém	98.757	0,00	não detectado	28
Mongaguá	54.610	5,48	2.993	20
Peruíbe	66.201	1,11	735	39
Praia Grande	316.844	0,79	2.503	513
Santos	428.703	1,43	6.130	666
São Vicente	357.929	2,04	7.302	179
Total	1.831.884	1,41	25.830	1.744

Fonte: TCU 2019 (população) e Estudo EPICOBS (% de testes positivos e notificações oficiais).

Ao buscar uma amostragem probabilística significante na Baixada Santista, o Estudo EPICOBS revelou a existência de uma prevalência de infecção por COVID-19 significativamente superior aos números oficialmente divulgados pelo Estado de São Paulo e Brasil, sinalizando o impacto epidemiológico do subdimensionamento da oferta de exames diagnósticos no cenário nacional, bem como mundial (mesmo grandes potencias hegemônicas mundiais sofrem com o escassez do suporte diagnóstico).

A publicação do Boletim Epidemiológico Especial do Ministério da Saúde, COE-COVID19 nº 14, referente à semana epidemiológica de 18 a 26 de abril de 2020 (anexo IV) e contemporânea a esta fase da pesquisa supracitada, reporta uma prevalência da doença no cenário nacional e internacional inferior à prevalência encontrada no estudo, conforme pode ser verificado na tabela abaixo:

Entes Federativos	População	confirmados pela doença	prevalência (/100.000 habitantes)
Estados Unidos	331.915.000	960.896	290
Espanha	46.711.000	223.759	479
Itália	60.250.000	195.351	324
França	67.443.000	161.488	239
Alemanha	82.678.000	156.727	190
Reino Unido	67.224.000	148.377	221
Turquia	84.339.000	107.773	128
Irã	83.993.000	90.481	108
China	1.401.379.000	82.827	6
Rússia	144.222.000	80.949	56
Brasil	212.559.000	61.888	29
São Paulo	45.919.049	20.715	45
Praia Grande-SP	325.073	469	144

Fonte: TCU 2019, Boletim Epidemiológico COE-COVID19 nº 14 e Boletim coronavírus PG de 01/05/2020.

Segundo o estudo, a prevalência de COVID-19 na Baixada Santista seria de 1.410/100.000 habitantes. Em Praia Grande, teríamos 790/100.000 habitantes, ou seja, **uma prevalência 5 (cinco) vezes maior que a dos números oficiais.** Este subdimensionamento da prevalência é ainda, provavelmente, muito superior no Estado de São Paulo e Brasil, posto que estes Entes Federativos tenham ofertado um número menor de exames diagnósticos a sua população, com respectiva prevalência oficial de 45 e 29 para cada 100.000 habitantes, quando comparado com o município de Praia Grande.

A prevalência de infectados, posto o percentual de sintomáticos com condições graves e críticas, impacta de forma decisiva no dimensionamento de serviços.

Há diferença de informações sobre morbidade hospitalar entre os dados da literatura e o acompanhamento de casos graves e críticos por organismos internacionais, os quais disponibilizam a evolução da Pandemia no Mundo em tempo real. Esta diferença pode potencialmente sinalizar uma redução da qualidade nas evidências científicas das revistas de maior prestígio, o que

efetivamente tem ocorrido. Um exemplo é a recente publicação, na respeitada revista *New England Journal of Medicine*, dos autores Geleris et. al (2020), que apresentam um estudo observacional não randomizado com desfechos de evolução desfavorável para intubação ou óbito onde o grupo controle inequivocamente tinha menor gravidade do que o grupo tratamento distorcendo potencialmente os resultados com viés de seleção. Este tipo de desenho, com menor força de evidência científica, dificilmente seria publicado em uma revista deste impacto em tempos ordinários. Em contraposição, a diferença poderia ser explicada também por imprecisão nos dados de morbidade das agências internacionais em decorrência de subnotificação de internações ou restrição de diagnóstico e acesso ao setor hospitalar por superação da capacidade instalada dos serviços, mesmo em países desenvolvidos (o que é muito provável posta as dezenas de reportagens na imprensa mundial reportando a situação, como em anexo V).

Segundo os dados da literatura, a Pandemia por COVID-19 acarretaria um total de 14% de casos graves e 5% de casos críticos, ou seja 19% de atendimento especializado em ambiente hospitalar, entre os infectados com doença ativa (Castella et al., 2020), valor muito superior aos 2% de morbidade de graves e críticos das bases de dados internacionais para o mundo. A tabela abaixo apresenta o cálculo de evolução clínica para grave ou crítica dos Entes supracitados a partir da base de dados do *worldometers* (anexo VI).

Entes Federativos	Evolução para grave/crítico		Prevalência (/100.000)
	Freq. absoluto	Freq. Relativa	
Estados Unidos	16.240	1,54%	441
Espanha	1.376	2,37%	586
Itália	855	1,12%	52
França	2.299	2,50%	368
Alemanha	1.329	8,66%	208
Reino Unido	1.559	Indisponível	343
Turquia	963	2,62%	171
Irã	2.727	15,24%	139
China	11	12,09%	6
Rússia	2.300	2,07%	180
Brasil	8.318	13,44%	96

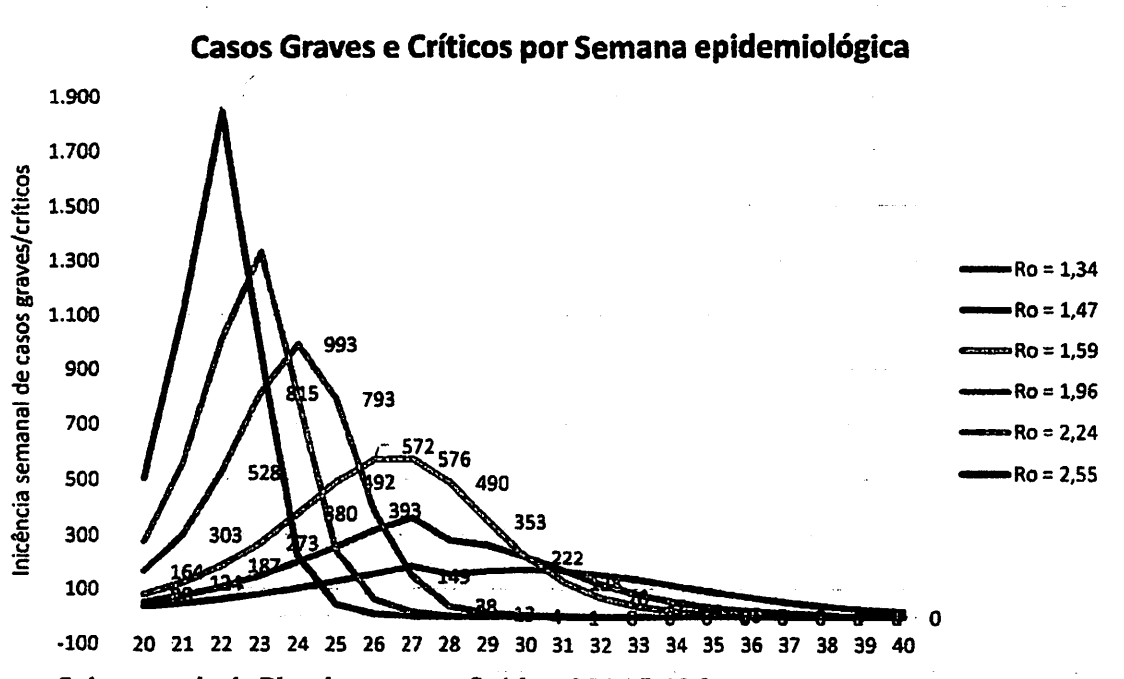
Fonte: https://www.worldometers.info/coronavirus/ [acesso em 15 mai 2020]

Enquanto grandes potências como EUA, Espanha, Itália e França tiveram um número de graves/críticos entre 1,5% a 2,5%, a Alemanha e China tiveram entre 8,6% a 12,09%. Com uma

razão de mortalidade específica de apenas 7 óbitos/100.000 habitantes, merece destaque a Alemanha, entre os países desenvolvidos, que apresentou menor diferença percentual da literatura médica de evolução para grave/crítico (aproximadamente 8,6%), podendo significar menor restrição de acesso ou internação de casos menos graves que a média dos demais países desenvolvidos.

A correta estimativa de número de casos graves e críticos constitui-se elemento fundamental para a tomada de decisão de políticas públicas, sendo as aparentes contradições das informações oficiais em todo o Mundo um grave fator potencial de distorções em investimentos e alocação de serviços de saúde, sendo qualquer estimativa sujeita a grande oscilação a depender dos parâmetros arbitrados de predição.

A tabela abaixo apresenta a estimativa de casos graves e críticos em Praia Grande, entre as semanas epidemiológicas 20 (10/05/2020) a 40 (27/09/2020), caso arbitre-se como parâmetro de evolução para grave/crítico de 2% em variações do número reprodutivo básico do SARS-Cov-2, conforme adesão populacional às medidas de distanciamento social.



Fonte: Subsecretaria de Planejamento em Saúde – SESAP 10.3

Os parâmetros supracitados estimam um cume de incidência de internações de graves e críticos de aproximadamente 576 entre as semanas epidemiológicas 26 a 28 se adotado um Rt =

1,59 ou de aproximadamente 993 entre as semanas epidemiológicas 23 a 25 se adotado um Rt = 1,96.

Buscando estruturar o número de leitos no pais, o Ministério da Saúde, através de seu Sistema de Gerenciamento da Tabela de Procedimentos, Medicamentos e OPM do SUS (tabela SIGTAP), estabeleceu os códigos de procedimentos pertinentes ao atendimento de média e alta complexidade hospitalar através dos códigos SIGTAP n° 03.03.01.022-3 - TRATAMENTO DE INFECÇÃO PELO CORONAVIRUS – COVID 19 e 08.02.01.029-6 - DIÁRIA DE UTI II - ADULTO COVID19 (anexo VII), além de códigos específicos da pediatria, estabelecendo uma hotelaria de média complexidade de 5 (cinco) dias.

Necessário destacar que a estimativa acima é uma consequência dos parâmetros arbitrados, os quais podem variar conforme a fonte utilizada. Cita-se, como exemplo, o número reprodutivo básico, sujeito a oscilações conforme a severidade das medidas públicas de contenção e adoção de distanciamento social, cujo valor pode variar entre 1,47 [I.C.95%: 1,34 – 1,59], como no repercutido e recente estudo sobre a Pandemia por SARS-CoV-2 no Brasil executado pelo *Imperial College COVID-19 Response Team* (2020) referente ao número reprodutivo básico para o Estado de São Paulo, em anexo VIII (grifo nosso em amarelo), até o já citado trabalho do *National Center for Biotechnology Information,* (Cascella M, Rajnik M, Cuomo A, et al, 2020) em 2,24 [I.C.95%: 1,96 – 2,55], ou até eventualmente estimativas ainda maiores também defendidas na literatura. A tabela abaixo dimensiona a necessidade de leitos conforme a oscilação do número reprodutivo básico (R_0) supracitado.

R_0	Parâmetro	N° estimado de internações (60 dias)	Média de Permanência (dias)	Leitos estimados (60 dias)
1,47 I.C.95%: [1,34; 1,59]	Média Complexidade	1.902 [1.028; 2.848]	5	159 [86; 237]
	UTI	222 [120; 329]	14	52 [28; 77]
2,24 I.C.95%: [1,96; 2,55]	Média Complexidade	4.530 [4.341; 4.542]	5	378 [362; 379]
	UTI	503 [484; 505]	14	117 [113; 118]

Fonte: Subsecretaria de Planejamento em Saúde – SESAP 10.3

Ao se adotar o número reprodutivo básico sugerido pelo *Imperial College COVID-19 Response Team* (2020) para o cenário provável de São Paulo, o município de Praia Grande

precisaria proporcionar a sua população um cenário de média complexidade de aproximadamente 159 [86; 237] leitos e de cuidados críticos de aproximadamente 52 [28; 77] leitos de UTI durante o período entre maio e junho/2020. O município, precocemente aprovou junto ao Cadastro Nacional dos Estabelecimentos de Saúde e à Comissão Intergestores Regional (CIR/DRS IV) as gestões interfederativas necessárias, para a aprovação de 233 leitos de média complexidade e 56 leitos de UTI, conforme aprovados na Deliberação CIB/SP nº. 29, de 24/04/2020 (Nº. 80 – DOE – 25/04/20 – seção 1 – p.15) em anexo IX. Tal dimensionamento, buscou garantir uma capacidade instalada correspondente as estimativas de intervalo superior de necessidades segundo o número reprodutivo básico (R_0) sugerido pelo *Imperial College COVID-19 Response Team* (anexo VIII).

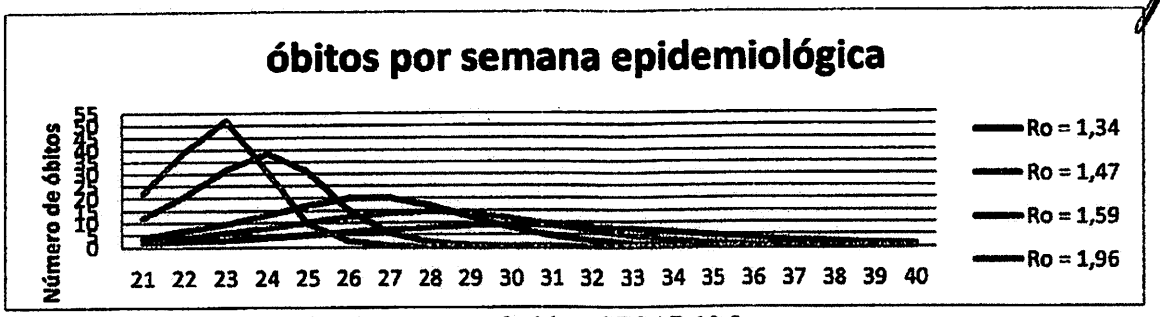
O dimensionamento acima demonstra de forma incisiva o quanto a fidedignidade dos dados de incidência e de prevalência constitui-se peça fundamental para a tomada de decisão, seja do quantitativo de leitos, seja de medidas de controle do distanciamento social e quarentenas. Estes dados também são fundamentais na predição do número de óbitos, particularmente no manejo de gestões mortuárias junto ao Plano de Contingência municipal.

A tabela abaixo apresenta a projeção estimada de óbitos acumulados entre as semanas epidemiológicas de 20 a 40, bem como a letalidade e razão de mortalidade específica por SARS-CoV-2, segundo a variação do número reprodutivo básica sugerido pelo *Imperial College COVID-19 Response Team* (2020) para o Estado de São Paulo e os parâmetros do *National Center for Biotechnology Information,* (Cascella M, Rajnik M, Cuomo A, et al, 2020).

R_0 (Número Reprodutivo Básico)	**Nº estimado de óbitos (semanas epidemiológicas 20 a 40)**	**Letalidade (%)**	**RME (/100.000)**
1,47 I.C.95%: [1,34; 1,59]	158 [134; 1,73]	4,26 [4,17; 4,46]	49 [41; 53]
2,24 I.C.95%: [1,96; 2,55]	200 [196; 200]	3,96 [3,89; 4,02]	60 [60; 61]

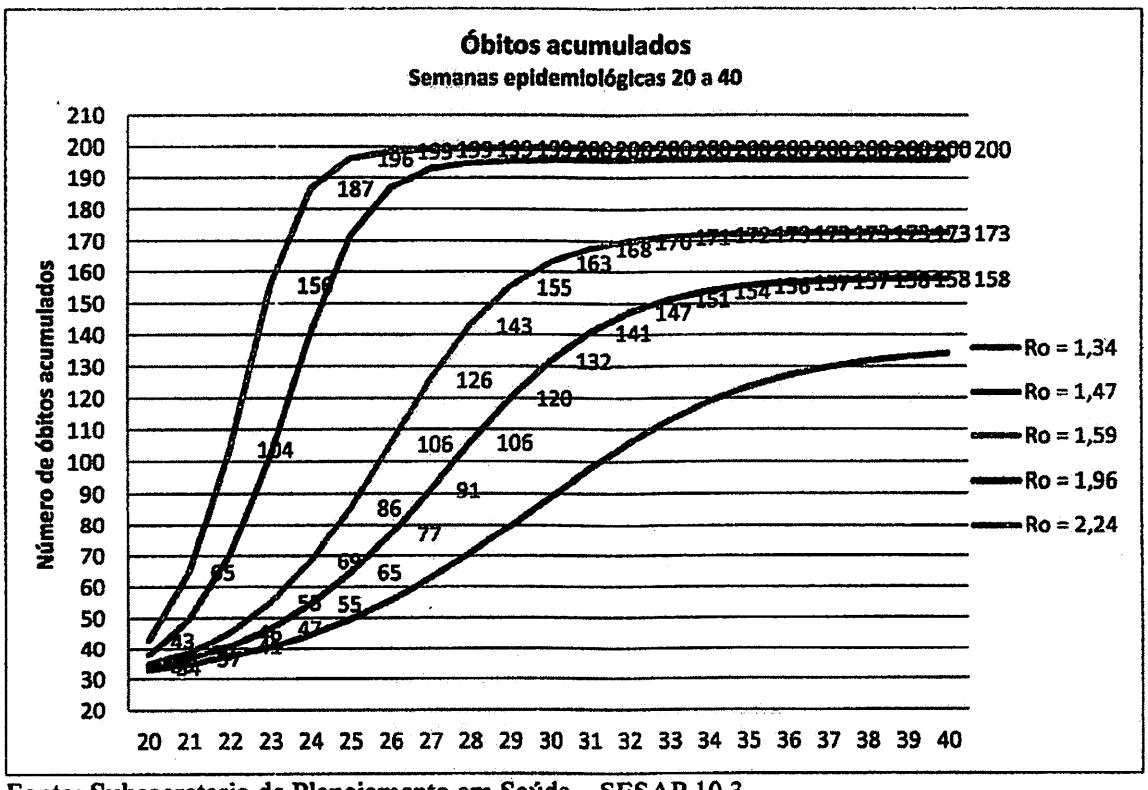
Fonte: Subsecretaria de Planejamento em Saúde – SESAP 10.3

Considerando que o município de Praia Grande, em sua série histórica, assista em média a 200 óbitos por mês, a Pandemia acarretaria um aumento absoluto de óbitos equivalente a 1 (um) mês de atividade mortuária, variando entre 158 a 200 óbitos durante a vigência da Pandemia, a depender da adesão da população às medidas de distanciamento social.



Fonte: Subsecretaria de Planejamento em Saúde – SESAP 10.3

O gráfico acima apresenta a quantidade de óbitos por semana a depender do número reprodutivo básico. Em um cenário de boa adesão ao distanciamento social, o município assistiria a um achatamento da curva, com um ápice de aproximadamente 15 óbitos por semana entre as semanas 27 a 29 (Ro = 1,47). Já em um cenário de abandono das medidas de distanciamento social, seria vivenciado uma intensa aceleração no número de óbitos por semana, atingindo-se picos entre 39 a 52 óbitos por semana respectivamente nas semanas 24 e 23, considerando números reprodutivos de 1,96 e 2,24.



Fonte: Subsecretaria de Planejamento em Saúde – SESAP 10.3

O gráfico acima apresenta as curvas de óbitos acumulados para os números reprodutivos selecionados.

Outro importante aspecto a se destacar é o efeito da capacidade diagnóstica sobre os indicadores de mortalidade. A capacidade de diagnosticar óbitos por COVID19, entre os países, impacta nos valores oficiais de razão de mortalidade específica (n°. óbitos por COVID19/população) e letalidade (n°. óbitos por COVID19/infectados por COVID19 na população) do agente etiológico da Pandemia.

Se a razão de mortalidade específica por COVID19 pode ser subdimensionada pela capacidade de corretamente identificar os óbitos pela doença, fato é que óbitos são mais dificilmente subnotificados do que doentes. Desta maneira, de forma muito mais marcante é afetada a Letalidade, posto que tanto o numerador (óbitos), quanto o denominador (infectados), são influenciados pela capacidade diagnóstica dos países, acarretando um potencial hiperdimensionamento da letalidade. A tabela abaixo apresenta a razão de mortalidade específica e letalidade da doença a partir das informações oficiais.

Entes Federativos	Óbitos	Razão de Mortalidade Específica por COVID 19 (/100.000)	Letalidade (%)
Estados Unidos	54.265	16	5,6%
Espanha	22.902	49	10,2%
Itália	26.384	44	13,5%
França	22.614	34	14,0%
Alemanha	5.880	7	3,8%
Reino Unido	20.319	30	13,7%
Turquia	2.706	3	2,5%
Irã	5.710	7	6,3%
China	4.632	0	5,6%
Rússia	747	1	0,9%
Brasil	4.205	2	6,8%
São Paulo	1.700	4	8,2%
Praia Grande-SP	31	10	6,6%

Fonte: TCU 2019 e Boletim Epidemiológico COE-COVID19 n° 14.

O hiperdimensionamento da letalidade pode ser facilmente percebido ao se substituir o número de notificações oficiais pela prevalência encontrada de doentes na população de Praia Grande, a partir do resultado da pesquisa EPICOBS, reduzindo-se a letalidade da doença de 6,6%

para apenas 1,2%, quando considerados os números oficiais de óbito, ou seja, uma letalidade parecida com a de outros agentes virais causadores de síndromes respiratórias agudas graves.

Frente a realidade analisada para as competências maio e junho, faz-se necessário que o município operacionalize em definitivo os hospitais de campanha planejados e busque complementar o número de leitos – com a mobilização da capacidade instalada disponível da Saúde Suplementar e dos demais Entes Federativos Estadual e Federal – durante o pico da curva de incidência de casos graves e críticos. Da mesma forma, cautelas semelhantes deverão ser adotadas em relação a gestão mortuária.

Acreditando ter ofertado elementos de fundamentação técnicas às próximas etapas a serem enfrentadas, reitero saudações e me prontifico a prestar informações complementares.

Atenciosamente,

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(RFG)

Referências Bibliográficas:

Cascella M, Rajnik M, Cuomo A, et al. Features, Evaluation and Treatment Coronavirus (COVID-19) [Updated 2020 Apr 6]. In: StatPearls [Internet]. Treasure Island (FL): ***StatPearls Publishing***; 2020 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554776/

Du Z, Wang L, Chauchemez S, Xu X, Wang X, Cowling BJ, et al. Risk for transportation of 2019 novel coronavirus disease from Wuhan to other cities in China. ***Emerg Infect Dis***. 2020 May [cited 2020 Mai 04]. https://doi.org/10.3201/eid2605.200146

Geleris, J.; Sun, Y.; Platt, J.; Zucker, J. et al. Observational Study of Hydroxychloroquine in Hospitalized Patients with Covid-19. ***New England Journal of Medicine***, 2020.

Imperial College COVID-19 Response Team. Report 21: Estimating COVID-19 cases and reproduction number in Brazil [relatório na internet]. Londres; 2020 [acesso em 4 mai 2020]. Disponível em: https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-21-brazil/

Zhao, S.; Lin, Q.; Ran, J.; Musa, S. S. et al. Preliminary estimation of the basic reproduction number of novel coronavirus (2019-nCoV) in China, from 2019 to 2020: A data-driven analysis in the early phase of the outbreak. ***International Journal of Infectious Diseases***, 92, p. 214-217, 2020/03/01/ 2020.

ANEXO I

(MEMO nº. 017/2020/SESAP 10.3)

NCBI Bookshelf. A service of the National Library of Medicine, National Institutes of Health.

StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-.

Features, Evaluation and Treatment Coronavirus (COVID-19)

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Introduction

According to the World Health Organization (WHO), viral diseases continue to emerge and represent a serious issue to public health. In the last twenty years, several viral epidemics such as the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002 to 2003, and H1N1 influenza in 2009, have been recorded. Most recently, the Middle East respiratory syndrome coronavirus (MERS-CoV) was first identified in Saudi Arabia in 2012.

In a timeline that reaches the present day, an epidemic of cases with unexplained low respiratory infections detected in Wuhan, the largest metropolitan area in China's Hubei province, was first reported to the WHO Country Office in China, on December 31, 2019. Published literature can trace the beginning of symptomatic individuals back to the beginning of December 2019. As they were unable to identify the causative agent, these first cases were classified as "pneumonia of unknown etiology." The Chinese Center for Disease Control and Prevention (CDC) and local CDCs organized an intensive outbreak investigation program. The etiology of this illness is now attributed to a novel virus belonging to the coronavirus (CoV) family.

On February 11, 2020, the WHO Director-General, Dr. Tedros Adhanom Ghebreyesus, announced that the disease caused by this new CoV was a "COVID-19," which is the acronym of "coronavirus disease 2019". In the past twenty years, two additional coronavirus epidemics have occurred. SARS-CoV provoked a large-scale epidemic beginning in China and involving two dozen countries with approximately 8000 cases and 800 deaths, and the MERS-CoV that began in Saudi Arabia and has approximately 2,500 cases and 800 deaths and still causes as sporadic cases.

This new virus seems to be very contagious and has quickly spread globally. In a meeting on January 30, 2020, per the International Health Regulations (IHR, 2005), the outbreak was declared by the WHO a Public Health Emergency of International Concern (PHEIC) as it had spread to 18 countries with four countries reporting human-to-human transmission. An additional landmark occurred on February 26, 2020, as the first case of the disease, not imported from China, was recorded in the United States.

Initially, the new virus was called 2019-nCoV. Subsequently, the task of experts of the International Committee on Taxonomy of Viruses (ICTV) termed it the SARS-CoV-2 virus as it is very similar to the one that caused the SARS outbreak (SARS-CoVs).

The CoVs have become the major pathogens of emerging respiratory disease outbreaks. They are a large family of single-stranded RNA viruses (+ssRNA) that can be isolated in different animal species.[1] For reasons yet to be explained, these viruses can cross species barriers and can cause, in humans, illness ranging from the common cold to more severe diseases such as MERS and SARS. Interestingly, these latter viruses have probably originated from bats and then moving into other mammalian hosts — the Himalayan palm civet for SARS-CoV, and the dromedary camel for MERS-CoV — before jumping to humans. The dynamics of SARS-Cov-2 are currently unknown, but there is speculation that it also has an animal origin.

The potential for these viruses to grow to become a pandemic worldwide seems to be a serious public health risk. Concerning COVID-19, the WHO raised the threat to the CoV epidemic to the "very high" level, on February 28, 2020. Probably, the effects of the epidemic caused by the new CoV has yet to emerge as the situation is quickly evolving. On March 11, as the number of COVID-19 cases outside China has increased 13 times and the number of countries involved has tripled with more than 118,000 cases in 114 countries and over 4,000 deaths, WHO declared the COVID-19 a pandemic.

World governments are at work to establish countermeasures to stem possible devastating effects. Health organizations coordinate information flows and issues directives and guidelines to best mitigate the impact of the threat. At the same time, scientists around the world work tirelessly, and information about the transmission mechanisms, the clinical spectrum of disease, new diagnostics, and prevention and therapeutic strategies are rapidly developing. Many uncertainties remain with regard to both the virus-host interaction and the evolution of the epidemic, with specific reference to the times when the epidemic will reach its peak.

At the moment, the therapeutic strategies to deal with the infection are only supportive, and prevention aimed at reducing transmission in the community is our best weapon. Aggressive isolation measures in China have led to a progressive reduction of cases in the last few days. In Italy, in geographic regions of the north, initially, and subsequently throughout the peninsula, political and health authorities are making incredible efforts to contain a shock wave that is severely testing the health system.

In the midst of the crisis, the authors have chosen to use the "Statpearls" platform because, within the PubMed scenario, it represents a unique tool that may allow them to make updates in real-time. The aim, therefore, is to collect information and scientific evidence and to provide an overview of the topic that will be continuously updated.

Etiology

CoVs are positive-stranded RNA viruses with a crown-like appearance under an electron microscope (*corona* is the Latin term for crown) due to the presence of spike glycoproteins on the envelope. The subfamily *Orthocoronavirinae* of the *Coronaviridae* family (order *Nidovirales*) classifies into four genera of CoVs: Alphacoronavirus (alphaCoV), Betacoronavirus (betaCoV), Deltacoronavirus (deltaCoV), and Gammacoronavirus (gammaCoV). Furthermore, the betaCoV genus divides into five sub-genera or lineages.[2] Genomic characterization has shown that probably bats and rodents are the gene sources of alphaCoVs and betaCoVs. On the contrary, avian species seem to represent the gene sources of deltaCoVs and gammaCoVs.

Members of this large family of viruses can cause respiratory, enteric, hepatic, and neurological diseases in different animal species, including camels, cattle, cats, and bats. To date, seven human CoVs (HCoVs) — capable of infecting humans — have been identified. Some of HCoVs were identified in the mid-1960s, while others were only detected in the new millennium.

In general, estimates suggest that 2% of the population are healthy carriers of a CoV and that these viruses are responsible for about 5% to 10% of acute respiratory infections.[3]

- Common human CoVs: HCoV-OC43, and HCoV-HKU1 (betaCoVs of the A lineage); HCoV-229E, and HCoV-NL63 (alphaCoVs). They can cause common colds and self-limiting upper respiratory infections in immunocompetent individuals. In immunocompromised subjects and the elderly, lower respiratory tract infections can occur.
- Other human CoVs: SARS-CoV, SARS-CoV-2, and MERS-CoV (betaCoVs of the B and C lineage, respectively). These cause epidemics with variable clinical severity featuring respiratory and extra-respiratory manifestations. Concerning SARS-CoV, MERS-CoV, the mortality rates are up to 10% and 35%, respectively.

Thus, SARS-CoV-2 belongs to the betaCoVs category. It has round or elliptic and often pleomorphic form, and a diameter of approximately 60–140 nm. Like other CoVs, it is sensitive to ultraviolet rays and heat. Furthermore, these viruses can be effectively inactivated by lipid solvents including ether (75%), ethanol, chlorine-containing disinfectant, peroxyacetic acid and chloroform except for chlorhexidine.

In genetic terms, Chan et al. have proven that the genome of the new HCoV, isolated from a cluster-patient with atypical pneumonia after visiting Wuhan, had 89% nucleotide identity with bat SARS-like-CoVZXC21 and 82% with that of human SARS-CoV[4]. For this reason, the new virus was called SARS-CoV-2. Its single-stranded RNA genome contains 29891 nucleotides, encoding for 9860 amino acids. Although its origins are not entirely understood, these genomic analyses suggest that SARS-CoV-2 probably evolved from a strain found in bats. The potential amplifying

mammalian host, intermediate between bats and humans, is, however, not known. Since the mutation in the original strain could have directly triggered virulence towards humans, it is not certain that this intermediary exists.

Transmission

Because the first cases of the CoVID-19 disease were linked to direct exposure to the Huanan Seafood Wholesale Market of Wuhan, the animal-to-human transmission was presumed as the main mechanism. Nevertheless, subsequent cases were not associated with this exposure mechanism. Therefore, it was concluded that the virus could also be transmitted from human-to-human, and symptomatic people are the most frequent source of COVID-19 spread. The possibility of transmission before symptoms develop seems to be infrequent, although it cannot be excluded. Moreover, there are suggestions that individuals who remain asymptomatic could transmit the virus. This data suggests that the use of isolation is the best way to contain this epidemic.

As with other respiratory pathogens, including flu and rhinovirus, the transmission is believed to occur through respiratory droplets from coughing and sneezing. Aerosol transmission is also possible in case of protracted exposure to elevated aerosol concentrations in closed spaces. Analysis of data related to the spread of SARS-CoV-2 in China seems to indicate that close contact between individuals is necessary. The spread, in fact, is primarily limited to family members, healthcare professionals, and other close contacts.

Based on data from the first cases in Wuhan and investigations conducted by the China CDC and local CDCs, the incubation time could be generally within 3 to 7 days and up to 2 weeks as the longest time from infection to symptoms was 12.5 days (95% CI, 9.2 to 18).[5] This data also showed that this novel epidemic doubled about every seven days, whereas the basic reproduction number (R0 - R naught) is 2.2. In other words, on average, each patient transmits the infection to an additional 2.2 individuals. Of note, estimations of the R0 of the SARS-CoV epidemic in 2002-2003 were approximately 3.[6]

It must be emphasized that this information is the result of the first reports. Thus, further studies are needed to understand the mechanisms of transmission, the incubation times and the clinical course, and the duration of infectivity.

Epidemiology

Data provided by the WHO Health Emergency Dashboard (March 14, 06.00 am CET) report 142.320 confirmed cases worldwide since the beginning of the epidemic. 5.388 (3.78%) cases have been fatal.

In china, 81.021 (57%) cases confirmed clinically and in the laboratory, and 3.173 deaths are reported. In addition to China, there are 61.299 confirmed cases in 129 other countries. The countries with most cases are Italy (17.660) and the Islamic Republic of Iran (11.364). The epidemiological scenario, therefore, has drastically changed, as on March 3 about 92% (79.968) of the confirmed cases were recorded in China, where almost all the deaths were also recorded (2,873, 96.5%). Of note, the "confirmed" cases reported between February 13, 2020, and February 19, 2020, include both laboratory-confirmed and clinically diagnosed patients from the Hubei province.

The most up-to-date source for the epidemiology of this emerging pandemic can be found at the following sources:

- The WHO Novel Coronavirus (COVID-19) Situation Board
- The Johns Hopkins Center for Systems Science and Engineering site for Coronavirus Global Cases COVID-19, which uses openly public sources to track the spread of the epidemic.

Pathophysiology

CoVs are enveloped, positive-stranded RNA viruses with nucleocapsid. For addressing pathogenetic mechanisms of SARS-CoV-2, its viral structure, and genome must be considerations. In CoVs, the genomic structure is organized in a +ssRNA of approximately 30 kb in length — the largest known RNA viruses — and with a 5'-cap structure and 3'-poly-A tail. Starting from the viral RNA, the synthesis of polyprotein 1a/1ab (pp1a/pp1ab) in the host is realized. The transcription works through the replication-transcription complex (RCT) organized in double-membrane vesicles and via the synthesis of subgenomic RNAs (sgRNAs) sequences. Of note, transcription termination occurs at transcription regulatory sequences, located between the so-called open reading frames (ORFs) that work as templates for the production of subgenomic mRNAs. In the atypical CoV genome, at least six ORFs can be present. Among these, a frameshift between ORF1a and ORF1b guides the production of both pp1a and pp1ab polypeptides that are processed by virally encoded chymotrypsin-like protease (3CLpro) or main protease (Mpro), as well as one or two papain-like proteases for producing 16 non-structural proteins (nsps). Apart from ORF1a and ORF1b, other ORFs encode for structural proteins, including spike, membrane, envelope, and nucleocapsid proteins.[1] and accessory protein chains. Different CoVs present special structural and accessory proteins translated by dedicated sgRNAs.

Pathophysiology and virulence mechanisms of CoVs, and therefore also of SARS-CoV-2 have links to the function of the nsps and structural proteins. For instance, research underlined that nsp is able to block the host innate immune response.[7] Among functions of structural proteins, the envelope has a crucial role in virus pathogenicity as it promotes viral assembly and release. However, many of these features (e.g., those of nsp 2, and 11) have not yet been described.

Among the structural elements of CoVs, there are the spike glycoproteins composed of two subunits (S1 and S2). Homotrimers of S proteins compose the spikes on the viral surface, guiding the link to host receptors.[8] Of note, in SARS-CoV-2, the S2 subunit — containing a fusion peptide, a transmembrane domain, and cytoplasmic domain — is highly conserved. Thus, it could be a target for antiviral (anti-S2) compounds. On the contrary, the spike receptor-binding domain presents only a 40% amino acid identity with other SARS-CoVs. Other structural elements on which research must necessarily focus are the ORF3b that has no homology with that of SARS-CoVs and a secreted protein (encoded by ORF8), which is structurally different from those of SARS-CoV.

In international gene banks such as GenBank, researchers have published several Sars-CoV-2 gene sequences. This gene mapping is of fundamental importance allowing researchers to trace the phylogenetic tree of the virus and, above all, the recognition of strains that differ according to the mutations. According to recent research, a spike mutation, which probably occurred in late November 2019, triggered jumping to humans. In particular, Angeletti et al. compared the Sars-Cov-2 gene sequence with that of Sars-CoV. They analyzed the transmembrane helical segments in the ORF1ab encoded 2 (nsp2) and nsp3 and found that position 723 presents a serine instead of a glycine residue, while the position 1010 is occupied by proline instead of isoleucine.[9] The matter of viral mutations is key for explaining potential disease relapses.

Research will be needed to determine the structural characteristics of SARS-COV-2 that underlie the pathogenetic mechanisms. Compared to SARS, for example, initial clinical data show less extra respiratory involvement, although due to the lack of extensive data, it is not possible to draw definitive clinical information.

The pathogenic mechanism that produces pneumonia seems to be particularly complex. Clinical and preclinical research will have to explain many aspects that underlie the particular clinical presentations of the disease. The data so far available seem to indicate that the viral infection is capable of producing an excessive immune reaction in the host. In some cases, a reaction takes place which as a whole is labeled a 'cytokine storm'. The effect is extensive tissue damage. The protagonist of this storm is interleukin 6 (IL-6). IL-6 is produced by activated leukocytes and acts on a large number of cells and tissues. It is able to promote the differentiation of B lymphocytes, promotes the growth of some categories of cells, and inhibits the growth of others. It also stimulates the production of acute phase proteins and plays an important role in thermoregulation, in bone maintenance and in the functionality of the central nervous system. Although the main role played by IL-6 is pro-inflammatory, it can also have anti-inflammatory effects. In turn, IL-6 increases during inflammatory diseases, infections, autoimmune disorders, cardiovascular diseases and some types of cancer. It is also implicated into the pathogenesis of the cytokine release syndrome (CRS) that is an acute systemic inflammatory syndrome characterized by fever and multiple organ dysfunction.

Histopathology

Tian et al.[10] and others reported histopathological data obtained on the lungs of two patients who underwent lung lobectomies for adenocarcinoma and retrospectively found to have had the infection at the time of surgery. Apart from the tumors, the lungs of both 'accidental'

cases showed edema and important proteinaceous exudates as large protein globules. The authors also reported vascular congestion combined with inflammatory clusters of fibrinoid material and multinucleated giant cells and hyperplasia of pneumocytes.

History and Physical

The clinical spectrum of COVID-19 varies from asymptomatic or paucisymptomatic forms to clinical conditions characterized by respiratory failure that necessitates mechanical ventilation and support in an intensive care unit (ICU), to multiorgan and systemic manifestations in terms of sepsis, septic shock, and multiple organ dysfunction syndromes (MODS). In one of the first reports on the disease, Huang et al. illustrated that patients (n. 41) suffered from fever, malaise, dry cough, and dyspnea. Chest computerized tomography (CT) scans showed pneumonia with abnormal findings in all cases. About a third of those (13, 32%) required ICU care, and there were 6 (15%) fatal cases.[11]

The case studies of Li et al. published in the New England Journal of Medicine (NEJM) on January 29, 2020, encapsulates the first 425 cases recorded in Wuhan.[5] Data indicate that the patients' median age was 59 years, with a range of 15 to 89 years. Thus, they reported no clinical cases in children below 15 years of age. There were no significant gender differences (56% male). Clinical and epidemiological data from the Chinese CDC and regarding 72,314 case records (confirmed, suspected, diagnosed, and asymptomatic cases) were shared in the Journal of the American Medical Association (JAMA) (February 24, 2020), providing an important illustration of the epidemiologic curve of the Chinese outbreak. [12] There were 62% confirmed cases, including 1% of cases that were asymptomatic, but were laboratory-positive (viral nucleic acid test). Furthermore, the overall case-fatality rate (on confirmed cases) was 2.3%. Of note, the fatal cases were primarily elderly patients, in particular those aged ≥ 80 years (about 15%), and 70 to 79 years (8.0%). Approximately half (49.0%) of the critical patients and affected by preexisting comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, and oncological diseases, died. While 1% of patients were aged 9 years or younger, no fatal cases occurred in this group.

The authors of the Chinese CDC report divided the clinical manifestations of the disease by there severity:

- Mild disease: non-pneumonia and mild pneumonia; this occurred in 81% of cases.
- Severe disease: dyspnea, respiratory frequency ≥ 30/min, blood oxygen saturation (SpO2) ≤ 93%, PaO2/FiO2 ratio or P/F [the ratio between the blood pressure of the oxygen (partial pressure of oxygen, PaO2) and the percentage of oxygen supplied (fraction of inspired oxygen, FiO2)] < 300, and/or lung infiltrates > 50% within 24 to 48 hours; this occurred in 14% of cases.
- Critical disease: respiratory failure, septic shock, and/or multiple organ dysfunction (MOD) or failure (MOF); this occurred in 5% of cases. [12]

Data obtainable from reports and directives provided by health policy agencies, allow dividing the clinical manifestations of the disease according to the severity of the clinical pictures. The COVID-19 may present with mild, moderate, or severe illness. Among the severe clinical manifestations, there are severe pneumonia, ARDS, sepsis, and septic shock. The clinical course of the disease seems to predict a favorable trend in the majority of patients. In a percentage still to be defined of cases, after about a week there is a sudden worsening of clinical conditions with rapidly worsening respiratory failure and MOD/MOF. As a reference, the criteria of the severity of respiratory insufficiency and the diagnostic criteria of sepsis and septic shock can be used.[13]

Uncomplicated (mild) Illness

These patients usually present with symptoms of an upper respiratory tract viral infection, including mild fever, cough (dry), sore throat, nasal congestion, malaise, headache, muscle pain, or malaise. Signs and symptoms of a more serious disease, such as dyspnea, are not present. Compared to previous HCoV infections, non-respiratory symptoms such as diarrhea are challenging to find.

Moderate Pneumonia

Respiratory symptoms such as cough and shortness of breath (or tachypnea in children) are present without signs of severe pneumonia.

Severe Pneumonia

Fever is associated with severe dyspnea, respiratory distress, tachypnea (> 30 breaths/min), and hypoxia (SpO2 < 90% on room air). However, the fever symptom must be interpreted carefully as even in severe forms of the disease, it can be moderate or even absent. Cyanosis can occur in children. In this definition, the diagnosis is clinical, and radiologic imaging is used for excluding complications.

Acute Respiratory Distress Syndrome (ARDS)

The diagnosis requires clinical and ventilatory criteria. This syndrome is suggestive of a serious new-onset respiratory failure or for worsening of an already identified respiratory picture. Different forms of ARDS are distinguished based on the degree of hypoxia. The reference parameter is the PaO2/FiO2:

- Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg. In not-ventilated patients or in those managed through non-invasive ventilation (NIV) by using positive end-expiratorypressure (PEEP) or a continuous positive airway pressure (CPAP) ≥ 5 cmH2O.
- Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤ 200 mmHg.
- Severe ARDS: PaO2/FiO2 ≤ 100 mmHg.

When PaO2 is not available, a ratio SpO2/FiO2 ≤ 315 is suggestive of ARDS.

Chest imaging utilized includes chest radiograph, CT scan, or lung ultrasound demonstrating bilateral opacities (lung infiltrates > 50%), not fully explained by effusions, lobar, or lung collapse. Although in some cases, the clinical scenario and ventilator data could be suggestive for pulmonary edema, the primary respiratory origin of the edema is proven after the exclusion of cardiac failure or other causes such as fluid overload. Echocardiography can be helpful for this purpose.

Sepsis

According to the International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3), sepsis represents a life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction.[14] The clinical pictures of patients with COVID-19 and with sepsis are particularly serious, characterized by a wide range of signs and symptoms of multiorgan involvement. These signs and symptoms include respiratory manifestations such as severe dyspnea and hypoxemia, renal impairment with reduced urine output, tachycardia, altered mental status, and functional alterations of organs expressed as laboratory data of hyperbilirubinemia, acidosis, high lactate, coagulopathy, and thrombocytopenia. The reference for the evaluation of multiorgan damage and the related prognostic significance is the Sequential Organ Failure Assessment (SOFA) score, which predicts ICU mortality based on lab results and clinical data.[15] A pediatric version of the score has also received validation.[16]**Septic Shock**

In this scenario, which is associated with increased mortality, circulatory, and cellular/metabolic abnormalities such as serum lactate level greater than 2 mmol/L (18 mg/dL) are present. Because patients usually suffer from persisting hypotension despite volume resuscitation, the administration of vasopressors is required to maintain a mean arterial pressure (MAP) ≥ 65 mmHg.

THE PECULIAR HISTORY OF THIS NEW DISEASE In some patients, the clinical history of this disease occurs with particular characteristics. It foresees that the patient manifests above all fever, which is not very responsive to antipyretics, and a state of malaise. A dry cough is often associated. After 5-7 days, older patients with already impaired lung function begin to experience shortness of breath and increased respiratory rate. In more fragile patients, however, dyspnea may already appear at the onset of symptoms. On the other hand, in younger subjects and in those who do not have basic respiratory impairments or other comorbidities, dyspnea may appear later. In these patients experiencing worsening inflammatory-induced lung injury, there is a decrease in oxygen saturation (<93%). This seems to be the crucial phase of the disease, from this point onwards, there may be a rapid deterioration of respiratory functions. The scenario is truly incredible because for patients who are paucisymptomatic and slightly hypoxic, the first therapeutic approach is oxygen therapy. Although this strategy is effective, worsening of

respiratory failure may occur in some patients. With the drive preserved, the next step, according to logic, is the NIV. This therapy has a rapid success by increasing the P/F. In some patients, however, there is a sudden, unexpected worsening of clinical conditions. Patients collapse under the operator's eyes and require rapid intubation and invasive mechanical ventilation. However, after 24-48 hours the patient can have a rapid improvement with an increase in P/F. Operators are therefore tempted to proceed with weaning. But very often, after an initial success there is a new worsening of respiratory conditions, such as to require a new invasive therapy. Therefore, mechanical ventilation has also been suggested for 1-2 weeks.

THE MESSAGE FOR THOSE WHO TREAT THESE PATIENTS IS THEREFORE TO FOLLOW THE CLINICAL PERFORMANCE FOCUSING ESPECIALLY ON THE VALUES OF THE SATURIMETRY, RATHER THAN CONSIDERING THE TYPICAL P/F VALUES SUGGESTIVE OF ARDS.

Evaluation

Most countries are utilizing some type of clinical and epidemiologic information to determine who should have testing performed. In the United States, criteria have been developed for persons under investigation (PUI) for COVID-19. According to the U.S. CDC, most patients with confirmed COVID-19 have developed fever and/or symptoms of acute respiratory illness (e.g., cough, difficulty breathing). If a person is a PUI, it is recommended that practitioners immediately put in place infection control and prevention measures. Initially, they recommend testing for all other sources of respiratory infection. Additionally, they recommend using epidemiologic factors to assist in decision making. There are epidemiologic factors that assist in the decision on who to test. This includes anyone who has had close contact with a patient with laboratory-confirmed COVID-19 within 14 days of symptom onset or a history of travel from affected geographic areas (presently China, Italy, Iran, Japan, and South Korea) within 14 days of symptom onset.

The WHO recommends collecting specimens from both the upper respiratory tract (naso- and oropharyngeal samples) and lower respiratory tract such as expectorated sputum, endotracheal aspirate, or bronchoalveolar lavage. The collection of BAL samples should only be performed in mechanically ventilated patients as lower respiratory tract samples seem to remain positive for a more extended period. The samples require storage at four degrees celsius. In the laboratory, amplification of the genetic material extracted from the saliva or mucus sample is through a reverse polymerase chain reaction (RT-PCR), which involves the synthesis of a double-stranded DNA molecule from an RNA mold. Once the genetic material is sufficient, the search is for those portions of the genetic code of the CoV that are conserved. The probes used are based on the initial gene sequence released by the Shanghai Public Health Clinical Center & School of Public Health, Fudan University, Shanghai, China on Virological.org, and subsequent confirmatory evaluation by additional labs. If the test result is positive, it is recommended that the test is repeated for verification. In patients with confirmed COVID-19 diagnosis, the laboratory evaluation should be repeated to evaluate for viral clearance prior to being released from observation.

The availability of testing will vary based on which country a person lives in with increasing availability occurring nearly daily.

Concerning laboratory examinations, in the early stage of the disease, a normal or decreased total white blood cell count and a decreased lymphocyte count can be demonstrated. Lymphopenia appears to be a negative prognostic factor. Increased values of liver enzymes, LDH, muscle enzymes, and C-reactive protein can be found. There is a normal procalcitonin value. In critical patients, D-dimer value is increased, blood lymphocytes decreased persistently, and laboratory alterations of multiorgan imbalance (high amylase, coagulation disorders, etc.) are found.

Treatment / Management

There is no specific antiviral treatment recommended for COVID-19, and no vaccine is currently available. The treatment is symptomatic, and oxygen therapy represents the major treatment intervention for patients with severe infection. Mechanical ventilation may be necessary in cases of respiratory failure refractory to oxygen therapy, whereas hemodynamic support is essential for managing septic shock.

On January 28, 2020, the WHO released a document summarizing WHO guidelines and scientific evidence derived from the treatment of previous epidemics from HCoVs. This document addresses measures for recognizing and sorting patients with severe acute respiratory disease; strategies for infection prevention and control; early supportive therapy and monitoring; a guideline for laboratory diagnosis; management of respiratory failure and ARDS; management of septic shock; prevention of complications; treatments; and considerations for pregnant patients.

Among these recommendations, we report the strategies for addressing respiratory failure, including protective mechanical ventilation and high-flow nasal oxygen (HFNO) or non-invasive ventilation (NIV).

Intubation and protective mechanical ventilation

Special precautions are necessary during intubation. The procedure should be executed by an expert operator who uses personal protective equipment (PPE) such as FFP3 or N95 mask, protective goggles, disposable gown long sleeve raincoat, disposable double socks, and gloves. If possible, rapid sequence intubation (RSI) should be performed. Preoxygenation (100% O2 for 5 minutes) should be performed via the continuous positive airway pressure (CPAP) method. Heat and moisture exchanger (HME) must be positioned between the mask and the circuit of the fan or between the mask and the ventilation balloon.

Mechanical ventilation should be with lower tidal volumes (4 to 6 ml/kg predicted body weight, PBW) and lower inspiratory pressures, reaching a plateau pressure (Pplat) < 28 to 30 cm H2O. PEEP must be as high as possible to maintain the driving pressure (Pplat-PEEP) as low as possible (< 14 cmH2O). Moreover, disconnections from the ventilator must be avoided for preventing loss of PEEP and atelectasis. Finally, the use of paralytics is not recommended unless PaO2/FiO2 < 150 mmHg. The prone ventilation for > 12 hours per day, and the use of a conservative fluid management strategy for ARDS patients without tissue hypoperfusion (strong recommendation) are emphasized.

Non-invasive ventilation

Concerning HFNO or non-invasive ventilation (NIV), the experts' panel, points out that these approaches performed by systems with good interface fitting do not create widespread dispersion of exhaled air, and their use can be considered at low risk of airborne transmission.[17] Practically, non-invasive techniques can be used in non-severe forms of respiratory failure. However, if the scenario does not improve or even worsen within a short period of time (1–2 hours) the mechanical ventilation must be preferred.

Other therapies

Among other therapeutic strategies, systemic corticosteroids for the treatment of viral pneumonia or acute respiratory distress syndrome (ARDS) are not recommended. Moreover, unselective or inappropriate administration of antibiotics should be avoided, although some centers recommend it. Although no antiviral treatments have been approved, several approaches have been proposed such as lopinavir/ritonavir (400/100 mg every 12 hours), chloroquine (500 mg every 12 hours), and hydroxychloroquine (200 mg every 12 hours). Alpha-interferon (e.g., 5 million units by aerosol inhalation twice per day) is also used.

Preclinical studies suggested that remdesivir (GS5734) — an inhibitor of RNA polymerase with in vitro activity against multiple RNA viruses, including Ebola — could be effective for both prophylaxis and therapy of HCoVs infections.[18] This drug was positively tested in a rhesus macaque model of MERS-CoV infection.[19]

In Italy, a great investigation led by the Istituto Nazionale Tumori, Fondazione Pascale di Napoli is focused on the use of tollicizumab. It is a humanized IgG1 monoclonal antibody, directed against the IL-6 receptor and commonly used in the treatment of rheumatoid arthritis.

When the disease results in complex clinical pictures of MOD, organ function support in addition to respiratory support, is mandatory. Extracorporeal membrane oxygenation (ECMO) for patients with refractory hypoxemia despite lung-protective ventilation should merit consideration after a case-by-case analysis. It can be suggested for those with poor results to prone position ventilation.

Prevention

Preventive measures are the current strategy to limit the spread of cases. Because an epidemic will increase as long as R0 is greater than 1 (COVID-19 is 2.2), control measures must focus on reducing the value to less than 1.

Preventive strategies are focused on the isolation of patients and careful infection control, including appropriate measures to be adopted during the diagnosis and the provision of clinical care to an infected patient. For instance, droplet, contact, and airborne precautions should be adopted during specimen collection, and sputum induction should be avoided.

The WHO and other organizations have issued the following general recommendations:

- Avoid close contact with subjects suffering from acute respiratory infections.
- Wash your hands frequently, especially after contact with infected people or their environment.
- Avoid unprotected contact with farm or wild animals.
- People with symptoms of acute airway infection should keep their distance, cover coughs or sneezes with disposable tissues or clothes and wash their hands.
- Strengthen, in particular, in emergency medicine departments, the application of strict hygiene measures for the prevention and control of infections.
- Individuals that are immunocompromised should avoid public gatherings.

The most important strategy for the populous to undertake is to frequently wash their hands and use portable hand sanitizer and avoid contact with their face and mouth after interacting with a possibly contaminated environment.

Healthcare workers caring for infected individuals should utilize contact and airborne precautions to include PPE such as N95 or FFP3 masks, eye protection, gowns, and gloves to prevent transmission of the pathogen.

Meanwhile, scientific research is growing to develop a coronavirus vaccine. In recent days, China has announced the first animal tests, and researchers from the University of Queensland in Australia have also announced that, after completing the three-week in vitro study, they are moving on to animal testing. Furthermore, in the U.S., the National Institute for Allergy and Infectious Diseases (NIAID) has announced that a phase 1 trial has begun for a novel coronavirus immunization in Washington state.

Differential Diagnosis

The symptoms of the early stages of the disease are nonspecific. Differential diagnosis should include the possibility of a wide range of infectious and non-infectious (e.g., vasculitis, dermatomyositis) common respiratory disorders.

- Adenovirus
- Influenza
- Human metapneumovirus (HmPV)
- Parainfluenza
- Respiratory syncytial virus (RSV)
- Rhinovirus (common cold)

For suspected cases, rapid antigen detection, and other investigations should be adopted for evaluating common respiratory pathogens and non-infectious conditions.

Pertinent Studies and Ongoing Trials

Multiple studies globally are investigating the use of remdesivir, a broad-spectrum antiviral.

Prognosis

Preliminary data suggests the reported death rate ranges from 1% to 2% depending on the study and country. The majority of the fatalities have occurred in patients over 50 years of age. Young children appear to be mildly infected but may serve as a vector for additional transmission.

Complications

Long term complications among survivors of infection with SARS-CoV-2 having clinically significant COVID-19 disease are not yet available. The mortality rates for cases globally remain between 1% to 2%.

Deterrence and Patient Education

Patients and families should receive instruction to:

- Avoid close contact with subjects suffering from acute respiratory infections.
- Wash their hands frequently, especially after contact with sick people or their environment.
- Avoid unprotected contact with farm or wild animals.
- People with symptoms of acute airway infection should keep their distance, cover coughs or sneezes with disposable tissues or clothes and wash their hands.
- Immunocompromised patients should avoid public exposure and public gatherings. If an immunocompromised individual must be in a closed space with multiple individuals present, such as a meeting in a small room; masks, gloves, and personal hygiene with antiseptic soap should be undertaken by those in close contact with the individual. In addition, prior room cleaning with antiseptic agents should be undertaken and performed before exposure. However, considering the danger involved to these individuals, exposure should be avoided unless a meeting, group event, etc. is a true emergency.
- Strict personal hygiene measures are necessary for the prevention and control of this infection.

Pearls and Other Issues

The following pearls have been provided by health professionals in Italy, the UK, and U.S. and are based on anecdotal experience.

- The positive end-expiratory pressure (PEEP) need not be kept high in the early phase, as it can be harmful. The disease is not an adult respiratory distress syndrome (ARDS) in the early phase of the illness.
- Early spontaneous ventilation after intensive care unit admission may be harmful and should be avoided.
- Microvascular thrombosis in the pulmonary circulation can lead to an increased dead space. Early pulmonary fibrosis following the disease has been reported from Italy. This could be oxygen-related or inflammation-related. Pulmonary thrombosis has been associated with wedge-shaped infarcts in the lungs on imaging, without the evidence of deep vein thrombosis.
- Proning of the patient is essential and should be done early. This should be done more than once a day. Keep a lower threshold for proning even if the usual threshold is a PaO2/FiO2 (PF ratio) of 13. The benefit of proning lasts less than 4 hours in the early phase, but as the disease advances into ARDS, the beneficial effects become long-lasting. Prone positioning should be followed by high flow nasal oxygen or non-invasive ventilation (preferably in the prone position), if the saturation is not maintained. There should be a low threshold for intubation if

NIV fails for more than an hour. To restrict the amount of oxygen consumption, NIV is preferred to high flow nasal oxygen. Humidified circuits should be used with appropriate filters.

- Many centers use inhaled nitric oxide and prostacyclin with good effect. Tachyphylaxis with nitric oxide is usually seen after 4-5 days.
- Maintain euvolemia. There is a high risk of acute kidney injury with hypovolemia.
- Extubation should be delayed more than usual, especially if the inflammatory markers are remaining high. Always perform a leak test before extubation.

Enhancing Healthcare Team Outcomes

Since the first outbreak of coronavirus (COVID-19) in Wuhan, China, the disease is spreading worldwide. Individuals at the extreme of ages and those that are immunocompromised are at the most significant risk. All health care workers should understand the presentation of the disease, workup, and supportive care. Further, health professionals should be aware of the precautions necessary to avoid the contraction and spread of the disease. [Level 5]

Questions

To access free multiple choice questions on this topic, click here.

Figure

Covid 19, Corona Replication. Contributed by Rohan Bir Singh, MD

Figure

Clinical Presentation of Patients with CoVID-19. Contributed by Rohan Bir Singh, MD; Made with Biorender.com

Figure

SARS- CoV 2 Structure. Contributed by Rohan Bir Singh, MD; Made with Biorender.com

Figure

Transmission Cycle of SARS CoV 2. Contributed by Rohan Bir Singh, MD; Made with Biorender.com

Figure

Single-stranded RNA genome of SARS-CoV2. Contributed by Rohan Bir Singh, MD; Made with Biorender.com

References

1. Perlman S, Netland J. Coronaviruses post-SARS: update on replication and pathogenesis. Nat. Rev. Microbiol. 2009 Jun;7(6):439-50. [PMC free article: PMC2830095] [PubMed: 19430490]
2. Chan JF, To KK, Tse H, Jin DY, Yuen KY. Interspecies transmission and emergence of novel viruses: lessons from bats and birds. Trends Microbiol. 2013 Oct;21(10):544-55. [PMC free article: PMC7126491] [PubMed: 23770275]
3. Chen Y, Liu Q, Guo D. Emerging coronaviruses: Genome structure, replication, and pathogenesis. J. Med. Virol. 2020 Apr;92(4):418-423. [PMC free article: PMC7167049] [PubMed: 31967327]
4. Chan JF, Kok KH, Zhu Z, Chu H, To KK, Yuan S, Yuen KY. Genomic characterization of the 2019 novel human-pathogenic coronavirus isolated from a patient with atypical pneumonia after visiting Wuhan. Emerg Microbes Infect. 2020;9(1):221-236. [PMC free article: PMC7067204] [PubMed: 31987001]
5. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, Ren R, Leung KSM, Lau EHY, Wong JY, Xing X, Xiang N, Wu Y, Li C, Chen Q, Li D, Liu T, Zhao J, Liu M, Tu W, Chen C, Jin L, Yang R, Wang Q, Zhou S, Wang R, Liu H, Luo Y, Liu Y, Shao G, Li H, Tao Z, Yang Y, Deng Z, Liu B, Ma Z, Zhang Y, Shi G, Lam TTY, Wu JT, Gao GF, Cowling BJ, Yang B, Leung GM, Feng Z. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. N. Engl. J. Med. 2020 Mar 26;382(13):1199-1207. [PMC free article: PMC7121484] [PubMed: 31995857]
6. Bauch CT, Lloyd-Smith JO, Coffee MP, Galvani AP. Dynamically modeling SARS and other newly emerging respiratory illnesses: past, present, and future. Epidemiology. 2005 Nov;16(6):791-801. [PubMed: 16222170]
7. Lei J, Kusov Y, Hilgenfeld R. Nsp3 of coronaviruses: Structures and functions of a large multi-domain protein. Antiviral Res. 2018 Jan;149:58-74. [PMC free article: PMC7113668] [PubMed: 29128390]
8. Song W, Gui M, Wang X, Xiang Y. Cryo-EM structure of the SARS coronavirus spike glycoprotein in complex with its host cell receptor ACE2. PLoS Pathog. 2018 Aug;14(8):e1007236. [PMC free article: PMC6107290] [PubMed: 30102747]
9. Angeletti S, Benvenuto D, Bianchi M, Giovanetti M, Pascarella S, Ciccozzi M. COVID-2019: The role of the nsp2 and nsp3 in its pathogenesis. J. Med. Virol. 2020 Feb 21; [PubMed: 32083328]
10. Tian S, Hu W, Niu L, Liu H, Xu H, Xiao SY. Pulmonary Pathology of Early-Phase 2019 Novel Coronavirus (COVID-19) Pneumonia in Two Patients With Lung Cancer. J Thorac Oncol. 2020 Feb 28; [PMC free article: PMC7128866] [PubMed: 32114094]
11. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z, Yu T, Xia J, Wei Y, Wu W, Xie X, Yin W, Li H, Liu M, Xiao Y, Gao H, Guo L, Xie J, Wang G, Jiang R, Gao Z, Jin Q, Wang J, Cao B. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020 Feb 15;395(10223):497-506. [PMC free article: PMC7159299] [PubMed: 31986264]
12. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. JAMA. 2020 Feb 24; [PubMed: 32091533]
13. Kogan A, Segel MJ, Ram E, Raanani E, Peled-Potashnik Y, Levin S, Sternik L. Acute Respiratory Distress Syndrome following Cardiac Surgery: Comparison of the American-European Consensus Conference Definition versus the Berlin Definition. Respiration. 2019;97(6):518-524. [PubMed: 30650409]
14. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, Bellomo R, Bernard GR, Chiche JD, Coopersmith CM, Hotchkiss RS, Levy MM, Marshall JC, Martin GS, Opal SM, Rubenfeld GD, van der Poll T, Vincent JL, Angus DC. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016 Feb 23;315(8):801-10. [PMC free article: PMC4968574] [PubMed: 26903338]
15. Seymour CW, Kennedy JN, Wang S, Chang CH, Elliott CF, Xu Z, Berry S, Clermont G, Cooper G, Gomez H, Huang DT, Kellum JA, Mi Q, Opal SM, Talisa V, van der Poll T, Visweswaran S, Vodovotz Y, Weiss JC, Yealy DM, Yende S, Angus DC. Derivation, Validation, and Potential Treatment Implications of Novel Clinical Phenotypes for Sepsis. JAMA. 2019 May 28;321(20):2003-2017. [PMC free article: PMC6537818] [PubMed: 31104070]
16. Matics TJ, Sanchez-Pinto LN. Adaptation and Validation of a Pediatric Sequential Organ Failure Assessment Score and Evaluation of the Sepsis-3 Definitions in Critically Ill Children. JAMA Pediatr. 2017 Oct 02;171(10):e172352. [PMC free article: PMC6583375] [PubMed: 28783810]

17. Hui DS, Chow BK, Lo T, Tsang OTY, Ko FW, Ng SS, Gin T, Chan MTV. Exhaled air dispersion during high-flow nasal cannula therapy *versus* CPAP *via* different masks. Eur. Respir. J. 2019 Apr;53(4) [PubMed: 30705129]
18. Gordon CJ, Tchesnokov EP, Feng JY, Porter DP, Götte M. The antiviral compound remdesivir potently inhibits RNA-dependent RNA polymerase from Middle East respiratory syndrome coronavirus. J. Biol. Chem. 2020 Apr 10;295(15):4773-4779. [PMC free article: PMC7152756] [PubMed: 32094225]
19. de Wit E, Feldmann F, Cronin J, Jordan R, Okumura A, Thomas T, Scott D, Cihlar T, Feldmann H. Prophylactic and therapeutic remdesivir (GS-5734) treatment in the rhesus macaque model of MERS-CoV infection. Proc. Natl. Acad. Sci. U.S.A. 2020 Mar 24;117(12):6771-6776. [PMC free article: PMC7104368] [PubMed: 32054787]

Bookshelf ID: NBK554776 PMID: 32150360

ANEXO II

(MEMO nº. 017/2020/SESAP 10.3)

BOLETIM CORONAVÍRUS

01 DE MAIO DE 2020

Prefeitura de Praia Grande informa que desde o início dos atendimentos relacionados ao coronavírus, a Cidade contabilizou:

Exames colhidos: 2.034
Suspeitos (aguardando resultado de exames): 386
Casos descartadas: 1179
Casos confirmados: 469 (sendo 31 óbitos)
Curados: 292
Positivos em investigação/ isolamento domiciliar: 125
Óbitos em investigação: 07

Atualmente, 116 pessoas seguem em isolamento domiciliar aguardando o resultado dos exames; 27 pacientes internados em observação, sendo 4 em UTI.

Informamos que os números de casos descartados e positivos dependem da liberação do exame do laboratório responsável pela análise.

PRAIA GRANDE

ANEXO III

(MEMO nº. 017/2020/SESAP 10.3)

Fls. 290 do Proc.
N.º 5928/2020

Reunião extraordinária do Condesb aprova uso de recursos do Fundo Metropolitano no combate à covid-19

A aplicação dos recursos do Fundo Metropolitano de Desenvolvimento (Fundo) nas ações de controle da covid-19, proposta pelo comitê de prefeitos da região, foi homologada durante a 36a. reunião Extraordinária do Conselho de Desenvolvimento da Baixada Santista - Condesb, realizada por videoconferência nesta quarta-feira (22/04). A ideia é realizar um estudo que norteará o planejamento das ações de saúde para o controle da pandemia na região, com base em dados científicos, que contribuirão nas decisões relacionadas ao isolamento social e à retomada das atividades econômicas.

O Estudo Epidemiológico sobre o alcance da infecção pelo novo Coronavírus levará em conta as características populacionais da Região Metropolitana da Baixada Santista e será executado sob a coordenação e responsabilidade do Parque Tecnológico de Santos em parceria com as universidades locais. A proposta homologada prevê a aplicação de recursos, no valor de até 1.976.442,92. Com previsão de início imediato, o estudo epidemiológico fará a testagem de 10 mil pessoas, para identificar qual o nível de circulação do novo coronavírus na região.

O colegiado definiu ainda incluir no Plano Metropolitano de Desenvolvimento Integrado – PMDI, ação específica para apoio ao combate da Pandemia do Covid-19 em seu Objetivo III com a seguinte redação: "Apoio às ações de combate da Infecção Humana causada em decorrência do Novo Coronavírus (Ação 068A).

Outra importante decisão, foi a aprovação do bloqueio de todos os saldos de planos anteriores do Fundo Metropolitano para utilização exclusiva em projetos para combate e prevenção à Covid-19, assim como a aprovação da prestação de contas do Fundo, referente ao exercício encerrado em 31/12/2019, que também integrou a pauta da reunião.

Rosana Major 22 de abril de 2020 Notícias Nenhum Comentário

← Prefeitos decidem prorrogar quarentena até 10 de maio na Baixada Santista

#Coronavírus - Uso de máscaras será obrigatório na Baixada Santista →

Deixe uma resposta

O seu endereço de e-mail não será publicado. Campos obrigatórios são marcados com *

Comentário

Nome *

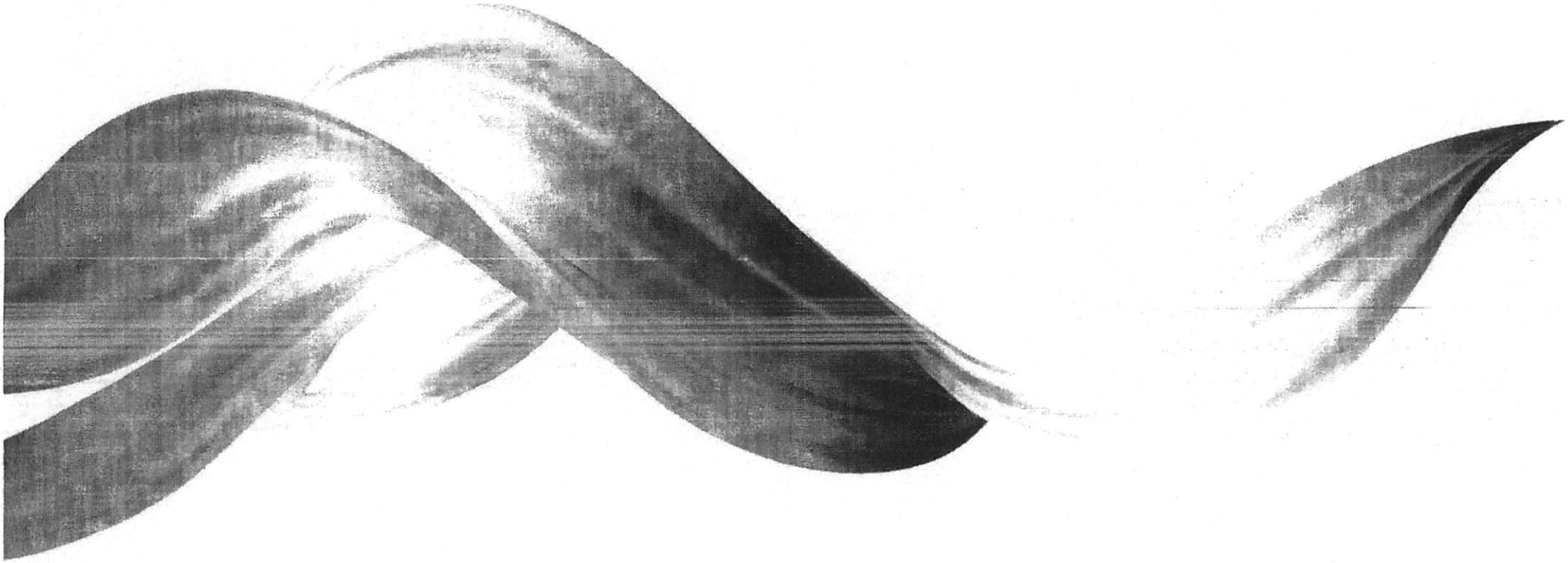
E-mail *

Site

Salvar meus dados neste navegador para a próxima vez que eu comentar.

Publicar comentário

EPICOBS

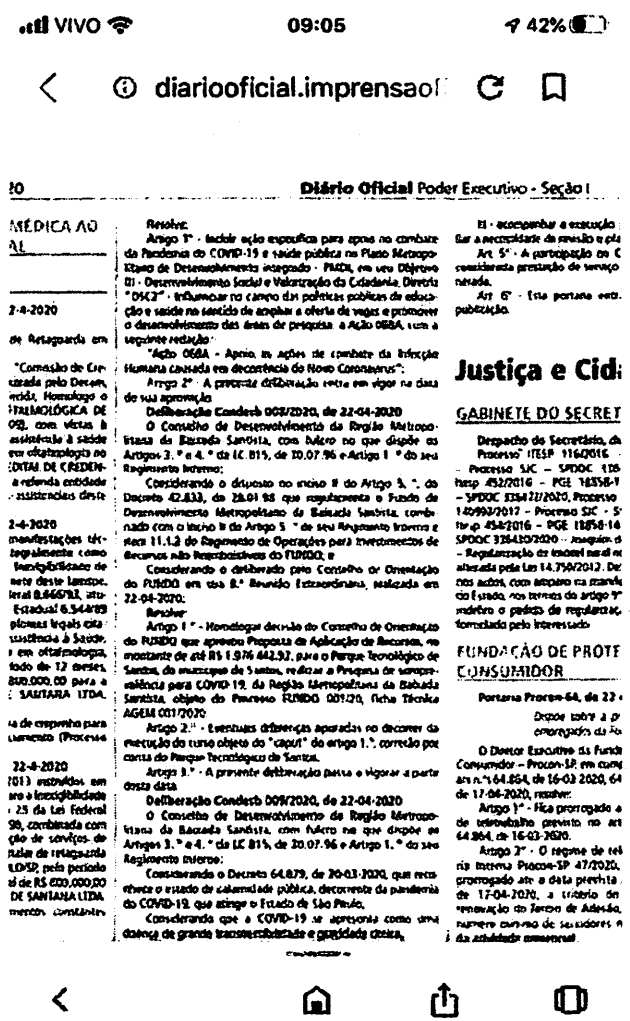


Epidemiologia da COVID-19 na Região metropolitana da Baixada Santista

Estimativa de Prevalência de infecção por SARS-CoV-2 na população da Baixada Santista, através de inquérito sorológico seriado em amostragem populacional estratificada por sorteio aleatório e coleta Domiciliar.

ESTUDO EPICOBS

Deliberação Condesb 009/2020, de 22-04-2020; publicado no DO do Estado



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MÉDICA AO AL

2-4-2020

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22-4-2020

013 estruídos em ara a inexigibilidade 25 da Lei Federal 90, combinada com ção de serviços de ratar de Retaguarda LD/SP, pelo período o de R$ 600.000,00 DE SANTANA LTDA. mentos constantes

Resolve:

Artigo 1º - Incluir ação específica para apoio no combate da Pandemia do COVID-19 e saúde pública no Plano Metropolitano de Desenvolvimento Integrado - PMDI, em seu Objetivo III - Desenvolvimento Social e Valorização da Cidadania, Diretriz "DSC2" - Influenciar no campo das políticas públicas de educação e saúde no sentido de ampliar a oferta de vagas e promover o desenvolvimento das áreas de pesquisa - a Ação 068A, com a seguinte redação:

"Ação 068A - Apoio às ações de combate da Infecção Humana causada em decorrência do Novo Coronavirus";

Artigo 2º - A presente deliberação entra em vigor na data de sua aprovação

Deliberação Condesb 008/2020, de 22-04-2020

O Conselho de Desenvolvimento da Região Metropolitana da Baixada Santista, com fulcro no que dispõe os Artigos 3. º e 4. º da LC 815, de 20.07.96 e Artigo 1. º do seu Regimento Interno:

Considerando o disposto no inciso II do Artigo 3. º, do Decreto 42.833, de 28.01.98 que regulamenta o Fundo de Desenvolvimento Metropolitano da Baixada Santista, combinado com o inciso II do Artigo 5. º de seu Regimento Interno e item 11.1.2 do Regimento de Operações para Investimentos de Recursos não Reembolsáveis do FUNDO; e

Considerando o deliberado pelo Conselho de Orientação do FUNDO em sua 8.ª Reunião Extraordinária, realizada em 22-04-2020;

Resolve:

Artigo 1º - Homologar decisão do Conselho de Orientação do FUNDO que aprovou Proposta de Aplicação de Recursos, no montante de até R$ 1.976.642,92, para o Parque Tecnológico de Santos, do município de Santos, visando a Pesquisa de soroprevalência para COVID-19 da Região Metropolitana da Baixada Santista, objeto do Processo FUNDO 009/20, ficha Técnica AGEM 007/2020;

Artigo 2º - Eventuais diferenças apuradas ao decorrer da execução do curso objeto do "caput" do artigo 1.º, correrão por conta do Parque Tecnológico de Santos.

Artigo 3.º - A presente deliberação passa a vigorar a partir desta data.

Deliberação Condesb 009/2020, de 22-04-2020

O Conselho de Desenvolvimento da Região Metropolitana da Baixada Santista, com fulcro no que dispõe os Artigos 3. º e 4. º da LC 815, de 20.07.96 e Artigo 1. º do seu Regimento Interno:

Considerando o Decreto 64.879, de 20-03-2020, que reconhece o estado de calamidade pública, decorrente da pandemia do COVID-19, que atinge o Estado de São Paulo,

Considerando que a COVID-19 se apresenta como uma doença de grande transmissibilidade e gravidade clínica,

II - acompanhar a execução fiar a necessidade de revisão e pla

Art. 5º - A participação do C considerada prestação de serviço ravada.

Art. 6º - Esta portaria entra publicação.

Justiça e Cid

GABINETE DO SECRET

Despacho do Secretário, de Processo ITESP 116/2016 - Processo SIC – SPDOC 135 itesp 452/2016 – PGE 18358-1 – SPDOC 3364 27/2020, Processo 142993/2017 – Processo SIC - S itesp 454/2016 – PGE 18858-16 SPDOC 3284 30/2020 - ... – Regularização de imóvel na al alterada pela Lei 14.750/2012. De nos autos, com arrimo na atribuiç do Estado, nos termos do artigo 9º indivíduo o padrão de regularizaç formulado pelo interessado

FUNDAÇÃO DE PROTE CONSUMIDOR

Portaria Procon-SP, de 22 -

Dispõe sobre a pr prorrogação da Jo

O Diretor Executivo da Fundaç Consumidor – Procon-SP, em cumpr art. n.º 64.864, de 16-03-2020, 64 de 17-04-2020, resolve:

Artigo 1º - Fica prorrogado a de teletrabalho previsto no art 64.864, de 16-03-2020.

Artigo 2º - O regime de tel nia Interna Procon-SP 47/2020, prorrogado até a data prevista de 17-04-2020, a critério da renovação do Termo de Adesão, número mínimo de servidores n da atividade essencial.

Aprovação no Comitê de Ética e Pesquisa

CENTRO UNIVERSITÁRIO LUSÍADA / FUNDAÇÃO LUSÍADAS

PlataformaBrasil

[illegible]

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: Estimativa de Prevalência da infecção por SARS-CoV-2 na população da Baixada Santista, através de inquérito sorológico baseado em amostragem populacional estratificada por sorteio aleatório e coleta Domiciliar - ESTUDO EPICOBS.

Pesquisador: MARCOS MONTANI CASEIRO

Área Temática:

Versão: 1

CAAE: 31046520.0.0000.5436

Instituição Proponente: Fundação Lusíada / Centro Universitário Lusíada - UNILUS

Patrocinador Principal: FUNDO DE DESENVOLVIMENTO METROPOLITANO DA BAIXADA SANTISTA - FUNDO

DADOS DO PARECER

Número do Parecer: 3.982.885

Apresentação do Projeto:

A COVID-19 é uma doença causada pelo vírus SARS-CoV-2. Esse vírus se espalhou rapidamente pelo mundo a partir de Hubei, China, o que levou a Organização Mundial da Saúde a classificar a COVID-19 como uma emergência de saúde internacional e posteriormente, declará-la uma pandemia. O número de casos confirmados, no dia 22 de abril, o número de casos confirmados já passava de 2.624.000 casos em 185 países, havendo ainda a confirmação de mais de 183 000 mortes, porém esses dados não refletem a real prevalência de COVID-19 na população, visto que, em muitos países, inclusive o nosso, os testes são quase que exclusivamente realizados em pessoas com sintomas, especialmente os mais graves. Para definir políticas de enfrentamento, é essencial dispor de dados sobre a prevalência real de infecção na população. Este estudo tem por objetivos avaliar a prevalência de indivíduos já infectados pelo SARS-CoV-2 na Baixada Santista, São Paulo, Brasil, analisar a velocidade de expansão da infecção e estimar o percentual de infectados com e sem sintomas. Serão realizados quatro inquéritos sorológicos repetidos a cada 15 dias, com amostragem probabilística de nove cidades que compõe a região da Baixada Santista. As entrevistas e testes ocorrerão no âmbito domiciliar. Serão utilizados testes rápidos para detecção de anticorpos, validados previamente ao início da coleta de dados.

Endereço: Rua Batista Pereira, nº 265
Bairro: Macuco CEP: 11.015-100
UF: SP Município: SANTOS
Telefone: (13)3202-4100 Fax: (13)3221-4488 E-mail: rcz-re@lusiada.br

CENTRO UNIVERSITÁRIO LUSÍADA / FUNDAÇÃO LUSÍADAS

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Objetivo da Pesquisa:

1. Estimar a prevalência de Anticorpos contra o SARS-CoV-2 na população da Baixada Santista, distribuída por Sexo, faixa etária e município de moradia
2. Determinar o aumento do número de pessoas infectadas ao longo do tempo
3. Avaliar o número de pessoas com infecção assintomáticas ou oligossintomáticas
4. Obter cálculos mais precisos de Letalidade
5. Avaliar o nível de conhecimento populacional sobre as medidas de isolamento e riscos de transmissão
6. Determinar a situação epidemiológica dessa infecção, com o intuito de fornecer subsídios e recomendações para o início do processo de saída do isolamento social

Avaliação dos Riscos e Benefícios:

O estudo envolve risco mínimo para a saúde dos participantes, pois envolve apenas a aplicação de um questionário curto e o exame sorológico por punção digital. Se houver qualquer desconforto, o participante poderá deixar de participar a qualquer momento. Os benefícios do projeto serão diretos e indiretos. Com relação aos benefícios diretos, com base nos resultados do exame, aqueles indivíduos que forem positivos poderão receber o manejo adequado para a doença. Os resultados do estudo irão servir para fornecer dados mais precisos sobre a COVID-19, traçar estratégias para o combate da pandemia e basear ações e programas de prevenção e saída do isolamento social de forma mais adequada.

Comentários e Considerações sobre a Pesquisa:

Estudo relevante, cumprindo as necessidades éticas.

Considerações sobre os Termos de apresentação obrigatória:

de acordo

Conclusões ou Pendências e Lista de Inadequações:

Necessita alterar no TCLE para o nome e telefone e endereço do CEP do UNILUS

Considerações Finais a critério do CEP:

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações	PB_INFORMAÇÕES_BÁSICAS_DO_P	27/04/2020		Aceito

Endereço: Rua Batista Pereira, nº 265
Bairro: Macuco CEP: 11.015-100
UF: SP Município: SANTOS
Telefone: (13)3202-4100 Fax: (13)3221-4488 E-mail: rcz-re@lusiada.br

CENTRO UNIVERSITÁRIO LUSÍADA / FUNDAÇÃO LUSÍADAS

PlataformaBrasil

Básicas do Projeto	ETO_1544619.pdf	11:46:57		Aceito
Folha de Rosto	folhaderosto.pdf	27/04/2020 11:25:20	MARCOS MONTANI CASEIRO	Aceito
Outros	PesquisaSoroprevalenciaSARSCoVquestionario.pdf	27/04/2020 11:10:05	MARCOS MONTANI CASEIRO	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLEEPICOBS.pdf	27/04/2020 11:11:41	MARCOS MONTANI CASEIRO	Aceito
Projeto Detalhado / Brochura Investigador	EPICOBS1Bestudofinal.pdf	27/04/2020 11:10:51	MARCOS MONTANI CASEIRO	Aceito

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

SANTOS, 27 de Abril de 2020

Assinado por:
Frederico Kauffmann Barbosa
(Coordenador(a))

Endereço: Rua Batista Pereira, nº 265
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Porque o estudo é Importante ?

- Os dados disponibilizados pelos serviços de Epidemiologia das diferentes prefeituras, são baseados em casos Graves e moderados internados e confirmados e representam uma pequena parcela das pessoas que foram infectadas.

- Estudo inédito em nosso Estado – e segundo estudo de base populacional para pesquisa de infecção por SARS-CoV-2 no Brasil.

- Observaremos uma mesma população ao Longo de 2 meses (Intervalo de 15 dias)

FASE 1 - DO ESTUDO - 29-30/04 - 01/05

Etapa inicial de estudo sobre o coronavírus fica pronta na 2ª

JÚNIOR BATISTA
DA REDAÇÃO

Sai na segunda-feira o resultado da primeira etapa do estudo epidemiológico promovido pela Fundação Parque Tecnológico de Santos para avaliar a velocidade de contaminação pelo novo coronavírus na região. Até ontem, cinco municípios já haviam aplicado testes rápidos e questionários: Santos, Itanhaém, Peruíbe, Mongaguá e Bertioga.

De acordo com o médico infectologista Marcos Caseiro, um dos coordenadores do programa, os resultados são robustos e, apesar de "não ter nada de absurdo", ajudam a ter uma dimensão do problema da covid-19. "A população tem

Os dados obtidos ajudarão a definir os rumos do isolamento e o direcionamento de recursos para o sistema de Saúde. Os testes poderão indicar o percentual da população infectada e que possui anticorpos contra o coronavírus, ajudando a determinar a curva de contágio.

Apenas um morador de cada residência visitada foi submetido ao exame, que leva 15 minutos. Nessa primeira etapa, 2,5 mil casas nas nove cidades serão visitadas pelos técnicos de saúde, cuja escolha é feita por amostragem.

O operador de empilhadeira Sidionir Mazagão, de 63 anos, fez o teste, que deu negativo. "Acho importan-

ideia para nos ajudar a saber como está a circulação do coronavírus".

SEGUNDA FASE

A segunda etapa vai ocorrer entre 13 e 15 de maio. O intervalo é para avaliar a velocidade de contaminação. Segunda mais populosa cidade da região, São Vicente concentrará 20% das amostras da Baixada Santista. Serão quase dois mil testes, divididos em quatro fases (487 pessoas por etapa).

Cada uma delas terá início na Área Continental e seguirá, posteriormente, à Área Insular. O Município conta com 12 equipes para cada fase de aplicação dos exames que detectam anticorpos específicos (IgG e

ALEXANDER FERRAZ

Qual foi o número de amostras propostos para coleta e o número de amostras colhidas e porcentagem.

Município	IBGE-2010	Amostras Programadas	COLHIDAS	% COLHIDAS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SANTOS *	416.220	609	559	91,8 (96,2)
BERTIOGA	46.867	83	83	100,0
CUBATÃO	118.305	167	171	102,4
GUARUJÁ	[illegible]	434	[illegible]	89,4
ITANHAÉM	85.704	108	108	100,0
MONGAGUÁ	44.802	75	73	97,3
PERUÍBE	59.105	91	90	98,9
PRAIA GRANDE	261.235	396	378	95,5
SÃO VICENTE	328.300	497	491	98,8

* A amostra programada inicialmente para Santos foi de 581; o que representa 96,2% do programado

279
2582/20 25

RESULTADOS

2342 Testes Realizados

33 Testes Positivos

1,41% da população com anticorpos

1 Infectado cada 69 habitantes da Baixada Santista

23.257 Número de habitantes com Anticorpos na Baixada Santista

RESULTADOS

Município	AMOSTRAS POSITIVAS	% da Pop. Positiva	População com Anticorpos Sars-CoV-2	Número de Casos Notificados oficialmente - (03/05/20)	Para cada notificado existem: ( ) não notificados
[illegible]	[illegible]	[illegible]	[illegible]	1.744	13
SANTOS	8	1,43	5.957	666	9
BERTIOGA	0	0,00	0	7	0
CUBATÃO	0	0,00	0	69	0
GUARUJÁ	7	1,10	3.229	223	23
ITANHAÉM	0	0,00	0	28	0
MONGAGUÁ	4	5,48	2.465	20	123
PERUÍBE	1	1,11	657	39	17
PRAIA GRANDE	3	0,79	2.073	513	4
SÃO VICENTE	10	2,04	6.686	179	37

RESULTADOS

Para cada caso notificado na Baixada Santista, existem:

13 casos não notificados

Letalidade

Baseado em casos Notificados => 8,2%

Baseada no Total de casos => 0,4%

ANEXO IV

(MEMO nº. 017/2020/SESAP 10.3)

14

Ministério da Saúde
Secretaria de Vigilância em Saúde

BOLETIM EPIDEMIOLÓGICO ESPECIAL
COE-COVID19

Centro de Operações de Emergência em Saúde Pública | Doença pelo Coronavírus 2019 (COE-COVID19)

Semana Epidemiológica 18 (26/04-02/05) | Atualização: 26 de abril de 2020 - 18:00 | Ativação COE: 95 dias - 1º Caso: 60 dias

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Apresentação

A partir desta edição, semanalmente, o Ministério da Saúde, por meio da Secretaria de Vigilância em Saúde (SVS/MS) divulgará um Boletim Epidemiológico Especial (BEE), visando não apenas apresentar os números disponíveis, mas também realizando a interpretação da situação epidemiológica e refletindo sobre as evidências e limitações de cada processo, além de apresentar uma análise mais detalhada sobre o perfil da transmissão no Brasil por Unidade da Federação e Região de Saúde.

Além do BEE, a partir de hoje, serão retomadas as coletivas técnicas. A divulgação dos dados epidemiológicos e de estrutura ocorrerá por meio do site.

CORONAVÍRUS // BRASIL

www.saude.gov.br/coronavirus

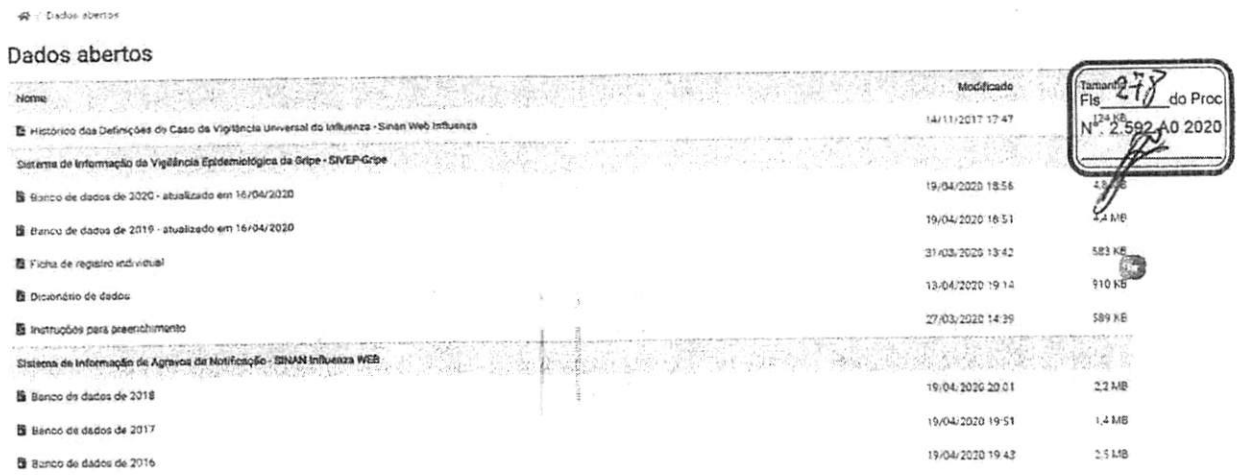


Figura 9: Painel de dados abertos na Plataforma IVIS do Ministério da Saúde. Acessado em 22/04/2020.

SITUAÇÃO EPIDEMIOLÓGICA

Mundo

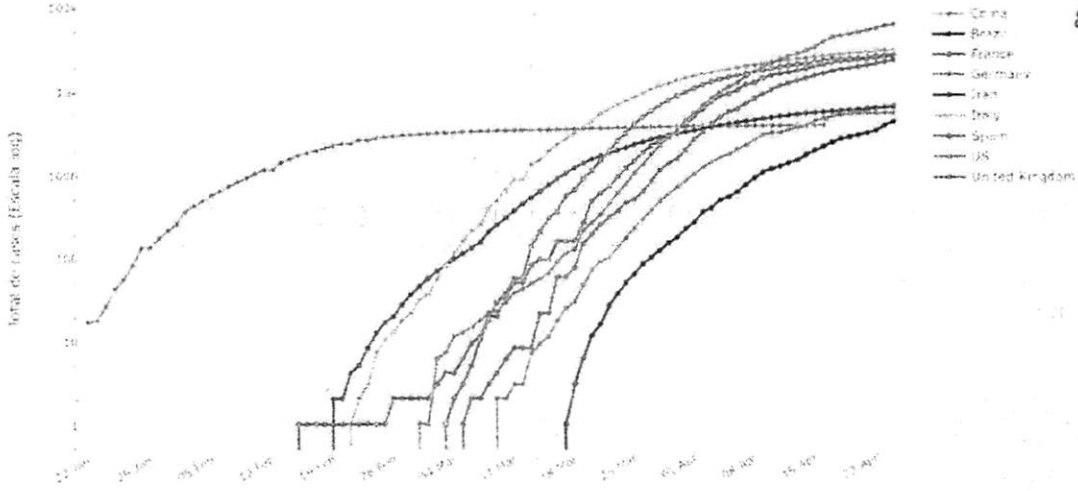
Segundo dados internacionais[5], até 26 de abril de 2020, foram confirmados 2.940.993 casos de COVID-19 com 203.822 óbitos (**Tabela 5**). Os Estados Unidos da América são o país com maior número de casos e óbitos (960.896 e 54.265, respectivamente). O Brasil é o 11º em número de casos confirmados e o 11º em número de óbitos.

Tabela 5: Distribuição dos casos de COVID-19 entre os países com maior número de casos em 2020.

ID	PAÍSES E TERRITÓRIOS	CONFIRMADOS		ÓBITOS		LETALIDADE	POPULAÇÃO	MORTALIDADE POR 1.000.000 DE HABITANTES
		N	%	N	%			
1	Estados Unidos	960.896	33%	54.265	27%	5,6%	331.915.000	163
2	Espanha	223.759	8%	22.902	11%	10,2%	46.711.000	490
3	Itália	195.351	7%	26.384	13%	13,5%	60.250.000	438
4	França	161.488	6%	22.614	11%	14,0%	67.443.000	335
5	Alemanha	156.727	5%	5.880	3%	3,8%	82.678.000	71
6	Reino Unido	148.377	5%	20.319	10%	13,7%	67.224.000	302
7	Turquia	107.773	4%	2.706	1%	2,5%	84.339.000	32
8	Irã	90.481	3%	5.710	3%	6,3%	83.993.000	68
9	China	82.827	3%	4.632	2%	5,6%	1.401.379.000	3
10	Rússia	80.949	3%	747	0,4%	0,9%	144.222.000	5
11	**Brasil**	**61.888**	**2%**	**4.205**	**2%**	**6,8%**	**212.559.000**	**20**
TOTAL		2.940.993	100%	203.822	100%	6,9%	7.754.179.000	26

[5] https://www.irrd.org/covid-19/#brasil

A **Figura 10** mostra a evolução do acumulado de casos confirmados de COVID-19 em nove países, incluindo o Brasil. Em relação aos demais países analisados, o Brasil ainda está em uma fase inicial da epidemia, tendo apresentado uma aceleração no número de casos confirmados a partir da semana epidemiológica 15 (05 a 11/04).



Fonte: Instituto para Redução de Riscos e Desastres de Pernambuco - https://www.irrd.org/covid-19/ - atualizado em 25/04/2020 às 23:43h.

Figura 10: Casos confirmados de COVID-19 ao redor do mundo.

Brasil

Até o dia 26 de abril de 2020, foram confirmados 61.888 casos por COVID-19 no Brasil. Deste total, 4.205 (6,8%) foram a óbito, 27.531 (44,5%) estão em acompanhamento e 30.152 (48,7%) já se recuperaram da doença. Nas últimas 24 horas foram confirmados 3.379 novos casos da doença, o que representou um incremento de 5,8% (3.379/58.509) em relação ao total acumulado até o dia anterior (**Figura 11**).

ID	UF	CASOS	ÓBITOS
1	SP	20.715	1.700
2	RJ	7.111	645
3	CE	5.833	327
4	PE	4.898	415
5	AM	3.833	304
6	MA	2.223	112
7	BA	2.209	73
9	PA	1.867	100
8	ES	1.703	51
10	MG	1.548	61
11	SC	1.235	42
13	RS	1.166	35
12	PR	1.156	72
14	DF	1.066	27
15	RN	825	44
16	AP	798	21
17	GO	573	25
18	AL	554	32
19	PB	499	49
20	RR	401	4
22	PI	331	18
21	RO	364	10
23	AC	279	11
24	MT	250	9
25	MS	234	7
26	SE	159	9
27	TO	58	2
BRASIL		61.888	4.205

Fonte: Secretaria de Vigilância em Saúde/Ministério da Saúde. Dados atualizados em 26 de abril de 2020 às 14h, sujeitos a revisões.

Figura 11: Distribuição dos casos e óbitos por COVID-19 por região e Unidade da Federação. Brasil, 2020.

ORIGINAL ARTICLE

Observational Study of Hydroxychloroquine in Hospitalized Patients with Covid-19

Joshua Geleris, M.D., Yifei Sun, Ph.D., Jonathan Platt, Ph.D., Jason Zucker, M.D., Matthew Baldwin, M.D., George Hripcsak, M.D., Angelena Labella, M.D., Daniel Manson, M.D., Christine Kubin, Pharm.D., R. Graham Barr, M.D., Dr.P.H., Magdalena E. Sobieszczyk, M.D., M.P.H., and Neil W. Schluger, M.D.

ABSTRACT

BACKGROUND

Hydroxychloroquine has been widely administered to patients with Covid-19 without robust evidence supporting its use.

METHODS

We examined the association between hydroxychloroquine use and intubation or death at a large medical center in New York City. Data were obtained regarding consecutive patients hospitalized with Covid-19, excluding those who were intubated, died, or discharged within 24 hours after presentation to the emergency department (study baseline). The primary end point was a composite of intubation or death in a time-to-event analysis. We compared outcomes in patients who received hydroxychloroquine with those in patients who did not, using a multivariable Cox model with inverse probability weighting according to the propensity score.

RESULTS

Of 1446 consecutive patients, 70 patients were intubated, died, or discharged within 24 hours after presentation and were excluded from the analysis. Of the remaining 1376 patients, during a median follow-up of 22.5 days, 811 (58.9%) received hydroxychloroquine (600 mg twice on day 1, then 400 mg daily for a median of 5 days); 45.8% of the patients were treated within 24 hours after presentation to the emergency department, and 85.9% within 48 hours. Hydroxychloroquine-treated patients were more severely ill at baseline than those who did not receive hydroxychloroquine (median ratio of partial pressure of arterial oxygen to the fraction of inspired oxygen, 223 vs. 360). Overall, 346 patients (25.1%) had a primary end-point event (180 patients were intubated, of whom 66 subsequently died, and 166 died without intubation). In the main analysis, there was no significant association between hydroxychloroquine use and intubation or death (hazard ratio, 1.04, 95% confidence interval, 0.82 to 1.32). Results were similar in multiple sensitivity analyses.

CONCLUSIONS

In this observational study involving patients with Covid-19 who had been admitted to the hospital, hydroxychloroquine administration was not associated with either a greatly lowered or an increased risk of the composite end point of intubation or death. Randomized, controlled trials of hydroxychloroquine in patients with Covid-19 are needed. (Funded by the National Institutes of Health.)

From the Divisions of General Medicine, Infectious Diseases, and Pulmonary, Allergy, and Critical Care Medicine, Department of Medicine (J.G., J.Z., M.B., A.L., D.M., C.K., R.G.B., M.E.S., N.W.S.), the Departments of Biostatistics (Y.S.) and Epidemiology (J.P., R.G.B., N.W.S.), Mailman School of Public Health, and the Department of Biomedical Informatics (G.H.), Vagelos College of Physicians and Surgeons, Columbia University, and New York–Presbyterian Hospital–Columbia University Irving Medical Center (J.G., J.Z., M.B., A.L., D.M., C.K., R.G.B., M.E.S., N.W.S.) — all in New York. Address reprint requests to Dr. Schluger at the Division of Pulmonary, Allergy, and Critical Care Medicine, Columbia University Irving Medical Center, PH-8 E., Rm. 101, 622 W. 168th St., New York, NY 10032, or at ns311@cumc.columbia.edu.

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THE AMINOQUINOLINES CHLOROQUINE and hydroxychloroquine are widely used in the treatment of malaria and rheumatic diseases, and they have been suggested as effective treatments for coronavirus disease 2019 (Covid-19) on the grounds of both antiinflammatory and antiviral effects.[1-4] In the United States, the Food and Drug Administration issued an Emergency Use Authorization on March 30, 2020, that allowed the use of these drugs in patients with Covid-19 who were not enrolled in clinical trials. Guidelines suggested that these drugs be administered to hospitalized patients who had evidence of pneumonia,[5] and to date, they have been used in many thousands of patients with acute Covid-19 around the world. However, to date, there have been no robust clinical trials that have shown efficacy of these agents for this illness, and the data that are available come from small studies that have either been uncontrolled or underpowered to detect meaningful clinical effects.

The original report of hydroxychloroquine as a treatment for Covid-19 described 26 patients who had been treated in an open-label, single-group study that involved contemporaneous, but nonrandomized controls in hospitals in France.[6] Patients were treated with hydroxychloroquine at a dose of 200 mg three times daily for 10 days. Data from this study were reported as showing the effectiveness of hydroxychloroquine in reducing the viral burden in treated patients (65.0% clearance by day 5, vs. 18.8% clearance by day 5 in untreated patients). However, data from 6 patients who received hydroxychloroquine were excluded from the analysis because of clinical worsening or loss to follow-up, which makes it difficult to interpret the findings.

Recent work suggests that hydroxychloroquine has more potent antiviral properties than chloroquine, as well as a better safety profile.[7] In accordance with clinical guidelines developed at our medical center, hydroxychloroquine was suggested as treatment for hospitalized patients with Covid-19 and respiratory difficulty, as indicated by a low resting oxygen saturation, during the period in which patients in this report were admitted.

We examined the association between hydroxychloroquine use and respiratory failure at a large medical center providing care to a substantial number of patients with Covid-19 in New York City. We hypothesized that hydroxychloroquine use would be associated with a lower risk of a composite end point of intubation or death in analyses that were adjusted for major predictors of respiratory failure and weighted according to propensity scores assessing the probability of hydroxychloroquine use.

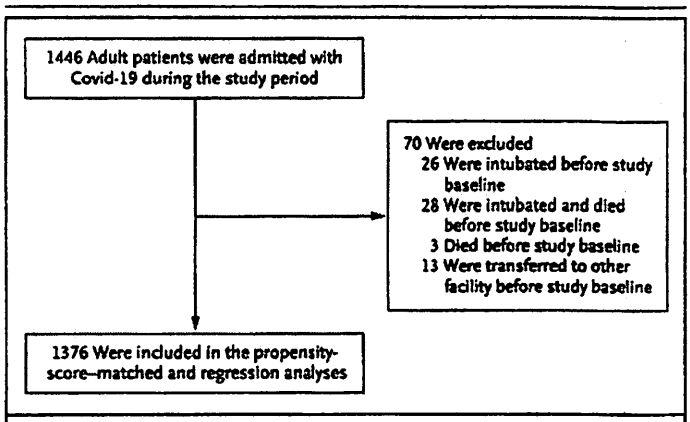

Figure 1. Study Cohort.
Study baseline was defined as 24 hours after arrival at the emergency department. Covid-19 denotes coronavirus disease 2019.

METHODS

SETTING

We conducted this study at New York–Presbyterian Hospital (NYP)–Columbia University Irving Medical Center (CUIMC), a quaternary, acute care hospital in northern Manhattan. We obtained samples from all admitted adults who had a positive test result for the virus SARS-CoV-2 from analysis of nasopharyngeal or oropharyngeal swab specimens obtained at any point during their hospitalization from March 7 to April 8, 2020. Follow-up continued through April 25, 2020. These tests were conducted by the New York State Department of Health until the NYP–CUIMC laboratory developed internal testing capability with a reverse-transcriptase–polymerase-chain-reaction assay on March 11, 2020. Patients who were intubated, who died, or who were transferred to another facility within 24 hours after presentation to the emergency department were excluded from the analysis. The institutional review board at CUIMC approved this analysis under an expedited review.

A guidance developed by the Department of Medicine and distributed to all the house staff and attending staff at our medical center suggested hydroxychloroquine as a therapeutic option for

patients with Covid-19 who presented with moderate-to-severe respiratory illness, which was defined as a resting oxygen saturation of less than 94% while they were breathing ambient air. The suggested hydroxychloroquine regimen was a loading dose of 600 mg twice on day 1, followed by 400 mg daily for 4 additional days. Azithromycin at a dose of 500 mg on day 1 and then 250 mg daily for 4 more days in combination with hydroxychloroquine was an additional suggested therapeutic option. The azithromycin suggestion was removed on April 12, 2020, and the hydroxychloroquine suggestion was removed on April 29, 2020. The decision to prescribe either or both medications was left to the discretion of the treating team for each individual patient.

Patients receiving sarilumab were allowed to continue hydroxychloroquine. Patients receiving remdesivir as part of a randomized trial either did not receive or had completed a course of treatment with hydroxychloroquine.

DATA SOURCES

We obtained data from the NYP–CUIMC clinical data warehouse. This warehouse contains all the clinical data available on all inpatient and outpatient visits to one of the CUIMC facilities (see the Data Extraction section in the Supplementary Appendix, available with the full text of this article at NEJM.org). No data were manually abstracted from the electronic medical record or charts. The data obtained included patients' demographic details, insurance status, vital signs, laboratory test results, medication administration data, historical and current medication lists, historical and current diagnoses, clinical notes, historical discharge disposition for previous inpatient hospitalizations, and ventilator use data.

VARIABLES ASSESSED

From the clinical data warehouse, we obtained the following data elements for each patient: age; sex; patient-reported race and ethnic group; current insurance carrier; the first recorded vital signs on presentation; the ratio of the partial pressure of arterial oxygen to the fraction of inspired oxygen (Pao_2:Fio_2) at admission, estimated with the use of methods developed by Brown and colleagues[8,9] (see the Data Extraction section in the Supplementary Appendix); the first recorded body-mass index as calculated for measured height and weight (the body-mass index is the weight in kilograms divided by the square of the height in meters), grouped on the basis of the Centers for Disease Control and Prevention guidelines for adults; the first recorded inpatient laboratory tests; past and current diagnoses; patient-reported smoking status; and medication administration at baseline. Details of the variables assessed are provided in the Supplementary Appendix.

HYDROXYCHLOROQUINE EXPOSURE

Patients were defined as receiving hydroxychloroquine if they were receiving it at study baseline or received it during the follow-up period before intubation or death. Study baseline was defined as 24 hours after arrival at the emergency department.

END POINT

The primary end point was the time from study baseline to intubation or death. For patients who died after intubation, the timing of the primary end point was defined as the time of intubation.

STATISTICAL ANALYSIS

We calculated bivariate frequencies to examine the associations among the preadmission variables described above. Patients without a primary end-point event had their data censored on April 25, 2020.

Cox proportional-hazards regression models were used to estimate the association between hydroxychloroquine use and the composite end point of intubation or death. An initial multivariable Cox regression model included demographic factors, clinical factors, laboratory tests, and medications. In addition, to help account for the nonrandomized treatment administration of hydroxychloroquine, we used propensity-score methods to reduce the effects of confounding. The individual propensities for receipt of hydroxychloroquine treatment were estimated with the use of a multivariable logistic-regression model that included the same covariates as the Cox regression model. Associations between hydroxychloroquine use and respiratory failure were then estimated by multivariable Cox regression models with the use of three propensity-score methods.

The primary analysis used inverse probability weighting. In the inverse-probability-weighted analysis, the predicted probabilities from the propensity-score model were used to calculate the stabilized inverse-probability-weighting weight.[10]

3X

Table 1. Characteristics of Patients Receiving or Not Receiving Hydroxychloroquine, before and after Propensity-Score Matching.*

Characteristic	Unmatched Patients		Propensity-Score–Matched Patients†	
	Hydroxychloroquine (N=811)	No Hydroxychloroquine (N=565)	Hydroxychloroquine (N=811)	No Hydroxychloroquine (N=274)
Age — no. (%)				
<40 yr	80 (9.9)	105 (18.6)	80 (9.9)	28 (10.2)
40–59 yr	217 (26.8)	142 (25.1)	217 (26.8)	69 (25.2)
60–79 yr	367 (45.3)	220 (38.9)	367 (45.3)	118 (43.1)
≥80 yr	147 (18.1)	98 (17.3)	147 (18.1)	59 (21.5)
Female sex — no. (%)	337 (41.6)	258 (45.7)	337 (41.6)	113 (41.2)
Race and ethnic group — no. (%)‡				
Non-Hispanic white	74 (9.1)	57 (10.1)	97 (12.0)	36 (13.1)
Non-Hispanic black	89 (11.0)	92 (16.3)	120 (14.8)	40 (14.6)
Hispanic	412 (50.8)	286 (50.6)	530 (65.4)	172 (62.8)
Other	48 (5.9)	36 (6.4)	64 (7.9)	26 (9.5)
Missing data	188 (23.2)	94 (16.6)	0	0
Body-mass index — no. (%)§				
<18.5	13 (1.6)	13 (2.3)	18 (2.2)	7 (2.6)
18.5–24.9	147 (18.1)	98 (17.3)	184 (22.7)	53 (19.3)
25.0–29.9	224 (27.6)	157 (27.8)	279 (34.4)	96 (35.0)
30.0–39.9	218 (26.9)	133 (23.5)	268 (33.0)	99 (36.1)
≥40.0	52 (6.4)	20 (3.5)	62 (7.6)	19 (6.9)
Missing data	157 (19.4)	144 (25.5)	0	0
Insurance — no. (%)				
Medicaid	165 (20.3)	146 (25.8)	166 (20.5)	54 (19.7)
Medicare	396 (48.8)	261 (46.2)	399 (49.2)	141 (51.5)
No insurance	79 (9.7)	49 (8.7)	79 (9.7)	29 (10.6)
Commercial insurance	166 (20.5)	106 (18.8)	167 (20.6)	50 (18.2)
Missing data	5 (0.6)	3 (0.5)	0	0
Current smoking — no. (%)	89 (11.0)	68 (12.0)	89 (11.0)	32 (11.7)
Past diagnoses — no. (%)				
Chronic lung disease¶	146 (18.0)	105 (18.6)	146 (18.0)	49 (17.9)
Diabetes	301 (37.1)	190 (33.6)	301 (37.1)	94 (34.3)
Hypertension	398 (49.1)	38 (6.7)	398 (49.1)	146 (53.3)
Cancer	109 (13.4)	67 (11.9)	109 (13.4)	35 (12.8)
Chronic kidney disease	133 (16.4)	105 (18.6)	133 (16.4)	61 (22.3)
Transplantation, HIV infection, or immune-suppressive medications	40 (4.9)	18 (3.2)	40 (4.9)	11 (4.0)
Medications at baseline — no. (%)				
Statin	308 (38)	197 (34.9)	308 (38)	107 (39.1)
ACE inhibitor or ARB	236 (29.1)	142 (25.1)	236 (29.1)	85 (31.0)
Systemic glucocorticoid	216 (26.6)	57 (10.1)	216 (26.6)	42 (15.3)
Direct oral anticoagulant or warfarin	76 (9.4)	47 (8.3)	76 (9.4)	24 (8.8)

Table 1. (Continued.)

Characteristic	Unmatched Patients		Propensity-Score–Matched Patients†	
	Hydroxychloroquine (N=811)	No Hydroxychloroquine (N=565)	Hydroxychloroquine (N=811)	No Hydroxychloroquine (N=274)
Azithromycin	486 (59.9)	127 (22.5)	486 (59.9)	102 (37.2)
Other antibiotic agent	604 (74.5)	305 (54.0)	604 (74.5)	183 (66.8)
Tocilizumab	58 (7.2)	12 (2.1)	58 (7.2)	9 (3.3)
Remdesivir	22 (2.7)	5 (0.9)	22 (2.7)	5 (1.8)
Initial vital signs — median (IQR)				
Systolic blood pressure — mm Hg	125 (111–139)	127 (111–144)	125 (111–139)	126 (110–138)
Diastolic blood pressure — mm Hg	75 (67–82)	76 (68–84)	75 (67–82)	74 (65–83)
Heart rate — beats/min	98 (86–111)	97 (83–109)	98 (86–111)	97 (84–108)
Oxygen saturation — %	94 (90–96)	96 (94–98)	94 (90–96)	94.5 (92–96)
Respiratory rate — breaths/min	20 (18–22)	18 (18–20)	20 (18–22)	19.5 (18–22)
Calculated Pao_2:Fio_2	223 (160–303)	360 (248–431)	223 (160–303)	273 (185–360)
Initial laboratory tests — median (IQR)‖				
D-Dimer — μg/ml	1.25 (0.76–2.28)	1.1 (0.59–2.35)	1.26 (0.76–2.29)	1.33 (0.66–2.45)
Ferritin — ng/ml	785 (420–1377)	481 (213–989)	777 (417–1370)	552 (283–1095)
Lactate dehydrogenase — U/liter	414 (322–546)	333 (246–448)	412 (321–544)	370 (273–515)
C-reactive protein — mg/liter	125 (75–199)	76 (20–150)	125 (74–199)	106 (48–183)
Procalcitonin — ng/ml	0.21 (0.11–0.53)	0.14 (0.09–0.39)	0.21 (0.11–0.53)	0.18 (0.10–0.45)
Neutrophil count per mm^3	5.06 (3.64–7.26)	4.53 (2.72–6.81)	5.05 (3.63–7.26)	4.95 (3.20–7.30)
Lymphocyte count per mm_3	0.94 (0.65–1.28)	1.02 (0.64–1.47)	0.95 (0.66–1.30)	0.98 (0.68–1.37)

* ACE denotes angiotensin-converting enzyme, ARB angiotensin-receptor blocker, Fio_2 fraction of inspired oxygen, HIV human immunodeficiency virus, IQR interquartile range, and Pao_2 partial pressure of arterial oxygen.
† Data for patients included in the propensity-score–matched analysis were multiply imputed.
‡ Data on race and ethnic group, as reported by the patient, were obtained from the clinical data warehouse.
§ The body-mass index is the weight in kilograms divided by the square of the height in meters.
¶ Chronic lung disease was defined as chronic obstructive pulmonary disease, asthma, or chronic bronchitis.
‖ In the unmatched analysis, data on the D-dimer level were missing for 291 patients, on the ferritin level for 168, on the lactate dehydrogenase level for 153, on the C-reactive protein level for 150, on the procalcitonin level for 121, on the neutrophil count for 33, and on the lymphocyte count for 33. Multiple imputation was used to account for missing data in the propensity-score–matched analysis.

Kaplan–Meier curves and Cox models that used the inverse-probability-weighting weights were reported.

We conducted a secondary analysis that used propensity-score matching and another that included the propensity score as an additional covariate. In the propensity-score matching analysis, the nearest-neighbor method was applied to create a matched control sample. Additional sensitivity analyses included the same set of analyses with the use of a different study baseline of 48 hours after arrival to the emergency department as well as analyses that defined the exposure as receipt of the first dose of hydroxychloroquine before study baseline only. Multiple imputation was used to handle missing data, and model estimates and standard errors were calculated with Rubin's rules.[11] The nonparametric bootstrap method was used to obtain 95% pointwise confidence intervals for the inverse-probability-weighted Kaplan–Meier curves. The statistical analyses were performed with the use of R software, version 3.6.1 (R Project for Statistical Computing).

RESULTS

CHARACTERISTICS OF THE COHORT

Of 1446 consecutive patients with Covid-19 who were admitted to the hospital between March 7 and April 8, 2020, a total of 70 patients were ex-

Table 2. Associations between Hydroxychloroquine Use and the Composite End Point of Intubation or Death in the Crude Analysis, Multivariable Analysis, and Propensity-Score Analyses.

Analysis	Intubation or Death
No. of events/no. of patients at risk (%)	
Hydroxychloroquine	262/811 (32.3)
No hydroxychloroquine	84/565 (14.9)
Crude analysis — hazard ratio (95% CI)	2.37 (1.84–3.02)
Multivariable analysis — hazard ratio (95% CI)*	1.00 (0.76–1.32)
Propensity-score analyses — hazard ratio (95% CI)	
With inverse probability weighting†	1.04 (0.82–1.32)
With matching‡	0.98 (0.73–1.31)
Adjusted for propensity score§	0.97 (0.74–1.28)

* Shown is the hazard ratio from the multivariable Cox proportional-hazards model, with stratification according to sex, chronic lung disease, and body-mass index, and with additional adjustment for age, race and ethnic group, insurance, current smoking, past diagnoses, current medications, vital statistics, and laboratory tests on presentation. The analysis included all 1376 patients.

† Shown is the primary analysis with a hazard ratio from the multivariable Cox proportional-hazards model with the same strata and covariates with inverse probability weighting according to the propensity score. The analysis included all the patients.

‡ Shown is the hazard ratio from a multivariable Cox proportional-hazards model with the same strata and covariates with matching according to the propensity score. The analysis included 1085 patients (811 who received hydroxychloroquine and 274 who did not).

§ Shown is the hazard ratio from a multivariable Cox proportional-hazards model with the same strata and covariates, with additional adjustment for the propensity score. The analysis included all the patients.

cluded from this study because they had already had intubation or death, were discharged after inpatient admission, or were directly admitted to alternative facilities within 24 hours after presentation to the emergency department. Thus, 1376 patients were included in the analysis (Fig. 1).

Over a median follow-up of 22.5 days, 346 patients (25.1%) had a primary end-point event (166 patients died without being intubated, and 180 were intubated). At the time of data cutoff on April 25, a total of 232 patients had died (66 after intubation), 1025 had survived to hospital discharge, and 119 were still hospitalized (only 24 of whom were not intubated) (Table S1 in the Supplementary Appendix).

Of the 1376 patients, 811 (58.9%) received hydroxychloroquine (median duration of treatment, 5 days) and 565 (41.1%) did not. Among the patients who received hydroxychloroquine, 45.8% received it in the 24 hours between their presentation to the emergency department and the start of study follow-up, and 85.9% received it within 48 hours after presentation to the emergency department. The timing of the first dose of hydroxychloroquine after presentation to the medical center is shown in Figure S3. The distribution of the patients' baseline characteristics according to hydroxychloroquine exposure is shown in Table 1, both in the unmatched and propensity-score–matched analytic samples. In the unmatched sample, hydroxychloroquine exposure differed according to age group, sex, race and ethnic group, body-mass index, insurance, smoking status, and current use of other medications. Hydroxychloroquine-treated patients had a lower Pao_2:Fio_2 at baseline than did patients who did not receive hydroxychloroquine (median, 233 vs. 360 mm Hg). In addition to the 27 patients listed in Table 1 who received remdesivir according to compassionate use, 30 patients in the study cohort were enrolled in randomized, blinded, placebo-controlled trials of that investigational agent or of sarilumab.

The distribution of the estimated propensity scores for receipt of hydroxychloroquine among patients who did and did not receive hydroxychloroquine is shown in Figure S1. The odds ratios (with 95% confidence intervals) for receipt of hydroxychloroquine according to all the variables included in the propensity-score model are shown in Table S2. The C-statistic of the propensity-score model was 0.81. In the matched analytic sample, 811 patients were exposed to hydroxychloroquine and 274 were not exposed. The differences between hydroxychloroquine and pretreatment variables were attenuated in the propensity-score–matched samples as compared with the unmatched samples (Table 2 and Fig. S2).

STUDY END POINTS

Among the 1376 patients included in the analysis, the primary end point of respiratory failure developed in 346 patients (25.1%); a total of 180 patients were intubated, and 166 died without intubation. In the crude, unadjusted analysis, patients who had received hydroxychloroquine were more likely to have had a primary end-point event than were patients who did not (hazard ratio, 2.37; 95% CI, 1.84 to 3.02) (Table 2). In the primary multivariable analysis with inverse probability weighting according to the propensity score, there was no significant association between hydroxychloroquine use and the composite primary end point (hazard ratio, 1.04; 95% CI, 0.82 to 1.32) (Fig. 2).

There was also no significant association between treatment with azithromycin and the composite end point (hazard ratio, 1.03; 95% CI, 0.81 to 1.31).

Additional multivariable propensity-score analyses yielded similar results (Table 2). Multiple additional sensitivity analyses, including analyses that used a different baseline at 48 hours after presentation and analyses with treatment defined as receipt of the first dose of hydroxychloroquine before study baseline, showed similar results (Table S3).

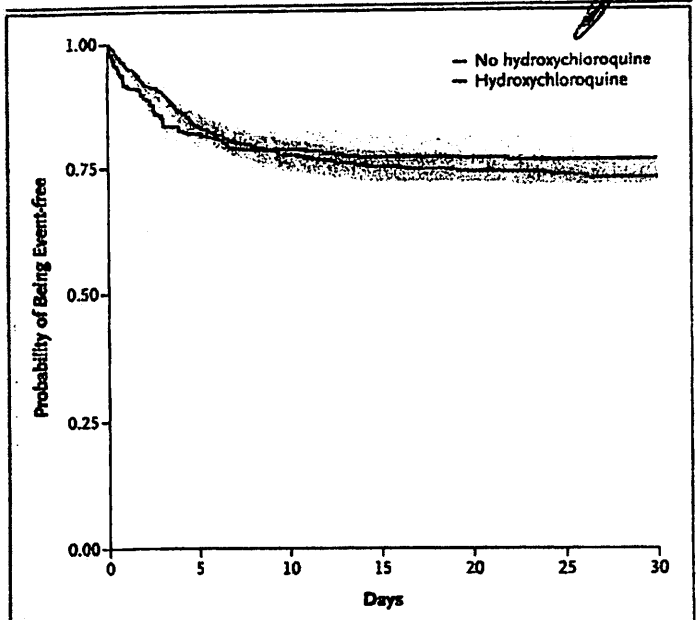

Figure 2. Freedom from Composite End Point of Intubation or Death.
The shaded areas represent pointwise 95% confidence intervals.

DISCUSSION

In this analysis involving a large sample of consecutive patients who had been hospitalized with Covid-19, the risk of intubation or death was not significantly higher or lower among patients who received hydroxychloroquine than among those who did not (hazard ratio, 1.04; 95% CI, 0.82 to 1.32). Given the observational design and the relatively wide confidence interval, the study should not be taken to rule out either benefit or harm of hydroxychloroquine treatment. However, our findings do not support the use of hydroxychloroquine at present, outside randomized clinical trials testing its efficacy.

As we noted in the introduction, the findings from an early study showing a benefit of hydroxychloroquine in 26 patients who had been treated in French hospitals are difficult to interpret, given the small size of that study, the lack of a randomized control group, and the omission of 6 patients from the analysis.[6] A clinical trial testing two doses of chloroquine in patients with Covid-19 planned to include 440 patients but was halted after 81 patients had been enrolled because of excessive QTc prolongation and an indication of higher mortality in the high-dose group (in which patients received 600 mg twice daily for 10 days) than in the low-dose group (in which patients received 450 mg daily for 4 days after an initial dose of 450 mg administered twice on the first day).[12]

Two small, randomized trials from China have been reported. Physicians in Wuhan randomly assigned 62 patients with mild illness to either the control group (in which patients could receive supplemental oxygen, unspecified antiviral agents, antibiotic agents, and immune globulin, with or without glucocorticoids) or the experimental group (in which patients also received 400 mg of hydroxychloroquine daily). This report has not yet been fully peer-reviewed, but results were posted to the MedRxiv website for public comment.[13] Investigators reported a faster mean time to clinical recovery (resolution of fever and cough and improvement on chest radiography) in the experimental group than in the control group. Four patients (all in the control group) had progression to severe infection. A small, randomized trial involving 30 patients in Shanghai reported on outcomes in patients treated with 400 mg of hydroxychloroquine daily for 5 days, as compared with a control group in which patients received "conventional treatment only."[14] This trial showed that by day 7, a total of 86% of the patients in the hydroxychloroquine-treated group and 93% of those in the control group had negative results on viral throat swabs. All the patients in this trial also received aerosolized interferon alfa by nebulizer.

A randomized clinical trial is the best approach to determine whether benefit can be ascribed to any given therapeutic intervention because this trial design minimizes the two major problems inherent in observational studies: unmeasured confounding and bias. With the analytic approaches we used in this examination of

our observational cohort, we have tried to minimize possible confounding in a variety of ways.

In the main analysis, a multivariable regression model with inverse probability weighting according to the propensity score, there was no significant association between hydroxychloroquine use and the risk of intubation or death. We also performed a series of analyses using several propensity-score approaches. Findings were similar in multiple sensitivity analyses. The consistency of the results across these analyses is reassuring. In our analysis, we adjusted for likely confounders, including age, race and ethnic group, body-mass index, diabetes, underlying kidney disease, chronic lung disease, hypertension, baseline vital signs, Pao_2:Fio_2, and inflammatory markers of the severity of illness. Despite this extensive adjustment, it is still possible that some amount of unmeasured confounding remains. Additional limitations of our study include missing data for some variables and potential for inaccuracies in the electronic health records, such as lack of documentation of smoking and coexisting illness for some patients. Nonetheless, we used contemporary methods to deal with missing data to minimize bias. Finally, the single-center design may limit the generalizability of these results.

Clinical guidance at our medical center has been updated to remove the suggestion that patients with Covid-19 be treated with hydroxychloroquine. In our analysis involving a large sample of consecutive patients who had been hospitalized with Covid-19, hydroxychloroquine use was not associated with a significantly higher or lower risk of intubation or death (hazard ratio, 1.04; 95% CI, 0.82 to 1.32). The study results should not be taken to rule out either benefit or harm of hydroxychloroquine treatment, given the observational design and the 95% confidence interval, but the results do not support the use of hydroxychloroquine at present, outside randomized clinical trials testing its efficacy.

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Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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REFERENCES

1. Biot C, Daher W, Chavain N, et al. Design and synthesis of hydroxyferroquine derivatives with antimalarial and antiviral activities. J Med Chem 2006;49:2845-9.
2. Fox RI. Mechanism of action of hydroxychloroquine as an antirheumatic drug. Semin Arthritis Rheum 1993;23:Suppl 1:82-91.
3. Devaux CA, Rolain JM, Colson P, Raoult D. New insights on the antiviral effects of chloroquine against coronavirus: what to expect for COVID-19? Int J Antimicrob Agents 2020 March 12 (Epub ahead of print).
4. Fantini J, Di Scala C, Chahinian H, Yahi N. Structural and molecular modelling studies reveal a new mechanism of action of chloroquine and hydroxychloroquine against SARS-CoV-2 infection. Int J Antimicrob Agents 2020 April 3 (Epub ahead of print).
5. Wilson KC, Chotirmall SH, Bai C, Rello J. COVID-19: interim guidance on management pending empirical evidence. April 3, 2020 (https://www.thoracic.org/covid/covid-19-guidance.pdf).
6. Gautret P, Lagier JC, Parola P, et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. Int J Antimicrob Agents 2020 March 20 (Epub ahead of print).
7. Yao X, Ye F, Zhang M, et al. In vitro antiviral activity and projection of optimized dosing design of hydroxychloroquine for the treatment of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Clin Infect Dis 2020 March 9 (Epub ahead of print).
8. Brown SM, Duggal A, Hou PC, et al. Nonlinear imputation of PaO2/FIO2 from SpO2/FIO2 among mechanically ventilated patients in the ICU: a prospective, observational study. Crit Care Med 2017;45:1317-24.
9. Brown SM, Grissom CK, Moss M, et al. Nonlinear imputation of Pao2/Fio2 from Spo2/Fio2 among patients with acute respiratory distress syndrome. Chest 2016;150:307-13.
10. Robins JM. Marginal structural models. 1998 (https://cdn1.sph.harvard.edu/wp-content/uploads/sites/343/2013/03/msm-web.pdf).
11. Rubin DB. Multiple imputation for nonresponse in surveys. New York: John Wiley, 1987.
12. Borba MGS, Val FFA, Sampaio VS, et al. Effect of high vs low doses of chloroquine diphosphate as adjunctive therapy for patients hospitalized with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection: a randomized clinical trial. JAMA Netw Open 2020;3(4):e208857.
13. Chen Z, Hu J, Zhang Z, et al. Efficacy of hydroxychloroquine in patients with COVID-19: results of a randomized clinical trial. MedRxiv. 2020 (https://www.medrxiv.org/content/10.1101/2020.03.22.20040758v3) (preprint).
14. Chen J, Liu D, Liu L, et al. A pilot study of hydroxychloroquine in treatment of patients with common coronavirus disease-19 (COVID-19). J Zhejiang Univ (Med Sci) 2020 (http://www.zjujournals.com/med/EN/10.3785/j.issn.1008-9292.2020.03.03).

ANEXO V

(MEMO nº. 017/2020/SESAP 10.3)

CORONAVÍRUS

No Norte da Itália, pacientes morrem sem extrema-unção, e cemitérios têm filas de caixões

Os hospitais estão lotados, as unidades de terapia intensiva, sem vaga, e os cemitérios e crematórios têm filas de caixões

Por: Folhapress em 18/03/20 às 17H00, atualizado em 18/03/20 às 17H27

Coronavírus na Itália
Foto: Andreas Solaro/AFP

Circulou nos últimos dias um vídeo em que são viradas páginas e páginas de um jornal tomadas por obituários de Bérgamo, no norte da Itália. O número de mortes na semana passada foi tão alto que os anúncios com os nomes ocuparam, na sexta-feira (13), um espaço no papel três vezes maior do que o habitual.Somente entre a terça e a quarta-feira (18), 475 pessoas morreram elevando para 2.978 o total do número de mortos.

Não é só no jornal da cidade que os contaminados pelo novo coronavírus não cabem mais. Os hospitais estão lotados, as unidades de terapia intensiva, sem vaga, e os cemitérios e crematórios têm filas de caixões.

Com 1,1 milhão de habitantes, a província de Bérgamo –que engloba cerca de 250 municípios– é a área mais afetada em toda a Itália. Dados divulgados nesta terça-feira (17) indicam que já são quase 4.000 contaminados ali (em todo o país, mais de 30 mil foram infectados, com mais de 2.500 mortes).

Leia também:
Coronavírus: 20º dia do Brasil é pior que o da Itália
Governo italiano anuncia pacote econômico em resposta a coronavírus

Bérgamo, a cidade, com 120 mil moradores, registrou 460 mortes desde o início da crise do coronavírus no país, há quase um mês. A média tem sido de 20 mortos por dia.

"Estamos vivendo as dores e o sofrimento dos mortos. Tivemos quase 400 mortes em uma única semana, e quase todas as famílias da cidade foram atingidas", disse à Folha dom Giulio Dellavite, monsenhor da diocese de Bérgamo.

"A epidemia está no máximo da explosão, os hospitais estão saturados, e os pacientes, sendo levados para outras regiões. A cidade está deserta, uma impressão terrível. Nunca vivemos isso antes."

A diocese faz as contas das próprias perdas: "A proximidade dos padres a comunidade é visível pelos números de mortos e internados. Mais de 10 padres já morreram pelo coronavírus e outros 20 estão nos hospitais".

Nos últimos dias, a quantidade de caixões à espera de serem cremados ou enterrados levou a diocese a ceder espaço para eles no

interior do Templo de Todos os Santos, uma igreja dentro do cemitério municipal.

"Os caixões estavam prestes a serem empilhados por falta de lugar. Colocamos a igreja à disposição para que os mortos não estejam em um canto qualquer. Para que possam, em seus últimos momentos, repousar em uma igreja. É um pequeno gesto simbólico", diz. Nesta terça, segundo ele, havia entre 100 e 150 mortos no templo.

O jornal local L'Eco di Bergamo publicou dez páginas com obituários na edição de 13 de março Reprodução O jornal local L'Eco di Bergamo publicou dez páginas com obituários na edição de 13 de março "" Segundo o secretário Giacomo Angeloni, responsável pela gestão dos cemitérios municipais, o ritmo dos enterros levou à realização de um sepultamento a cada meia hora nos últimos dias.

Toda a situação, do diagnóstico ao enterro, tem sido anormal. Há relatos, confirmados pelo religioso, de doentes que foram levados de casa, alguns ainda sem a certeza do resultado positivo, e que não foram mais vistos pela família.

"O parente vai embora de ambulância, entra no hospital e ninguém mais pode vê-lo, porque não se pode nem visitar. Depois, um telefonema avisa que a pessoa está morta, que um caixão fechado está liberado e que poderá ser enterrado sem funeral", contou dom Giulio. "Até o luto se tornou ainda mais difícil."

Segundo o decreto que colocou a Itália inteira em quarentena no dia 9 de março, estão proibidas todas as cerimônias civis, de casamentos e funerais, para evitar a aglomeração de pessoas e o contágio entre elas.

"A única possibilidade que o governo permite é, no ato do sepultamento, que o padre realize uma bênção para a família próxima", diz dom Giulio. "Mas, quando é uma vítima do coronavírus, os familiares quase sempre estão em isolamento obrigatório, então tem havido padres sozinhos dando a bênção para um defunto enterrado sem ninguém por perto. Ou uma ou duas pessoas."

Também a extrema-unção, um dos sacramentos da Igreja Católica, está vetada aos doentes do coronavírus, porque quem está contaminado não tem autorização para ser visitado por ninguém.

Para contornar, os bispos da Lombardia concederam que uma bênção possa ser realizada por laicos nessas situações, inclusive pela equipe médica. "Muita gente está morrendo sozinha nos hospitais, sem familiares, sem ninguém. Como todos, os padres também não podem entrar lá."

Com tantos casos, a estrutura sanitária de Bérgamo opera além do limite. Especialmente o hospital Papa João 23, onde quase 500 pacientes estão internados e faltam leitos de terapia intensiva.

Para liberar camas nos hospitais, o serviço sanitário autorizou o uso de três hotéis para receber os pacientes do coronavírus que não têm condições de fazer o isolamento domiciliar. Casos, por exemplo, de pessoas que não podem dispor em casa de um quarto exclusivo ou que não têm cuidadores.

Tudo para evitar situações como as descritas pelo médico Christian Salaroli, de Bérgamo, ao jornal Corriere della Sera. Por carência de leitos, a equipe do hospital Papa João 23 tem precisado escolher quem segue adiante no tratamento. "Se uma pessoa tem entre 80 e 95 anos e uma grave insuficiência respiratória, provavelmente não prosseguirá", disse.

Salaroli também citou pacientes com patologias cardiorrespiratórias ou problemas graves na coronária, porque toleram mal alguns procedimentos. "Digo a mim mesmo que é como uma guerra. Se procura salvar só quem tem mais chances. É o que está acontecendo."

Acompanhe a cobertura em tempo real da pandemia de coronavírus

+ Coronavírus em Pernambuco, no Brasil e no mundo

+ Coronavírus na Política

+ Coronavírus na Economia

+ Coronavírus em Diversão&Arte

+ Coronavírus no Esporte

ANEXO VI

(MEMO nº. 017/2020/SESAP 10.3)

About

Worldometer is run by an international team of developers, researchers, and volunteers with the goal of making world statistics available in a thought-provoking and time relevant format to a wide audience around the world. It is published by a small and independent digital media company based in the United States. We have no political, governmental, or corporate affiliation. Furthermore, we have no investors, donors, grants, or backers of any type. We are completely independent and self-financed through automated programmatic advertising sold in real time on multiple ad exchanges.

Trusted Authority

Worldometer was voted as one of the best free reference websites (http://www.ala.org/rusa/sections/mars/marspubs/marsbestfreewebsites/marsbestref2011) by the **American Library Association** (ALA), the oldest and largest library association in the world.

Worldometer is a provider of global COVID-19 statistics for many caring people around the world. Our data is also trusted and used by the **UK Government** (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878126/COVID-19_Press_Conference_Slides_05042020.pdf), **Johns Hopkins CSSE** (https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6), the **Government of Thailand** (https://ddc.moph.go.th/viralpneumonia/eng/index.php), the **Government of Pakistan** (http://covid.gov.pk/stats/global), the **Government of Sri Lanka** (https://mpb.health.gov.lk/covid19-dashboard/), **Government of Vietnam** (https://ncov.moh.gov.vn/), **Financial Times** (https://www.ft.com/coronavirus-latest), **The New York Times** (https://www.nytimes.com/2020/03/20/health/coronavirus-data-logarithm-chart.html), **Business Insider** (https://www.businessinsider.com/figures-show-us-soon-coronavirus-worse-china-2020-3), **BBC** (https://www.bbc.co.uk/iplayer/episode/m000h499/bbc-news-at-ten-05042020), and many others.

Over the past 15 years, our statistics have been requested by, and provided to: **Oxford University Press, Wiley, Pearson, CERN, World Wide Web Consortium (W3C), The Atlantic, BBC, Milton J. Rubenstein Museum of Science & Technology, Science Museum of Virginia, Morgan Stanley, IBM, Hewlett Packard, Dell, Kaspersky, PricewaterhouseCoopers, Amazon Alexa, Google Translate, the United Nations Conference on Sustainable Development (Rio+20)**, the U2 (/u2/) concert (/u2/), and many others.

Worldometer is cited as a source in over 10,000 published books (https://www.google.com/search?q=worldometers&tbnG=Search+Books&tbm=bks&tbo=1&gws_rd=ssl) and in more than 6,000 professional journal articles (http://scholar.google.com/scholar?hl=en&q=worldometers&btnG=&as_sdt=1%2C22&as_sdtp=).

How it works

For the COVID-19 data, we collect data from official reports, directly from Government's communication channels or indirectly, through local media sources when deemed reliable. We provide the source of each data update in the "Latest Updates" (News) section. Timely updates are made possible thanks to the participation of users around the world and to the dedication of a team of analysts and researchers who validate data from an ever-growing list of over 5,000 sources. More info (/coronavirus/about/)

For the live counters on the home page (/), we elaborate instead a real-time estimate through our proprietary algorithm which processes the latest data and projections provided by the most reputable organizations and statistical offices in the world (/sources/).

Why Live Counters?

When using static numbers to describe numerical change through time, we fail to provide a sense of the relationship between the magnitude of change and the flow of time, which is how we experience change in real life. What static numbers fail to provide is the perception of the frequency and timing of events, the *rhythm*, an essential part of nature and a tool for understanding the physical phenomena surrounding us. Only by employing live counters we are able to convey these elements and truly grasp the magnitude of the quantitative change through time.

Other Projects

Within the Real Time Statistics Project, we have launched Internet Live Stats (http://www.internetlivestats.com/) and 7 Billion World (http://www.7billionworld.com/)
We pioneered two methods of visualizing data: the ***Single Unit Isotype*** and the ***Live Isotype*** (details (http://www.internetlivestats.com/about.php)).

Questions and Feedback

Please refer to the frequently asked questions (/faq/). For other questions or to send us your feedback, please contact us (/contact/).

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ANEXO VII

(MEMO nº. 017/2020/SESAP 10.3)

Diário Oficial
Imprensa Nacional

REPÚBLICA FEDERATIVA DO BRASIL
BRASÍLIA - DF

Nº 59-B - DOU de 26/03/20 - Seção 1 – p. 1

MINISTÉRIO DA SAÚDE
GABINETE DO MINISTRO

PORTARIA Nº 568, DE 26 DE MARÇO DE 2020

Autoriza a habilitação de leitos de Unidade de Terapia Intensiva Adulto para atendimento exclusivo dos pacientes COVID-19.

O MINISTRO DE ESTADO DA SAÚDE, no uso das atribuições que lhe conferem os incisos I e II do parágrafo único do art. 87 da Constituição, e

Considerando a Lei nº 13.979, 6 de fevereiro de 2020, que dispõe sobre as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Coronavírus responsável pelo surto de 2019;

Considerando a Medida Provisória nº 924, de 13 de março de 2020, que abre Crédito Extraordinário para o Programa de Enfrentamento da Emergência de Saúde Pública de Importância Internacional Decorrente do Coronavírus; e

Considerando a Portaria nº 356/GM/MS, de 11 de março de 2020, que dispõe sobre a regulamentação e operacionalização do disposto na Lei nº 13.979, de 6 de fevereiro de 2020, que estabelece as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Corona vírus (COVID-19); resolve:

Art. 1º Fica autorizada, em caráter excepcional, a habilitação temporária de leitos de Unidade de Terapia Intensiva Adulto para atendimento exclusivo dos pacientes COVID-19.

§ 1º A habilitação temporária dos leitos de UTI ocorrerá a partir da solicitação do gestor local, de acordo com as necessidades dos seus territórios, através de ofício endereçado à Coordenação-Geral e Atenção Hospitalar e domiciliar - CGAHD via e-mail cgahd@saude.gov.br, o qual deverá nominar:

I - a relação dos estabelecimentos em que serão instalados os leitos de UTI, com os seus espectivos Cadastro Nacional de Estabelecimento de Saúde - CNES;

II - o quantitativo de leitos a serem habilitados; e

III - os equipamentos e o RH disponíveis para o funcionamento dos leitos.

§ 2º Os Estabelecimentos temporários que não possuirem o CNES, deverão obter as orientações específicas do Ministério da Saúde, disponível em Wiki CNES (wiki.datasus.gov.br).

§3º A publicação das Portarias de habilitação ocorrerá considerando os critérios epidemiológicos (paciente x leitos) e rede assistencial disponível dos estados, pelo período excepcional de 90 (noventa) dias, podendo ser prorrogado.

§ 4º O custeio para diária de leito neste âmbito, será de R$ 800,00 (oitocentos reais).

§ 5º As habilitações tratadas no art. 1º poderão ser encerradas a qualquer tempo caso seja finalizada a situação de emergência de saúde pública de importância internacional decorrente do Coronavírus, nos termos do art. 4º, §1º, da Lei nº 13.979 de 2020.

Art. 2º Os recursos orçamentários, objeto desta Portaria, correrão por conta do orçamento do Ministério da Saúde, devendo onerar o Programa de Trabalho 10.122.5018.21C0.6500 - Enfrentamento da Emergência de Saúde Pública de Importância Internacional Decorrente do Coronavirus.

Art. 3º Esta Portaria entra em vigor na data de sua Publicação.

LUIZ HENRIQUE MANDETTA

Ministério da Saúde

SIGTAP - Sistema de Gerenciamento da Tabela de Procedimentos, Medicamentos e OPM do SUS

Usuário: publico

- Procedimento
- Compatibilidades
- Tabelas
- Relatórios

Procedimento

Procedimento: 03.03.01.022-3 - TRATAMENTO DE INFECÇÃO PELO CORONAVIRUS – COVID 19

Grupo: 03 - Procedimentos clínicos
Sub-Grupo: 03 - Tratamentos clínicos (outras especialidades)
Forma de Organização: 01 - Tratamento de doenças infecciosas e parasitárias

Competência: 05/2020 Histórico de alterações

Modalidade de Atendimento: Hospitalar
Complexidade: Média Complexidade
Financiamento: Média e Alta Complexidade (MAC)
Sub-Tipo de Financiamento:
Instrumento de Registro: AIH (Proc. Principal)
Sexo: Ambos
Média de Permanência: 5
Tempo de Permanência:
Quantidade Máxima: 1
Idade Mínima: 0 meses
Idade Máxima: 130 anos
Pontos: 80
Atributos Complementares: Admite permanência à maior

Valores

Serviço Ambulatorial:	R$ 0,00	Serviço Hospitalar:	R$ 1.195,99
Total Ambulatorial:	R$ 0,00	Serviço Profissional:	R$ 304,01
		Total Hospitalar:	R$ 1.500,00

Descrição	CID	CBO	Leito	Serviço Classificação	Habilitação	Redes	Origem	Regra Condicionada	Renases	T. SS

Descrição

COMPREENDE AS AÇÕES NECESSÁRIAS PARA O TRATAMENTO CLÍNICO DO PACIENTE INTERNADO COM DIAGNÓSTICO DE COVID 19

Ministério da Saúde

SIGTAP - Sistema de Gerenciamento da Tabela de Procedimentos, Medicamentos e OPM do SUS

Usuário: publico

- Procedimento
- Compatibilidades
- Tabelas
- Relatórios

Procedimento

Procedimento: 08.02.01.029-6 - DIÁRIA DE UTI II - ADULTO COVID19

Grupo: 08 - Ações complementares da atenção à saúde
Sub-Grupo: 02 - Ações relacionadas ao atendimento
Forma de Organização: 01 - Diárias

Competência: 05/2020 Histórico de alterações

Modalidade de Atendimento: Hospitalar
Complexidade: Não se Aplica
Financiamento: Média e Alta Complexidade (MAC)
Sub-Tipo de Financiamento:
Instrumento de Registro: AIH (Proc. Especial)
Sexo: Ambos
Média de Permanência:
Tempo de Permanência:
Quantidade Máxima:
Idade Mínima: 12 anos
Idade Máxima: 130 anos
Pontos:
Atributos Complementares:

Valores

Serviço Ambulatorial:	R$ 0,00	Serviço Hospitalar:	R$ 1.372,80
Total Ambulatorial:	R$ 0,00	Serviço Profissional:	R$ 227,20
		Total Hospitalar:	R$ 1.600,00

Descrição | CID | CBO | Leito | Serviço Classificação | Habilitação | Redes | Origem | Regra Condicionada | Renases | TUSS

Descrição

COMPREENDE TODAS AS AÇÕES NECESSÁRIAS À MANUTENÇÃO DA VIDA DO PACIENTE COM DIAGNÓSTICO DE CORONAVÍRUS - COVID 19 COM O SUPORTE E TRATAMENTO INTENSIVOS.

ANEXO VIII

(MEMO nº. 017/2020/SESAP 10.3)

Report 21: Estimating COVID-19 cases and reproduction number in Brazil

Thomas A Mellan[3*], Henrique H Hoeltgebaum*, Swapnil Mishra*, Charlie Whittaker*, Ricardo P Schnekenberg*, Axel Gandy*, H Juliette T Unwin, Michaela A C Vollmer, Helen Coupland, Iwona Hawryluk, Nuno Rodrigues Faria, Juan Vesga, Harrison Zhu, Michael Hutchinson, Oliver Ratmann, Melodie Monod, Kylie Ainslie, Marc Baguelin, Sangeeta Bhatia, Adhiratha Boonyasiri, Nicholas Brazeau, Giovanni Charles, Laura V Cooper, Zulma Cucunuba, Gina Cuomo-Dannenburg, Amy Dighe, Bimandra Djaafara, Jeff Eaton, Sabine L van Elsland, Richard FitzJohn, Keith Fraser, Katy Gaythorpe, Will Green, Sarah Hayes, Natsuko Imai, Ben Jeffrey, Edward Knock, Daniel Laydon, John Lees, Tara Mangal, Andria Mousa, Gemma Nedjati-Gilani, Pierre Nouvellet, Daniela Olivera, Kris V Parag, Michael Pickles, Hayley A Thompson, Robert Verity, Caroline Walters, Haowei Wang, Yuanrong Wang, Oliver J Watson, Lilith Whittles, Xiaoyue Xi, Lucy Okell, Ilaria Dorigatti, Patrick Walker, Azra Ghani, Steven Riley, Neil M Ferguson[1], Christl A. Donnelly, Seth Flaxman* and Samir Bhatt[2*]

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SUGGESTED CITATION
Thomas A Mellan, Henrique H Hoeltgebaum, Swapnil Mishra *et al.* Estimating COVID-19 cases and reproduction number in Brazil. Imperial College London (08-05-2020), doi: https://doi.org/10.25561/78872.

DOI: https://doi.org/10.25561/78872

1 Summary

Brazil is an epicentre for COVID-19 in Latin America. In this report we describe the Brazilian epidemic using three epidemiological measures: the number of infections, the number of deaths and the reproduction number. Our modelling framework requires sufficient death data to estimate trends, and we therefore limit our analysis to 16 states that have experienced a total of more than fifty deaths. The distribution of deaths among states is highly heterogeneous, with 5 states—São Paulo, Rio de Janeiro, Ceará, Pernambuco and Amazonas—accounting for 81% of deaths reported to date. In these states, we estimate that the percentage of people that have been infected with SARS-CoV-2 ranges from 3.3% (95% CI: 2.8%-3.7%) in São Paulo to 10.6% (95% CI: 8.8%-12.1%) in Amazonas. The reproduction number (a measure of transmission intensity) at the start of the epidemic meant that an infected individual would infect three or four others on average. Following non-pharmaceutical interventions such as school closures and decreases in population mobility, we show that the reproduction number has dropped substantially in each state. However, for all 16 states we study, we estimate with high confidence that the reproduction number remains above 1. A reproduction number above 1 means that the epidemic is not yet controlled and will continue to grow. These trends are in stark contrast to other major COVID-19 epidemics in Europe and Asia where enforced lockdowns have successfully driven the reproduction number below 1. While the Brazilian epidemic is still relatively nascent on a national scale, our results suggest that further action is needed to limit spread and prevent health system overload.

2 Introduction

The world faces an unprecedented public health emergency in the COVID-19 pandemic. Since the emergence of the novel coronavirus (SARS-CoV-2) in China in December 2019, global spread has been rapid, with over 3.5 million cases and almost 250 thousand deaths reported from 187 countries as of the 6th May [13]. Though transmission of the disease beyond Asia was initially centred around Western Europe and North America, significant spread is now seen in other parts of the world, including many countries across Sub-Saharan Africa and Latin America.

One such area of concern is Brazil - since report of its first case on 25th February, its epidemic has grown quickly, with the country now reporting over 135,000 cases and over 7,000 deaths [14].In response to significant spread and community transmission of the virus within the country, Brazilian state and city officials have mandated extensive public health measures to reduce the transmission of COVID-19, including declaring a state of emergency, mandating the closure of retail and service businesses,

DOI: https://doi.org/10.25561/78872

restricting transportation, and closing schools. Specific packages of interventions have been decided at the state level, with substantial variation between states in the extent to which measures have been adopted, and their comparative timing [4]. Importantly, interventions employed to date remain short of the widespread and mandatory lockdowns implemented across parts of Asia and Europe and which have proved to be highly effective at containing spread of the virus [7, 19].

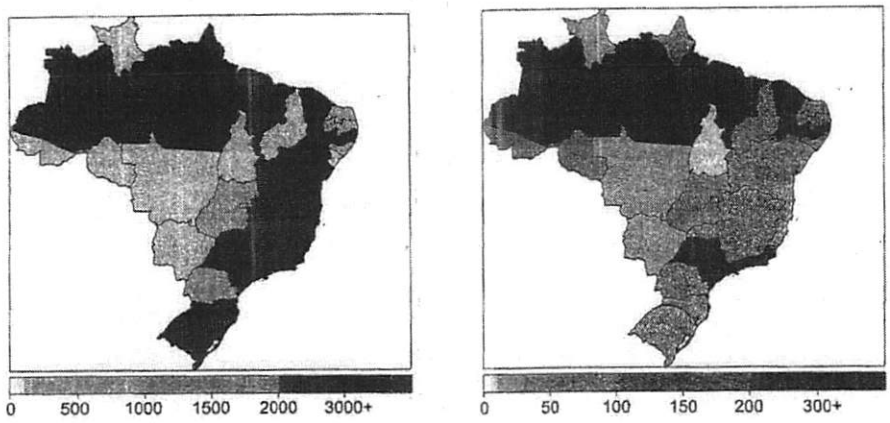

Figure 1: Map of cases (a) and deaths (b) in Brazil by state level. Data source: Painel Coronavirus at `https://covid.saude.gov.br`, accessed on 7th May 2020.

It remains unclear the extent to which these measures have been effective in reducing transmission across the country. Reported cases across Brazil have more than doubled over the past 10 days and show little sign of slowing. Given this rapid growth, a better understanding of the current epidemiological situation and the impact of interventions deployed to date is required to guide policy decisions aimed at preventing worsening of the public health emergency the country faces. Motivated by this, we extend a previously published semi-mechanistic Bayesian hierarchical model of COVID-19 epidemiological dynamics [7, 19] to assess the impact of interventions aimed at curbing transmission of COVID-19 across Brazil. In our framework we estimate the number of deaths, infections and transmission as a function of patterns in human mobility. We utilise this framework to explore the epidemiological situation in detail at the state level and understand the spread of the virus across the country to date. These results include both estimates of the proportion of individuals infected so far as well as the impact of different control interventions, and provide insight into possible future epidemic trajectories should further control measures be employed, or current interventions relaxed.

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State	IFR %	Population	Deaths	Deaths per million	Infections (thousands)	Attack rate %	Reproduction number
SP	0.7	46,289,333	3,045	65.80	1,530 [1,310, 1,700]	3.30 [2.83, 3.68]	1.47 [1.34, 1.59]
RJ	0.8	17,366,189	1,205	69.40	582 [492, 657]	3.35 [2.83, 3.78]	1.44 [1.28, 1.60]
CE	1.1	9,187,886	848	92.30	410 [343, 464]	4.46 [3.73, 5.05]	1.61 [1.42, 1.81]
PE	1.1	9,617,072	803	83.50	288 [239, 328]	3.00 [2.49, 3.41]	1.32 [1.14, 1.53]
AM	0.8	4,207,714	751	178	448 [372, 509]	10.60 [8.84, 12.10]	1.58 [1.38, 1.81]
PA	0.9	8,690,745	392	45.10	439 [339, 513]	5.05 [3.90, 5.90]	1.90 [1.57, 2.31]
MA	1.0	7,114,598	291	40.90	147 [118, 170]	2.07 [1.65, 2.40]	1.55 [1.32, 1.80]
BA	1.1	14,930,424	160	10.70	59.5 [46.5, 69.6]	0.40 [0.31, 0.47]	1.37 [1.14, 1.63]
ES	0.9	4,064,052	145	35.70	91 [69.4, 107]	2.24 [1.71, 2.64]	1.57 [1.29, 1.90]
PR	0.9	11,516,840	101	8.77	28.4 [21.6, 33.6]	0.25 [0.19, 0.29]	1.16 [0.95, 1.39]
MG	1.0	21,292,666	97	4.56	28.1 [21, 33.4]	0.13 [0.10, 0.16]	1.30 [1.05, 1.57]
PB	1.2	4,039,277	92	22.80	25.7 [19.4, 30.4]	0.64 [0.48, 0.75]	1.23 [0.97, 1.52]
AL	1.1	3,351,092	89	26.60	40.1 [29, 48.1]	1.20 [0.87, 1.44]	1.27 [0.94, 1.67]
RS	0.9	11,422,973	87	7.62	48.2 [36.3, 57.1]	0.42 [0.32, 0.50]	1.44 [1.15, 1.77]
RN	1.1	3,534,165	72	20.40	19.9 [14.7, 23.7]	0.56 [0.42, 0.67]	1.18 [0.92, 1.45]
SC	0.8	7,252,502	59	8.14	16.5 [12.2, 19.7]	0.23 [0.17, 0.27]	1.14 [0.91, 1.38]

Table 1: Estimated infection fatality ratio (IFR), state population, reported deaths and deaths per million population, estimated number of infections in thousands, attack rate (AR), and time-varying reproduction number on 6 May 2020 with 95% credible intervals, for São Paulo (SP), Rio de Janeiro (RJ), Pernambuco (PE), Ceará (CE), Amazonas (AM), Pará (PA), Maranhão (MA), Bahia (BA), Espírito Santo (ES), Paraná (PR), Minas Gerais (MG), Paraíba (PB), Rio Grande do Sul (RS), Rio Grande do Norte (RN), Alagoas (AL), Santa Catarina (SC).

DOI: https://doi.org/10.25561/78872

3 Results

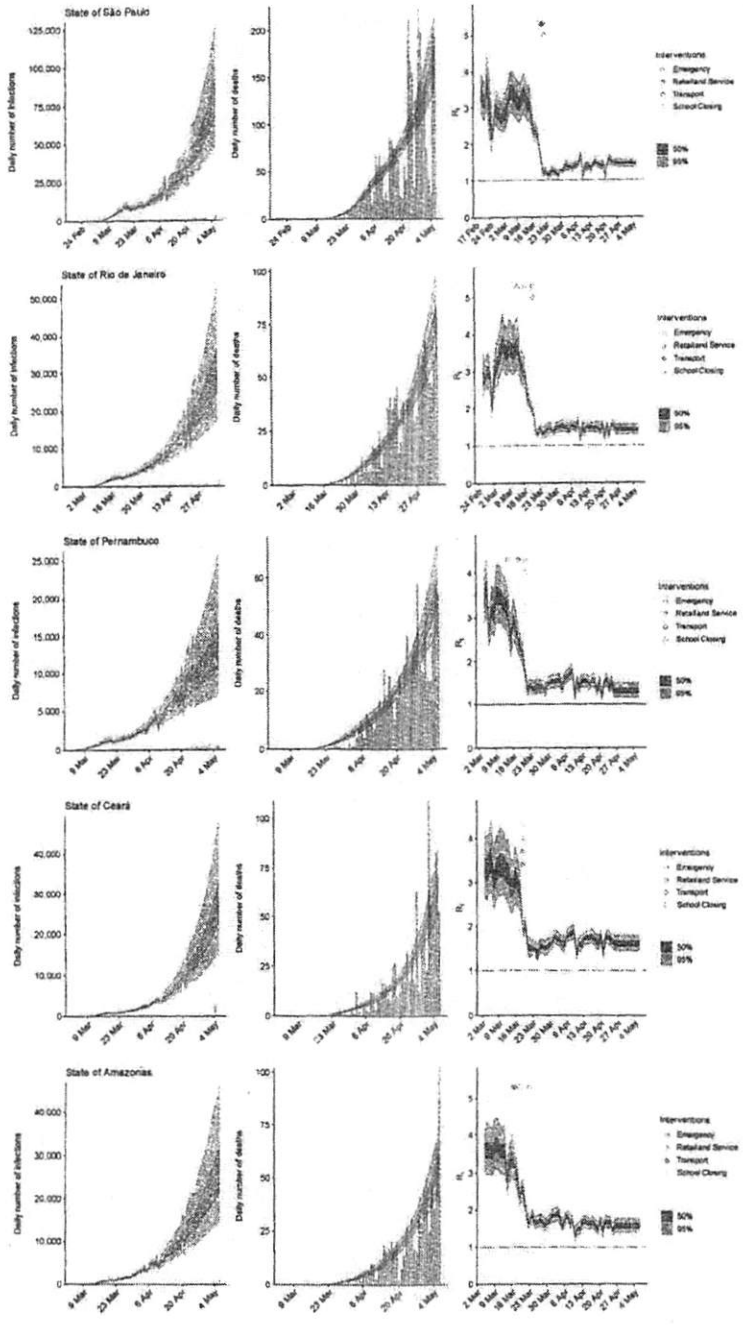

Figure 2: Estimates of infections, deaths and R_t. Left: daily number of infections, brown bars are reported cases, blue bands are predicted infections, dark blue 50% credible interval (CI), light blue 95% CI. Middle: daily number of deaths, brown bars are reported deaths, blue bands are predicted deaths, CI as in left plot. Right: time-varying reproduction number R_t, dark green 50%CI, light green 95%CI. If the R_t is above 1, the number of infections continues to grow. Icons are interventions shown at the time they occurred.

DOI: https://doi.org/10.25561/78872

3.1 Attack Rates

Brazil has already reported almost twice as many COVID-19 deaths than China and over 100,000 confirmed cases. But despite these high numbers, we estimate that only a small proportion of individuals within each state has been infected to date (attack rate). The distribution of deaths among states is highly heterogeneous, with 5 states—São Paulo, Rio de Janeiro, Ceará, Pernambuco and Amazonas—accounting for 81% of reported deaths. In these states, we estimate that the percentage of people that have been infected with SARS-CoV-2 ranges from 3.3% (95% CI: 2.8%-3.7%) in São Paulo to 10.6% (95% CI: 8.8%-12.1%) in Amazonas. The remaining states all have attack rates below 2.3%, apart from Pará (PA), which at 5.05% (CI95: 3.9%-5.9%), is lower only than Amazonas. The full list of attack rate estimates for each state is shown in Table 1.

These results illustrate that the proportion of the population already infected and potentially immune remains low. Considering an R_0 of 3 and transmissibility similar to that observed across European[7] and Brazilian[16] settings, the estimated share of the population infected to date remains far short of the 70% herd immunity threshold required to prevent rapid resurgence of the virus if control measures are relaxed. [7] and in Brazil.[16]).

3.2 Sensitivity Analysis - Infection Fatality Rate & Underreporting

Substantial uncertainty remains in our understanding of the fundamental epidemiology of COVID-19 and the quality of surveillance systems across different settings. Consequently, estimates of the expected number of deaths and infections are sensitive to assumptions made within our modelling framework. In particular there is uncertainty surrounding the infection fatality ratio (IFR), which is the probability of an individual dying if infected with SARS-CoV-2. If this number is very low, more infections and a higher attack rate are to be expected for the same number of observed deaths, and vice versa. There is also considerable uncertainty in the observed death data, as little is known about the extent and nature of underreporting. In order to examine the effect of these assumptions on the conclusions described above, we undertook a series of sensitivity analyses (see Appendix) exploring different assumptions surrounding state-level IFR (relating to assumptions about how healthcare quality varies with state income) and the extent of death underreporting. The results of these sensitivity analysis, as expected, yield quantitative differences in the predicted attack rates - for example, assuming a 50% level of death underreporting changes our predicted attack rates from 3.30% (CI95: 2.83%-3.68%) and 10.60% (CI95: 8.84%-12.10%) to 6.49% (CI95: 5.44%-7.35%) and 19.90% (CI95:16.40%-22.80%) for São Paulo and Amazonas respectively. Similarly, assumptions surrounding the extent and variation of healthcare quality across states

did not qualitatively alter the conclusions reached, namely that levels of infection in the population to date are significantly lower than that required for herd immunity.

3.3 Effectiveness of Control Measures

Attempts to contain the spread of SARS-Cov-2 in the community have centred around the deployment of various non-pharmaceutical interventions (NPIs) that involve reducing the number of contacts made between individuals [6]. Common examples are school closures, social distancing rules, banning of public gatherings and complete lockdown. Disrupting chains of transmission and bringing the reproduction number (R_t) below 1 is essential to control the virus and prevent exponential growth. Using our framework, we estimate the time-varying effective reproduction number across all Brazilian states. We parameterised R_t as a function of Google mobility data [2] - an implicit assumption within this framework is that changes in mobility patterns can be related to changes in transmission intensity, which is supported by previous research examining other respiratory viruses [18, 10].

We describe the time-varying effective reproduction number R_t for the 5 states with the current highest number of deaths: São Paulo (SP), Rio de Janeiro (RJ), Pernambuco (PE), Ceará (CE), and Amazonas (AM) (Figure 2). Estimates of the initial reproduction number (R_0) are consistently in the range of 3 - 4 across all states, in line with estimates of transmissibility derived from European data [7]. Our results also show that R_t has dropped dramatically following the implementation of public health interventions, with mobility declining by 29% on average across Brazil and R_t declining by 54% on average. However, in none of the states we considered did our results suggest that measures implemented to date have brought R_t below 1. By contrast, in previously published work examining Italy [19] where stringent measures including societal lockdowns have been implemented, mobility had reduced by 53% compared to baseline[2], reducing R_t by 85% compared to R_0 and bringing it significantly below 1. These results therefore suggest that, in the absence of additional major interventions, substantial further growth of the epidemic is expected across all 16 Brazilian states considered, leading to worsening of the COVID-19 public health crisis.

Changes in the effective reproduction number reflect alterations to patterns of mobility and contact stemming from both government-mandated interventions as well as changes in behaviour at the individual level. Within our framework, we explore the comparative impact of reductions in different types of mobility (in different settings, including the workplace, parks, residential and transit stations) on the effective reproduction number (see Figure 3). Our results support broad equivalency in the effect of reductions in different types of mobility and their corresponding impact on R_t (Figure 3). However,

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we note the large credible intervals associated with each estimate, which limits our ability to identify differences.

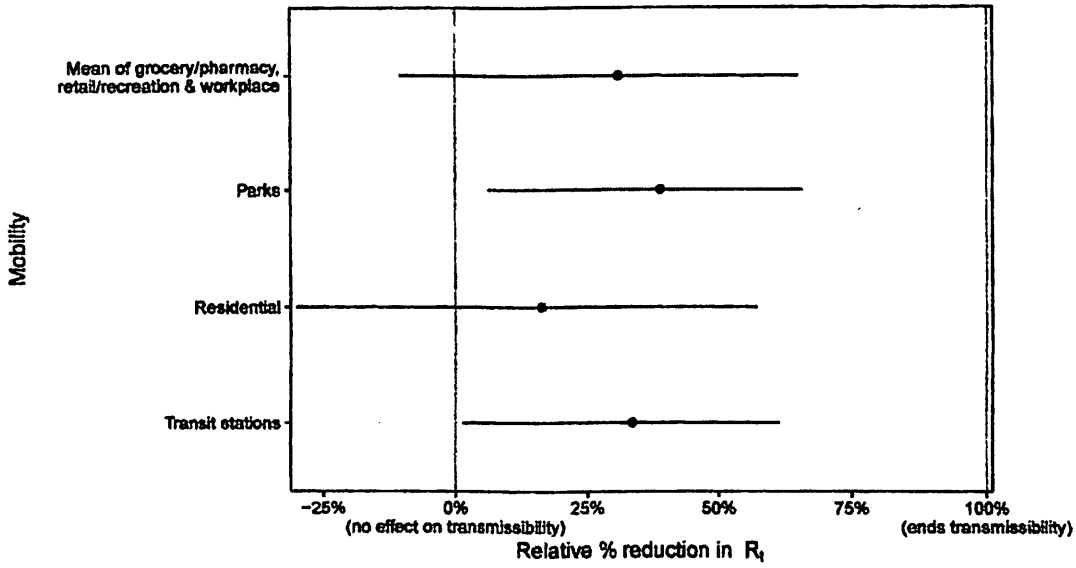

Figure 3: Effect sizes for mobility covariates in R_t.

4 Conclusion

In this report we utilise a semi-mechanistic Bayesian model of COVID-19 transmission, calibrated using data on reported deaths at the state level, to infer the epidemiological characteristics of the epidemic in Brazil to date. The results presented here suggest an ongoing epidemic in which substantial reductions in the average reproduction number have been achieved through non-pharmaceutical interventions. However our results also show that so far the changes in mobility have not been stringent enough to reduce the reproduction number below 1. Therefore we predict continued growth of the epidemic across Brazil and increases in the associated number of cases and deaths unless further actions are taken.

Our results reveal extensive heterogeneity in predicted attack rates between states, suggesting that the epidemic is at a far more advanced stage in some states compared to others. Despite this heterogeneity however, in no states do any of our results indicate that herd immunity is close to being reached, underscoring the early stage of the epidemic in Brazil currently, and the prospect of the situation worsening unless further control measures are implemented. The estimated attack rates are calculated from the reported number of deaths. We expect ascertainment of deaths to be higher than for cases, a phenomenon attributable to the large proportion of infected individuals who typically present as asymp-

tomatic e.g. [11]. Because of this extensive asymptomatic fraction and limitations surrounding population testing currently, we expect our estimates to be more accurate than naive attack rates estimated from the reported number of cases. Important to note however that estimating the extent to which deaths are underreported remains very difficult and we therefore consider a number of different death underreporting scenarios in our analyses. Although differences in these assumptions alter our quantitative estimates of attack rate, they do not alter our qualitative conclusions surrounding the impact of control interventions and the proportion of the population infected to date falling short of the threshold required for herd immunity. We additionally consider the possibility that the extent of COVID-19 death underreporting has been non-stationary over time - specifically, that increases in the ascertainment of COVID-19 deaths over time during the initial phase of the epidemic could lead to upwards biasing of our R_0 estimates. To test the sensitivity of this bias in R_0 we ran our model with a strong prior on a low R_0 but found that our conclusions regarding $R_t > 1$ were unchanged.

Our results surrounding attack rates are also sensitive to assumptions about the state-specific infection fatality ratio (IFR) used, a quantity driven by a diversity of different factors including demographic structure of the state's population, the pattern of social contacts between age-groups, and the quality/quantity of available healthcare (such as supportive oxygen therapy and mechanical ventilation). Our estimated IFRs for each of the Brazilian states range from 0.7% to 1.2%, reflecting substantial differences between states in their demographic structure and healthcare provision. As an example, the population of Amazonas is on average 7 years younger than São Paulo. Using previously published estimates of mortality risk [17], this difference would lead to naive estimates of the IFR that are lower in Amazonas compared to São Paulo (0.38% and 0.70% respectively. However, these previous studies assume a level of healthcare similar to that of China, accounting for the poorer health outcomes we expect in Brazil's least affluent states produces IFR estimates of 0.70% for São Paulo and 0.72% Amazonas. Whilst estimates of these IFRs will ultimately be sensitive to considerations of how healthcare quality shapes patterns of mortality, the presented results are robust to assumptions surrounding the extent of variation in healthcare quality (see Appendix). We would also note that across all states considered and across all scenarios, the IFR we predict is substantially higher than the value of 0.1% used in the recent work by Galluci-Neto and colleagues [5].

The semi-mechanistic Bayesian framework utilised also allows quantification of the impact of non-pharmaceutical interventions on the reproduction number, R_t. Our results suggest substantial reductions in the estimated value of R_t across all states following introduction of these interventions. This is predicated on the assumption that reductions in transmission can be accurately ascertained from reductions in mobility. Such an assumption has been borne out in previous work looking at the impact of reductions in

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mobility on transmission of the virus during the Chinese epidemic [1]. However, it is important to note that the relationship linking mobility and transmission will likely be highly dynamic over the course of an epidemic, being modified by other factors such as behavioural changes surrounding physical distancing and routine mask wearing. .

Our results suggests that, despite reductions, these measures have only been partially successful in reducing transmission - across all states considered here, the value of R_t remains above 1, indicating that transmission remains uncontrolled and that in the absence of stricter measures leading to further reductions in mobility, that growth of the epidemic will continue. This is in contrast to European settings where societal lockdowns have been implemented, leading to estimated reductions in R_t below 1 [19]. Such reductions have been associated with substantial reductions in patterns of mobility - in countries such as Italy where a strict lockdown was mandated, mobility declined to far greater extent than has been observed to date in Brazil. For instance, patterns of mobility surrounding grocery/pharmacy in Lombardy, one of the most severely affected regions in Italy, dropped by almost 75% over when measures were introduced (yielding an estimated R_t of 0.58). By contrast, across Amazonas and São Paulo to date, the maximum observed reduction has only been 18% and 21% respectively, producing R_t estimates of 1.58 and 1.46 respectively. Overall whilst our work suggests that implemented measures to date have had an impact on transmission, they also highlight their insufficiency if transmission is to be controlled, and the need for further contact-limiting measures, beyond what is currently implemented, to reduce the reproduction number in Brazil to less than 1.

Overall, our results reveal that despite extensive spread and transmission of the virus across the country, the extent of infection in the general population remains low and far short of the level required for herd immunity. This result is robust to assumptions surrounding the IFR associated with each state, and the extent of underreporting we assume in the available deaths data. More broadly, our results suggest that in the absence of the introduction of further control measures that will more strongly curb transmission, Brazil faces the prospect of an epidemic that will continue to grow exponentially.

5 Acknowledgements

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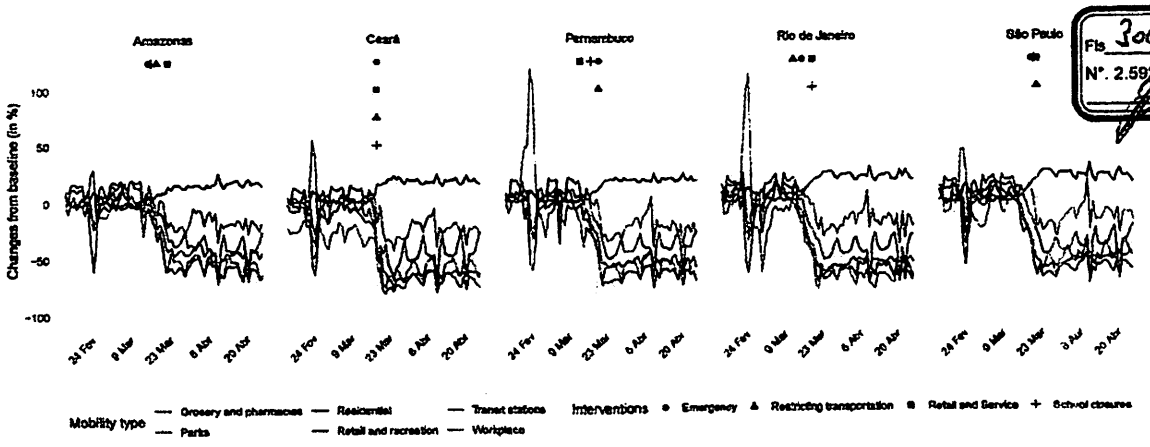

Figure 4: Mobility covariates from Google mobility reports for São Paulo (SP), Rio de Janeiro (RJ), Pernambuco (PE), Ceará (CE), Amazonas (AM).

6 Appendix

6.1 Model

We adopt the Bayesian semi-mechanistic model from [7] to estimate transmission intensity and attack rates of COVID-19 conditional on the reported number of deaths. The code base for our work can be found at `https://github.com/ImperialCollegeLondon/covid19model`. For the Brazilian model at state level, four covariates related to Google mobility were included. These describe the reduction or increase in mobility in residential areas ($k = 1$), transit stations ($k = 2$), parks ($k = 3$) and the average between groceries and pharmacies, retail and recreational areas and workplaces ($k = 4$), which are averaged due to collinearity.

As adopted in the recent published report, a subnational analysis for Italy [19], the time-varying reproduction number R_t is modelled as function of Google mobility data. Parameters are jointly estimated for 16 Brazilian states to evaluate if interventions taken so far were able to reduce R_t below to 1. Partial and full pooling were adopted, but produced almost identical results.

Denote $I_{k,t,m}$ as the k-th Google mobility indicator, at time t for Brazilian state m. The time-varying reproduction number for Brazilian state m, $R_{t,m}$, is modeled by:

$$R_{t,m} = R_{0,m}\left(2\lambda^{-1}(-\sum_{k=1}^{4}(\alpha_k + \beta_{m,k})I_{k,t,m})\right)$$

where λ^{-1} denotes the logistic function, α_k the effects shared between M states and $\beta_{m,k}$ state-specific

effects. Prior distributions for the partial pooling model were set as

$$\alpha_k \sim \mathcal{N}(0, 0.5)$$
$$\beta_{m,k} \sim \mathcal{N}(0, \gamma), \quad \text{with} \quad \gamma \sim \mathcal{N}(0, 0.5),$$

while the prior distribution for $R_{0,m}$ was chosen to be

$$R_{0,m} \sim \mathcal{N}(3.28, |\kappa|)$$
$$\kappa \sim \mathcal{N}(0, 0.5)$$

with κ being the same among all states to share information about the variability of $R_{0,m}$. The value of 3.28 was already used in [7, 19] based on [12].

6.2 Death underreporting scenarios

In this work, an extension of the semi-mechanistic Bayesian hierarchical model from [7] is adopted to reflect the uncertainty about underreported deaths. We address the effect of underreporting in the data set by setting a prior distribution to death underreporting $\psi \sim beta(\theta, \rho)$. The hyperparameters of the beta density are fixed in order to reflect in the mode the desired underreporting rate, see Figure 5.

As in the original model [7], daily deaths $D_{t,m}$ are observed for days $t \in \{1, \ldots, n\}$ and Brazilian states $m \in \{1, \ldots, M\}$. These daily deaths are modelled using a positive real-valued function $d_{t,m} = \mathbb{E}[D_{t,m}\psi]$ that represents the expected number of deaths attributed to COVID-19, taking into account the designated underreported rate ψ. Daily deaths $D_{t,m}$ are assumed to follow a negative binomial distribution with mean $d_{t,m}$ and variance $d_{t,m} + \frac{d_{t,m}^2}{\phi}$, where ϕ follows a normal distribution, i.e.

$$D_{t,m} \sim \text{Negative Binomial}\left(d_{t,m}, d_{t,m} + \frac{d_{t,m}^2}{\phi}\right),$$
$$\phi \sim \mathcal{N}(0, 5)$$

in which $\mathcal{N}(\mu, \sigma)$ denotes a normal distribution with mean μ and standard deviation σ. The rest of the mathematical model follows the original manuscript [7] introducing the new feature of underreporting death rate ψ on daily deaths.

The effect of death underreporting on the attack rate is shown in Table 2 for three additional scenarios: 33% and 50% and 67% underreporting. The underreporting scenarios are implemented by scaling reported death data by beta distributions with means (0.67, 0.5, 0.33) and in each instance variance 0.004. The distributions are shown in Figure 5.

State	0% underreporting	33% underreporting	50% underreporting	67% underreporting
SP	3.30 [2.83, 3.68]	4.90 [4.13, 5.52]	6.49 [5.44, 7.35]	9.58 [7.74, 11.00]
RJ	3.35 [2.83, 3.78]	5.05 [4.19, 5.74]	6.75 [5.50, 7.74]	10.20 [8.09, 11.90]
CE	4.46 [3.73, 5.05]	6.66 [5.46, 7.61]	8.76 [7.14, 10.10]	12.90 [10.30, 14.90]
PE	3.00 [2.49, 3.41]	4.50 [3.67, 5.15]	5.94 [4.79, 6.84]	8.86 [6.93, 10.30]
AM	10.60 [8.84, 12.10]	15.40 [12.80, 17.60]	19.90 [16.40, 22.80]	27.70 [22.80, 31.80]
PA	5.05 [3.90, 5.90]	7.63 [5.83, 8.95]	9.95 [7.50, 11.80]	14.90 [11.10, 17.70]
MA	2.07 [1.65, 2.40]	3.12 [2.44, 3.63]	4.15 [3.24, 4.83]	6.23 [4.71, 7.37]
BA	0.40 [0.31, 0.47]	0.61 [0.47, 0.71]	0.81 [0.62, 0.95]	1.26 [0.93, 1.49]
ES	2.24 [1.71, 2.64]	3.36 [2.52, 3.99]	4.45 [3.34, 5.25]	6.69 [4.82, 8.04]
PR	0.25 [0.19, 0.29]	0.37 [0.28, 0.44]	0.50 [0.37, 0.59]	0.74 [0.53, 0.89]
MG	0.13 [0.10, 0.16]	0.20 [0.15, 0.24]	0.27 [0.19, 0.33]	0.41 [0.29, 0.49]
PB	0.64 [0.48, 0.75]	0.97 [0.72, 1.15]	1.31 [0.96, 1.56]	1.98 [1.41, 2.39]
AL	1.20 [0.87, 1.44]	1.81 [1.27, 2.18]	2.41 [1.70, 2.89]	3.66 [2.51, 4.42]
RS	0.42 [0.32, 0.50]	0.65 [0.48, 0.77]	0.87 [0.64, 1.05]	1.35 [0.95, 1.62]
RN	0.56 [0.42, 0.67]	0.85 [0.62, 1.02]	1.16 [0.83, 1.39]	1.77 [1.23, 2.14]
SC	0.23 [0.17, 0.27]	0.34 [0.25, 0.41]	0.46 [0.33, 0.55]	0.69 [0.48, 0.84]

Table 2: Estimated attack rates for 0%, 33%, 50% and 67% death underreporting scenarios.

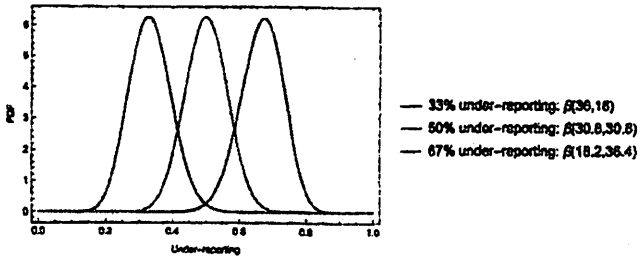

Figure 5: Underreporting prior distributions.

6.3 Cases and R_t for 16 states

The estimated cases, deaths and R_t for all 16 states considered in our joint model, São Paulo (SP), Rio de Janeiro (RJ), Pernambuco (PE), Ceará (CE), Amazonas (AM), Pará (PA), Maranhão (MA), Bahia (BA), Espírito Santo (ES), Paraná (PR), Minas Gerais (MG), Paraíba (PB), Rio Grande do Sul (RS), Rio Grande do Norte (RN), Alagoas (AL), Santa Catarina (SC), are shown in Figure 6.

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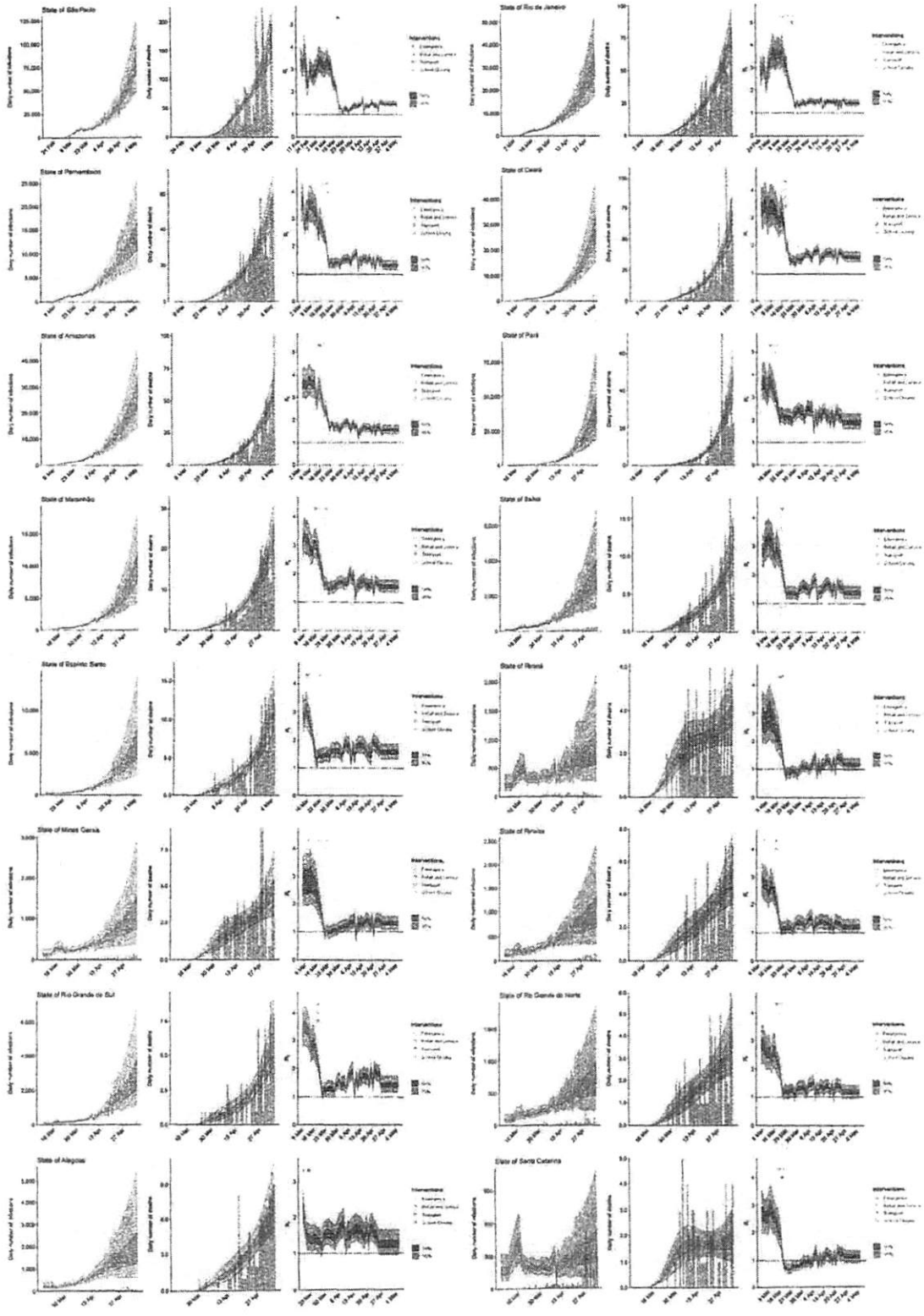

Figure 6: Estimates of infections, deaths and R_t for all 16 states considered in the model.

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6.4 Full and partial-pooling sensitivity

The results in this work have been produced with partial pooling of covariate coefficients. Full pooling results are shown in Table 3. There is no substantial difference.

State	AR% half pooling	AR% full pooling
SP	3.30 [2.83, 3.68]	3.32 [2.86, 3.69]
RJ	3.35 [2.83, 3.78]	3.33 [2.81, 3.74]
CE	4.46 [3.73, 5.05]	4.31 [3.62, 4.88]
PE	3.00 [2.49, 3.41]	3.00 [2.51, 3.41]
AM	10.60 [8.84, 12.10]	10.60 [8.94, 12.00]
PA	5.05 [3.90, 5.90]	4.67 [3.72, 5.41]
MA	2.07 [1.65, 2.40]	2.07 [1.65, 2.40]
BA	0.40 [0.31, 0.47]	0.39 [0.31, 0.45]
ES	2.24 [1.71, 2.64]	2.17 [1.69, 2.55]
PR	0.25 [0.19, 0.29]	0.24 [0.18, 0.29]
MG	0.13 [0.10, 0.16]	0.13 [0.10, 0.15]
PB	0.64 [0.48, 0.75]	0.65 [0.49, 0.77]
AL	1.20 [0.87, 1.44]	1.15 [0.86, 1.37]
RS	0.42 [0.32, 0.50]	0.42 [0.32, 0.50]
RN	0.56 [0.42, 0.67]	0.57 [0.43, 0.68]
SC	0.23 [0.17, 0.27]	0.23 [0.17, 0.28]

Table 3: Attack rate (AR) by state, with half and full-pooling of mobility covariates between states.

6.5 Onset-to-death sensitivity

Onset-to-death distribution sensitivity analysis for attack rate is shown in Table 4. Outcomes are not substantially affected by perturbation of onset-to-death distribution mean by plus or minus 10%.

6.6 IFR Calculation and Sensitivity Analysis

Estimates of the expected IFR across different states are derived from previously published estimates of mixing patterns in a Latin America setting [3] alongside estimates of the virus' transmissibility (the basic reproduction number, R_0) derived from European settings [7] and from estimates of disease sever-

State	AR% onset-to-death mean decreased by 10%	AR% onset-to-death mean increased by 10%
SP	3.15 [2.72, 3.51]	3.38 [2.88, 3.79]
RJ	3.17 [2.68, 3.58]	3.54 [2.96, 4.01]
CE	4.04 [3.38, 4.57]	4.96 [4.10, 5.66]
PE	2.77 [2.32, 3.13]	3.21 [2.65, 3.65]
AM	9.80 [8.22, 11.10]	11.50 [9.56, 13.10]
PA	4.38 [3.38, 5.12]	5.91 [4.51, 6.97]
MA	1.86 [1.50, 2.14]	2.29 [1.80, 2.67]
BA	0.36 [0.29, 0.42]	0.44 [0.34, 0.51]
ES	1.98 [1.52, 2.32]	2.51 [1.88, 2.98]
PR	0.24 [0.19, 0.28]	0.25 [0.19, 0.30]
MG	0.13 [0.09, 0.15]	0.14 [0.10, 0.17]
PB	0.60 [0.46, 0.70]	0.68 [0.50, 0.81]
AL	1.09 [0.79, 1.29]	1.32 [0.94, 1.59]
RS	0.37 [0.28, 0.44]	0.48 [0.35, 0.57]
RN	0.53 [0.39, 0.63]	0.59 [0.43, 0.71]
SC	0.22 [0.17, 0.26]	0.23 [0.17, 0.28]

Table 4: Attack rate (AR) with onset-to-death distribution mean decreased by 10% to 16.9 days and increased by 10% to 20.7 days.

ity derived from the Chinese epidemic [15] and subsequently modified to match data emerging from the epidemic in the United Kingdom [7]. We additionally modified these estimates of disease severity (specifically the Infection Fatality Ratio or IFR) to account for the substantial heterogeneity we expect to observe in health outcomes across states due to variation in healthcare quality and capacity, the details of which are described below.

Across the states considered in this analysis, average income varies from as high as $\sim$ \$300 in São Paulo to as low as $\sim$ \$100 in Maranhão.[8] Such disparities in income are likely to result in significant disparities in the quality and extent of available healthcare. Motivated by this, we modified the state-specific IFRs used in an income-dependent manner. Specifically, we assumed that the state with the highest income (São Paulo) has a quality of care identical to that observed in China (and thus motivated using the estimates presented in Verity et al.[15]), and that the state with the lowest income (Maranhnão) had significantly worse healthcare outcomes - more similar to those that would be expected in a Lower Middle Income Country (see Walker et al., [20] for further details on how differences in health quality across set-

State	(i) IFR UK contact matrix	(ii) IFR Peru contact matrix	(iii) IFR UK contact matrix, poorer out-comes	(iv) IFR Peru contact matrix, poorer out-comes
AC	0.38	0.39	0.78	0.78
AL	0.51	0.53	1.06	1.07
AM	0.37	0.38	0.79	0.79
AP	0.34	0.35	0.73	0.73
BA	0.59	0.62	1.10	1.12
CE	0.58	0.61	1.07	1.09
ES	0.63	0.65	0.87	0.89
MA	0.48	0.50	1.03	1.04
MG	0.69	0.72	1.01	1.04
PA	0.42	0.43	0.89	0.89
PB	0.62	0.65	1.13	1.16
PE	0.58	0.60	1.06	1.07
PI	0.57	0.59	1.10	1.11
PR	0.66	0.69	0.84	0.86
RJ	0.73	0.76	0.76	0.79
RN	0.60	0.62	1.04	1.06
RO	0.45	0.45	0.81	0.81
RR	0.33	0.34	0.67	0.67
RS	0.78	0.81	0.84	0.87
SC	0.65	0.67	0.74	0.76
SE	0.51	0.53	0.96	0.97
SP	0.67	0.70	0.67	0.70
TO	0.49	0.51	0.89	0.90

Table 7: Infection fatality ratios (IFR) with Brazilian state-level population weighting,, using: i) UK contact matrix, ii) Peru contact matrix, iii) UK contact matrix with poorer hospitalisation outcomes, iv) Peru contact matrix with poorer hospitalisation outcomes.

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6.7 Data

As input of deaths and reported cases, our model uses daily updates from a government initiative funded by Brazil's ministry of Health called *Painel Coronavírus*, available at `https://covid.saude.gov.br`. In this data the number of deaths attributable to COVID-19 is segmented by state level. Possible under-reporting in death data is addressed in the mathematical model described in Section 6.1.

For population counts we used the 2020 projection by state published by *Instituto Brasileiro de Geografia e Estatística* (IBGE).[9]

Mobility report data from Google (`https://www.google.com/covid19/mobility/`) were used to estimate the effects of different interventions over time. The report provides the estimated percentage of change on movements of places such as retail and recreation, groceries and pharmacies, parks, transit stations, workplaces, and residential comparing to a baseline. Such baseline corresponds to the median value of each day of the week, using data of January 3rd to February 6th, 2020. More details can be found in Figure 7.

Regarding intervention data, the values taken into account are the dates in which interventions were effectively applied, even though they were encouraged at earlier dates.

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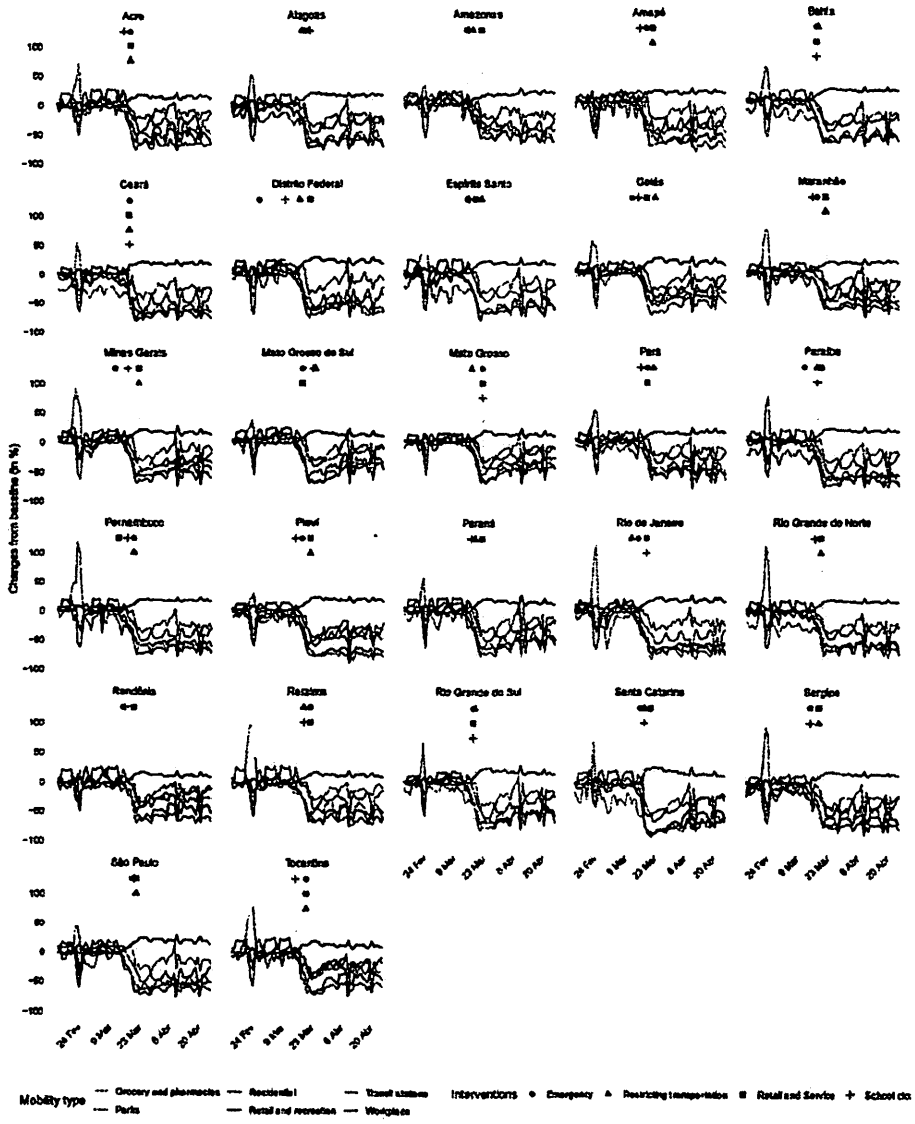

Figure 7: Google mobility time series for all Brazilian states with their respective interventions from 15th February to 26th April 2020.

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State	Emergency declared	Retail and services closed	Transportation restricted	Schools closed
AC	2020-03-20	2020-03-20	2020-03-20	2020-03-20
AL	2020-03-20	2020-03-21	2020-03-19	2020-03-23
AM	2020-03-16	2020-03-23	2020-03-23	2020-03-19
AP	2020-03-20	2020-03-23	2020-03-23	2020-03-17
BA	2020-03-19	2020-03-19	2020-03-20	2020-03-19
CE	2020-03-19	2020-03-19	2020-03-19	2020-03-19
DF	2020-02-28	2020-03-23	2020-03-18	2020-03-11
ES	2020-03-16	2020-03-20	2020-03-23	2020-03-17
GO	2020-03-13	2020-03-24	2020-03-24	2020-03-16
MA	2020-03-19	2020-03-23	2020-03-23	2020-03-17
MG	2020-03-12	2020-03-23	2020-03-23	2020-03-18
MS	2020-03-19	2020-03-19	2020-03-25	2020-03-24
MT	2020-03-23	2020-03-23	2020-03-18	2020-03-23
PA	2020-03-20	2020-03-20	2020-03-23	2020-03-17
PB	2020-03-21	2020-03-21	2020-03-19	2020-03-17
PE	2020-03-21	2020-03-14	2020-03-21	2020-03-18
PI	2020-03-19	2020-03-23	2020-03-23	2020-03-16
PR	2020-03-19	2020-03-23	2020-03-20	2020-03-18
RJ	2020-03-16	2020-03-20	2020-03-13	2020-03-20
RN	2020-03-20	2020-03-21	2020-03-21	2020-03-18
RO	2020-03-20	2020-03-21		2020-03-17
RR	2020-03-23	2020-03-23	2020-02-20	2020-03-20
RS	2020-03-19	2020-03-19	2020-03-20	2020-03-19
SC	2020-03-17	2020-03-18	2020-03-18	2020-03-19
SE	2020-03-16	2020-03-20	2020-03-20	2020-03-16
SP	2020-03-20	2020-03-22	2020-03-22	2020-03-21
TO	2020-03-21	2020-03-21	2020-03-21	2020-03-16

Table 8: Non-pharmaceutical interventions by state, adapted from [4].

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tings are likely to impact outcomes). Details on the age-specific infection fatality probabilities for these two states are provided in Table 5. For the other states where income lies somewhere between that of Maranhão and São Paulo, we linearly interpolate the age-specific infection fatality probabilities based on state-level average income.[8] These age-specific infection fatality probabilities are then combined with predictions of the age-distribution of infections to produce an overall, state-specific IFR.

Ages	IFR% São Paulo	IFR% Maranhão
0-4	0.0028	0.021
5-9	0.0024	0.018
10-14	0.0044	0.033
15-19	0.0091	0.067
20-24	0.020	0.15
25-29	0.039	0.29
30-34	0.062	0.45
35-39	0.094	0.66
40-44	0.13	0.82
45-49	0.22	1.13
50-54	0.45	1.77
55-59	0.82	2.38
60-64	1.72	3.70
65-70	2.71	4.73
75-80	4.25	6.47
80-84	6.15	8.47
85+	9.63	12.57

Table 5: IFR by age for São Paulo and Maranhão.

Substantial uncertainty still remains in these IFR calculations however, and motivated by this we carried out a sensitivity analysis exploring the impacts of different choices of mixing matrix (Peru vs the United Kingdom) and of assumptions surrounding healthcare quality (namely the method described above or assuming that all states are able to provide a level of healthcare equal to that seen during the Chinese epidemic). The results of these sensitivity analyses are shown in Table 6 for different IFRs. Although assumptions surrounding healthcare quality impact the quantitative predictions of the IFR and associated predicted attack rates, they do not qualitatively change our conclusions surrounding herd immunity and the lack of infections to date sufficient to have reached it.

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State	(i) AR% UK contact matrix	(ii) AR% Peru contact matrix	(iii) AR% UK contact matrix, poorer outcomes	(iv) AR% Peru contact matrix, poorer outcomes
SP	3.42 [2.93, 3.82]	3.28 [2.82,3.67]	3.41 [2.93, 3.80]	3.30 [2.83, 3.68]
RJ	3.67 [3.08, 4.13]	3.52 [2.96,3.98]	3.49 [2.92, 3.94]	3.35 [2.83, 3.78]
CE	8.17 [6.86, 9.24]	7.83 [6.58,8.85]	4.55 [3.79, 5.15]	4.46 [3.73, 5.05]
PE	5.53 [4.61, 6.28]	5.31 [4.43,6.03]	3.04 [2.52, 3.45]	3.00 [2.49, 3.41]
AM	21.00 [17.90,23.70]	20.70 [17.60,23.40]	10.60 [8.85, 12.00]	10.60 [8.84, 12.10]
PA	10.40 [8.13, 12.20]	10.30 [8.02,11.90]	5.06 [3.90, 5.94]	5.05 [3.90, 5.90]
MA	4.53 [3.60, 5.24]	4.39 [3.51,5.08]	2.08 [1.65, 2.41]	2.07 [1.65, 2.40]
BA	0.76 [0.59, 0.89]	0.73 [0.57,0.85]	0.40 [0.32, 0.47]	0.40 [0.31, 0.47]
ES	3.14 [2.39, 3.71]	3.04 [2.32,3.58]	2.27 [1.72, 2.67]	2.24 [1.71, 2.64]
PR	0.32 [0.24, 0.37]	0.30 [0.23,0.36]	0.25 [0.19, 0.30]	0.25 [0.19, 0.29]
MG	0.20 [0.15, 0.23]	0.19 [0.14,0.23]	0.14 [0.10, 0.16]	0.13 [0.10, 0.16]
PB	1.21 [0.91, 1.44]	1.14 [0.86,1.36]	0.65 [0.49, 0.77]	0.64 [0.48, 0.75]
AL	2.61 [1.89, 3.12]	2.52 [1.82,3.01]	1.21 [0.87, 1.45]	1.20 [0.87, 1.44]
RS	0.47 [0.36, 0.56]	0.45 [0.34,0.54]	0.44 [0.33, 0.52]	0.42 [0.32, 0.50]
RN	1.01 [0.75, 1.20]	0.96 [0.71,1.16]	0.57 [0.42, 0.68]	0.56 [0.42, 0.67]
SC	0.27 [0.20, 0.32]	0.26 [0.19,0.31]	0.23 [0.17, 0.28]	0.23 [0.17, 0.27]

Table 6: Attack rates % (AR) estimated using different infection fatality ratios (IFR) with Brazilian state-level population weighting and using: i) UK contact matrix, ii) Peru contact matrix, iii) UK contact matrix with poorer hospitalisation outcomes, iv) Peru contact matrix with poorer hospitalisation outcomes.

DOI: https://doi.org/10.25561/78872

References

[1] KEC Ainslie et al. "Evidence of initial success for China exiting COVID-19 social distancing policy after achieving containment [version 1; peer review: awaiting peer review]". In: *Wellcome Open Research* 5.81 (2020).

[2] Ahmet Aktay et al. "Google COVID-19 Community Mobility Reports: Anonymization Process Description (version 1.0)". In: *ArXiv* abs/2004.0 (2020).

[3] Hector Verastegui Kathryn M. Edwards Ana I. Gil Claudio F. Lanata Niel Hens. Carlos G. Grijalva Nele Goeyvaerts. "Peruvian social contact data (Version 1.0) [Data set]. Zenodo." In: (2017). URL: http://doi.org/10.5281/zenodo.1215891.

[4] "COVID-19 Observatory in Latin America and the Caribbean". In: URL: https://www.cepal.org/en/topics/covid-19.

[5] Samy Dana et al. "Brazilian Modeling of COVID-19 (BRAM-COD): a Bayesian Monte Carlo approach for COVID-19 spread in a limited data set context". In: *medRxiv* (2020). eprint: https://www.medrxiv.org/content/early/2020/05/03/2020.04.29.20081174.full.pdf. URL: https://www.medrxiv.org/content/early/2020/05/03/2020.04.29.20081174.

[6] NM Ferguson et al. *Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand (Report 9)*. Tech. rep. URL: https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/news--wuhan-coronavirus/ (visited on 03/25/2020).

[7] Seth Flaxman et al. "Report 13: Estimating the number of infections and the impact of non-pharmaceutical interventions on COVID-19 in 11 European countries". In: (2020). URL: https://doi.org/10.25561/77731.

[8] "IBGE divulga o rendimento domiciliar per capita 2019". In: (). URL: https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/26956-ibge-divulga-o-rendimento-domiciliar-per-capita-2019.

[9] "IBGE Projeções da População". In: (). URL: https://www.ibge.gov.br/estatisticas/sociais/populacao/9109-projecao-da-populacao.html?=&t=resultados.

[10] Moritz U. G. Kraemer et al. "The effect of human mobility and control measures on the COVID-19 epidemic in China". In: *Science* 368.4690 (2020).

[11] Enrico Lavezzo et al. "Suppression of COVID-19 outbreak in the municipality of Vo, Italy". In: *medRxiv* (2020).

[12] Ying Liu et al. "The reproductive number of COVID-19 is higher compared to SARS coronavirus". In: *Journal of Travel Medicine* 27.2 (Feb. 2020). taaa021. ISSN: 1195-1982. eprint: https://academic.oup.com/jtm/article-pdf/27/2/taaa021/32902430/taaa021.pdf. URL: https://doi.org/10.1093/jtm/taaa021.

[13] World Health Organisation. "WHO, Coronavirus disease 2019 (COVID-19) Situation Report – 107". In: (2020). URL: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports.

[14] "Painel Coronavírus". In: (). URL: https://covid.saude.gov.br/.

[15] Ilaria Dorigatti Peter Winskill Charles Whittaker Natsuko Imai Gina Cuomo-Dannenburg Hayley Thompson Patrick G T Walker Han Fu Amy Dighe Jamie T Griffin Marc Baguelin Sangeeta Bhatia Adhiratha Boonyasiri Anne Cori Zulma Cucunubá Rich FitzJohn Katy Gaythorpe Will Green Arran Hamlet Wes Hinsley Daniel Laydon Gemma Nedjati-Gilani Steven Riley Sabine van Elsland Erik Volz Haowei Wang Yuanrong Wang Xiaoyue Xi Christl A Donnelly Azra C Ghani Neil M Ferguson Robert Verity Lucy C Okell. "Estimates of the severity of coronavirus disease 2019: a model-based analysis". In: *Lancet Infectious Diseases* (2020).

[16] William Marciel de Souza et al. "Epidemiological and clinical characteristics of the early phase of the COVID-19 epidemic in Brazil". In: *medRxiv* (2020). eprint: https://www.medrxiv.org/content/early/2020/04/29/2020.04.25.20077396.full.pdf. URL: https://www.medrxiv.org/content/early/2020/04/29/2020.04.25.20077396.

[17] Robert Verity et al. "Estimates of the severity of COVID-19 disease". In: *Lancet Infect Dis* in press (2020).

[18] Julia Gog Ottar N. Bjørnstad Stephen Kissler Lone Simonsen Bryan T. Grenfell Cécile Viboud Vivek Charu Scott Zeger. "Human mobility and the spatial transmission of influenza in the United States". In: *PLOS Computational Biology* (2017).

[19] Michaela A. C. Vollmer et al. "Report 20: Using mobility to es mate the transmission intensity of COVID-19 in Italy: A subnational analysis with future scenarios". In: (2020).

[20] P. G. T. Walker et al. *Report 12: The Global Impact of COVID-19 and Strategies for Mitigation and Suppression*. URL: https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/news--wuhan-coronavirus/.

ANEXO IX

(MEMO nº. 017/2020/SESAP 10.3)

Diário Oficial Poder Executivo

Estado de São Paulo Seção I

Palácio dos Bandeirantes
Av. Morumbi, 4.500 - Morumbi - CEP 05698-900 - Fone: 3745-3344
Nº 80 – DOE – 25/04/20 - seção 1 – p.15

COORDENADORIA DE PLANEJAMENTO DE SAÚDE

Deliberação CIB 29, de 24-4-2020

Considerando a Lei nº 13.979, 6 de fevereiro de 2020, que dispõe sobre as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus responsável pelo surto de 2019;

Considerando a Medida Provisória nº 924, de 13 de março de 2020, que abre Crédito Extraordinário para o programa de Enfrentamento da Emergência de Saúde Pública de Importância Internacional Decorrente do Coronavírus;

Considerando a Portaria nº 356/GM/MS, de 11 de março de 2020, que dispõe sobre a regulamentação e operacionalização do disposto na Lei nº 13.979, de 6 de fevereiro de 2020, que estabelece as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Corona vírus (COVID-19); Considerando a Portaria nº 568, de 26 de março de 2020 que autoriza a habilitação de leitos de Unidade de Terapia Intensiva Adulto para atendimento exclusivo dos pacientes COVID-19; e finalmente,

Considerando a Deliberação CIB nº 23, de 02/04/2020, publicada em 03/04/2020 e republicada em 07/04/2020, que aprova o mapa do conjunto de hospitais e respectivos leitos para o enfrentamento da COVID-19 no Estado de São Paulo;

Considerando a Portaria MS/SAES/nº 237, de 18/03/2020, que inclui habilitações, leitos e procedimentos para atendimentos exclusivos dos pacientes com COVID-19;

Considerando a Portaria GM/MS/nº 568 de 26/03/2020 que autoriza em caráter emergencial a habilitação temporária de leitos de UTI para uso exclusivo de pacientes de COVID-19 pelo período de 90 dias, podendo ser prorrogado.

A Comissão Intergestores Bipartite do Estado de São Paulo – CIB/SP em reunião no dia 23/04/2020 aprova o mapa do conjunto de hospitais e respectivos leitos para o enfrentamento da COVID-19, no Estado de São Paulo.

O mapa estará disponível no endereço eletrônico da SES/SP, conforme segue: **http://portal.saude.sp.gov.br/resources/ses/perfil/cidadao/homepage-new/outros-destaques/covid-19/delib_cib_planilha_covid_09_04_2020.pdf**

Destaca-se que, no mapa detalham-se os novos leitos, de UTI Adulto (Coluna: UTI adulto ampliação, habilitação imediata **1ª remessa** e Coluna: UTI adulto ampliação, habilitação imediata **2ª remessa**) e Coluna: UTI AD ampliação, habilitação imediata, **3ª remessa (23/04/2020)** e de UTI Pediátrico (Coluna: UTI pediátrico ampliação - habilitação imediata) aptos para funcionamento para habilitação imediata, conforme Portaria GM/MS 568, de 26/03/2020 e aqueles leitos que estão em **fase de estruturação, para funcionamento e habilitação posterior:** Coluna leitos de UTI Adulto (Coluna: UTI adulto ampliação – requer equipamento e/ou RH) e Coluna de leitos de UTI Pediátrico que requer equipamento e/ou RH.

DRS	DRSNOME	REGSAUDE	MUNICIPIO	CNES	NOME	GESTÃ	L Clin exist	L Clin SUS	Leito Clinico existente convertido para COVID	LEITO CLINICO AMPLIADO JÁ FUNCIONANDO	LEITO CLINICO PARA AMPLIAÇÃO FUTURA	UTI AD exist	UTI AD SUS	Leito UTI AD existente Convertido para COVID	UTI Adulto ampliação - habilitação imediata, 1ª remessa	Leitos de UTI Adulto ampliação - habilitação imediata, 2ª remessa	Leitos de UTI Adulto ampliação - habilitação imediata, 3ª remessa	Leitos de UTI Adulto ampliação - habilitação imediata, 4ª remessa	Fase de Estruturação - leitos UTI Adulto - Ampliação. Requer Equip e/ou RH	UTI Pediatrica Ampliação - habilitação imediata	Fase de estruturação - Leitos UTI Pediátrica - requer equip e/ou RH	portaria habilitação leis	observações
03	ARARAQUARA	Central do DRS III	ARARAQUARA	6943284	MATERNIDADE GOTA DE LEITE DE ARARAQUARA	M	5	3	-	-		-	-	-	-	-			-				
03	ARARAQUARA	Central do DRS III	ARARAQUARA	2082527	SANTA CASA DE ARARAQUARA	M	60	40	20	10		18	14	10	-	-	10		-				
03	ARARAQUARA	Central do DRS III	ARARAQUARA	9267263	PRONTO SOCORRO MELHADO	M	18	18	-	-		-	-	-	-	-			-				
03	ARARAQUARA	Central do DRS III	BOA ESPERANCA DO SUL	2079402	SANTA CASA SAO VICENTE DE PAULO BOA ESPERANCA DO SUL	M	6	6	3	-		-	-	-	-	-			-				
03	ARARAQUARA	Centro Oeste do DR	BORBOREMA	2081989	HOSPITAL SAO SEBASTIAO DE BORBOREMA	M	11	10	6	-		-	-	-	-	-			-				
03	ARARAQUARA	Centro Oeste do DR	IBITINGA	2082640	SANTA CASA DE CARIDADE E MATERNIDADE IBITINGA	M	38	19		-		10	4		5	-			-				
03	ARARAQUARA	Centro Oeste do DR	ITAPOLIS	2079836	SANTA CASA DE MISERICORDIA ITAPOLIS	M	44	27		-		9	4	-	5	-			-				
03	ARARAQUARA	Centro Oeste do DR	NOVA EUROPA	2747685	SANTA CASA DE MISERICORDIA NOVA EUROPA	M	6	4	2	-		-	-	-	-	-			-				
03	ARARAQUARA	Centro Oeste do DR	TABATINGA	2079399	SANTA CASA DE MISERICORDIA TABATINGA SP	M	16	10	8	-		-	-	-	-	-			-				
03	ARARAQUARA	Coracao do DRS III	DESCALVADO	2081717	SANTA CASA DESCALVADO	M	18	14	16	-		-	-	-	-	-			-				
03	ARARAQUARA	Coracao do DRS III	DOURADO	9329080	HOSPITAL E MATERNIDADE PUBLICO DE DOURADO	M	6	6	3	-		-	-	-	-	-			-				
03	ARARAQUARA	Coracao do DRS III	IBATE	2092395	HOSPITAL MUNICIPAL IBATE	M	10	10	4	-		-	-	-	-	-			-				
03	ARARAQUARA	Coracao do DRS III	PORTO FERREIRA	2082322	HOSPITAL DONA BALBINA	M	22	13	4	-		6	4	2	-	-			-				
03	ARARAQUARA	Coracao do DRS III	RIBEIRAO BONITO	2747693	SANTA CASA DE MISERICORDIA RIBEIRAO BONITO	M	8	5	3	-		-	-	-	-	-			-				
03	ARARAQUARA	Coracao do DRS III	SAO CARLOS	2080931	SANTA CASA DE SAO CARLOS	M	131	84	24	-		20	15	16	8	-			-				
03	ARARAQUARA	Coracao do DRS III	SAO CARLOS	5586348	HOSPITAL UNIVERST DA UFSCAR PROF DR HORACIO C PANEPUCCI	M	28	28	5	-		-	-	-	-	-			-				
03	ARARAQUARA	Norte do DRS III	MATAO	2090961	HOSPITAL CARLOS FERNANDO MALZONI MATAO	E	89	51	17	10		18	15	5	-	-	-		-				
03	ARARAQUARA	Norte do DRS III	TAQUARITINGA	2078295	SANTA CASA DE TAQUARITINGA	M	66	35	29	-		8	6	-	-	-			-				
TOTAL 03							626	427	164	20	-	99	72	43	21	-	12	-	10	-	-	-	-
04	BAIXADA SANTISTA	Baixada Santista	BERTIOGA	2083272	HOSPITAL MUNICIPAL DE BERTIOGA	M	15	15	-	20		-	-	-	-	-	10		-				
04	BAIXADA SANTISTA	Baixada Santista	CUBATAO	2078473	HOSPITAL DR LUIZ CAMARGO DA FONSECA E SILVA	M	38	20	-	25		7	7	1	10	-			-				
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA	2754843	HOSPITAL SANTO AMARO	M	50	50	-	-		20	20	-	10	-			-				
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA	7544529	INST DE INFECT EMILIO RIBAS II BAIXADA SANTISTA	E	27	27	5	-		13	13	6	-	-			7				
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA		PAM RODOVIARIA	M				14													
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA		HOSPITAL DE CAMPANHA GUARUJÁ	M				50													
04	BAIXADA SANTISTA	Baixada Santista	ITANHAEM	6834183	RESSURGIR CENTRO DE REEDUCACAO PSICOSSOCIAL	M	-	-		-		-	-			-							
04	BAIXADA SANTISTA	Baixada Santista	ITANHAEM	2087804	HOSPITAL REGIONAL JORGE ROSSMANN DE ITANHAEM	E	30	30	15	18		20	-	10	10	-			10				
04	BAIXADA SANTISTA	Baixada Santista	MONGAGUA	2024438	HOSPITAL E MATERNIDADE DR ADONIRAN CORREIA CAMPOS MONGAGUA	M	12	12		-		-	-		-	-			-				
04	BAIXADA SANTISTA	Baixada Santista	PERUIBE	9297715	MATERNIDADE MUNICIPAL DE PERUIBE	M	-	-		15		-	-		-	-			6				
04	BAIXADA SANTISTA	Baixada Santista	PERUIBE		UNIDADE HOSPITALAR MAERNIDADE/COVID/CAMPANHA	M					22												
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	2716097	COMPLEXO HOSPITALAR IRMA DULCE O S S	M	54	54	44	-		20	20	2	20	-		10	-	4			
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105589	HOSPITAL DE CAMPANHA COVID19 FALCÃO	M					90												
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105562	HOSPITAL DE CAMPANHA COVID19 QUIETUDE	M					11												
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105740	HOSPITAL DE CAMPANHA COVID19 RODRIGÃO	M					88												
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	6817890	ASSOCIAÇÃO HOSPITALAR CASA DE SAUDE DE SANTOS	M												20					
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	2025752	SANTA CASA DE SANTOS	M	143	70	-	30		71	40	-	20	-	10		-	9		PT 1.089 de 04/05/2020	20
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	2079720	HOSPITAL GUILHERME ALVARO SANTOS	E	53	53	20	-		21	21	20	9	-			10	2		PT 1.089 de 04/05/2020	
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	2080354	HOSPITAL SANTO ANTONIO SANTOS	M	74	47	-	-		18	9	-	4	-	5		-				
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	2698463	SECAO HOSPITAL E MATERNIDADE MUNICIPAL DR SILVERIO FONTES	M	7	7	-	-		-	-	-	-	-			-				
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	2698471	SECAO HOSPITAL MUNICIPAL DR ARTHUR DOMINGUES PINTO	M	32	32	-	19		-	-	-	-	-	13		-				
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	6998704	COMPLEXO HOSPITALAR DOS ESTIVADORES	M	92	92	18	30		17	-	2	10	-	10		-			PT 1.089 de 04/05/2020	

Fls. 311 do Proc.
Nº. 2.592/20 2020

OFÍCIO nº. 267/2020 – SESAP 10

Em 22 de maio de 2020.

À Senhora
Paula Covas Borges Calipo
Diretora Técnica de Saúde III
Av. Epitácio Pessoa nº 415 – Aparecida
CEP: 11.030-601– Santos/SP

Prezada Senhora,

Tem este a satisfação em cumprimentá-la e, ao ensejo, submeter a vossa ilustre apreciação e gestões a proposta de Plano de Trabalho de Custeio Interfederativo de Qualificação, de leitos de média complexidade hospitalar e leitos complementares de UTI tipo II adulto, provenientes da capacidade instalada do município de Praia Grande (código IBGE nº 3541000), visando à garantia constitucional de acesso universal de assistência à saúde e da continuidade dos serviços essenciais à população paulista, necessários ao enfrentamento da emergência de saúde pública de importância internacional decorrente do novo coronavírus (COVID-19) no Estado de São Paulo através de regulação racional, unificada e oportuna no sistema Estadual de Regulação do acesso em saúde (Sistema CROSS), conforme instrumentos que seguem em anexo.

Certo de contar com os procedimentos cabíveis, subscrevo-me.

Atenciosamente,

Adm. Cleber Suckow Nogueira
Secretário Municipal de Saúde Pública

(CSN/vappc)

Diário Oficial Poder Executivo

Estado de São Paulo Seção I

Palácio dos Bandeirantes
Av. Morumbi, 4.500 - Morumbi - CEP 05698-900 - Fone: 3745-3344
Nº 99 – DOE – 27/05/20 - seção 1 – p.37

COORDENADORIA DE PLANEJAMENTO DE SAÚDE

Deliberação CIB nº 38, 26-05-2020

Considerando a Lei nº 13.979, 6 de fevereiro de 2020, que dispõe sobre as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Coronavírus responsável pelo surto de 2019;

Considerando a Medida Provisória nº 924, de 13 de março de 2020, que abre Crédito Extraordinário para o programa de Enfrentamento da Emergência de Saúde Pública de Importância Internacional Decorrente do Coronavírus;

Considerando a Portaria nº 356/GM/MS, de 11 de março de 2020, que dispõe sobre a regulamentação e operacionalização do disposto na Lei nº 13.979, de 6 de fevereiro de 2020, que estabelece as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Corona vírus (COVID-19); Considerando a Portaria nº 568, de 26 de março de 2020 que autoriza a habilitação de leitos de Unidade de Terapia Intensiva Adulto para atendimento exclusivo dos pacientes COVID-19; e finalmente,

Considerando as Deliberações CIB nº 23, de 02/04/2020, publicada em 03/04/2020 e republicada em 07/04/2020, Deliberação CIB 26 de 13/04/2020, publicada em14/04/2020, Deliberação CIB 29 de 24/04/2020, publicada em 25/04/2020 e a Deliberação CIB 36 de 12/05/2020, publicada em 13/05/2020, que aprovam o mapa do conjunto de hospitais e respectivos leitos para o enfrentamento da COVID-19 no Estado de São Paulo; atualizados periodicamente mediante a publicação das respectivas deliberações;

Considerando a Portaria MS/SAES/nº 237, de 18/03/2020, que inclui habilitações, leitos e procedimentos para atendimentos exclusivos dos pacientes com COVID-19;

Considerando a Portaria GM/MS/nº 568 de 26/03/2020 que autoriza em caráter emergencial a habilitação temporária de leitos de UTI para uso exclusivo de pacientes de COVID-19 pelo período de 90 dias, podendo ser prorrogado.

A Comissão Intergestores Bipartite do Estado de São Paulo – CIB/SP aprova ***ad referendum*** o mapa do conjunto de hospitais e respectivos leitos para o enfrentamento da COVID-19, no Estado de São Paulo, atualização, com a inclusão da 5ª remessa de leitos de UTI AD COVID e UTI PED COVID, para habilitação.

O mapa estará disponível no endereço eletrônico da SES/SP, conforme segue: **http://portal.saude.sp.gov.br/resources/ses/perfil/cidadao/homepage-new/outros-destaques/covid-19/delib_cib_planilha_covid_09_04_2020.pdf**

Destaca-se que, no mapa detalham-se os novos leitos, de UTI Adulto COVID (Colunas: UTI adulto COVID ampliação, habilitação imediata **1ª , 2ª, 3ª, 4ª e 5ª remessas** e Coluna: UTI pediátrico ampliação - habilitação imediata , atualizados nesta data, com a inclusão da 5ª remessa.

Também contam as colunas relativas a leitos de clinica medica convertidos para atendimento à COVID, bem como aqueles ampliados especificamente para a Pandemia, destacando aqueles já funcionando.

Apresenta ainda as colunas que demonstram o total de leitos de UTI COVID AD e PED em **fase de estruturação, para funcionamento e habilitação posterior, atualizados nesta data.**

RELAÇÃO DE AMPLIAÇÃO DE LEITOS CLÍNICA MÉDICA E UTI ENVIADAS AO MS PARA FINS DE HABILITAÇÃO DE UTI

ATUALIZADA EM 19 DE MAIO DE 2020

DRS	DRSNOME	REGSAUDE	MUNICIPIO		NOME	GESTÃO	GRUPO DE HOSPITAIS	L CLIN exist	L CLIN SUS	Leito Clínico existente convertido para COVID	LEITO CLÍNICO AMPLIADO JÁ FUNCIONANDO	LEITO CLÍNICO PARA AMPLIAÇÃO FUTURA	UTI AD exist	UTI AD SUS	Leito UTI AD existente Convertido para COVID	UTI Adulto ampliação habilitação imediata, 1ª remessa	Leitos de UTI Adulto ampliação habilitação imediata, 2ª remessa	Leitos de UTI Adulto ampliação habilitação imediata, 3ª remessa	Leitos de UTI Adulto ampliação habilitação imediata, 4ª remessa	Leitos de UTI Adulto ampliação habilitação imediata, 5ª remessa	Fase de Estruturação UTI Adulto Ampliação	UTI Pediatrica ampliação habilitação imediata	Fase de estruturação Leitos UTI Pediatrica	[illegible]	[illegible]	[illegible]	TIPOLOGIA DOS HOSPITAIS
01	GRANDE S. PAULO	Alto do Tietê	ARUJA	6451098	HOSPITAL DALILA FERREIRA BARBOSA	M	Municipais	9	9	-	-																NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	ARUJA	6628842	PRONTO ATENDIMENTO BARRETO	M	Municipais												10								EXCLUSIVO COVID
01	GRANDE S. PAULO	Alto do Tietê	BIRITIBA MIRIM		POSTO DE ATENDIMENTO COVID	M	Municipais																				NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	FERRAZ DE VASCONCELOS	2080079	HOSPITAL DR OSIRIS FLORINDO COELHO FERRAZ DE VASCONCELOS	E	Estaduais-Direto	60	60	18	-	28	10	10							20						PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	FERRAZ DE VASCONCELOS	116750	HOSPITAL DE CAMPANHA DE FERRAZ/GINASIO PROF. ADÃO DIAS DOS SANTOS	M	Municipais				20								10								EXCLUSIVO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARAREMA	3779335	SANTA CASA DE GUARAREMA	M	Priv.s. fins lucrativos	22	19	-																	PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2040089	HOSPITAL MATERNIDADE JESUS JOSE E MARIA	M	Priv.s. fins lucrativos	15	15	3			5	6	1												NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2080427	HOSPITAL MUNICIPAL DA CRIANCA E DO ADOLESCENTE HMCA	M	Municipais	-														5	10				PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2081276	CASAS ANDRE LUIZ GUARULHOS	E	Priv.s. fins lucrativos	-																			NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2079135	HOSPITAL STELLA MARIS	M	Priv.s. fins lucrativos	58	58				12	10													PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2079410	COMPLEXO HOSPITALAR PADRE BENTO DE GUARULHOS	E	Estaduais-Direta	82	82	37	-		10	10				18						PT 1.266 de 15/05/2020	18	2.592.000,00	PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2080338	HOSPITAL GERAL DE GUARULHOS PROF DR WALDEMAR DE CARVALHO	E	Estaduais-OSS	88	88	35	4		18	18		23				17	10			PT 1.080 de 04/05/2020	23	3.312.000,00	PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	2082881	HOSP MUNICIPAL DE URGENCIAS HMU	M	Municipais	29	29	-	-		10	10				10						PT 1.266 de 15/05/2020	10	1.440.000,00	PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	5200105	HOSPITAL MUNICIPAL PIMENTAS BONSUCESSO MANUEL DE PAIVA	M	Municipais	34	34	8	-		19	19	15			15				2		PT 1.266 de 15/05/2020	15	2.160.000,00	PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	GUARULHOS	102172	HOSPITAL DE CAMPANHA GUARULHOS	M	Municipais				30							10									EXCLUSIVO COVID
01	GRANDE S. PAULO	Alto do Tietê	ITAQUAQUECETUBA	2078562	HOSPITAL GERAL DE ITAQUAQUECETUBA	E	Estaduais-OSS	54	54	40	6		10	10	10	12					10			PT 812 de 14/04/2020 PT 1.266 de 15/05/2020	10 12	1.440.000,00 1.728.000,00	PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Alto do Tietê	MOGI DAS CRUZES	2080052	HOSPITAL NOSSA SENHORA APARECIDA	M	Priv.s. fins lucrativos	13	11	-			8	8													PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	MOGI DAS CRUZES	2080680	HOSPITAL DAS CLINICAS LUZIA DE PINHO MELO MOGI DAS CRUZES	E	Estaduais-OSS	78	78	21	22		10	10	5	12								Pt 808 DE 20/04/2020	12	1.728.000,00	PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	MOGI DAS CRUZES	2084236	CENTRO ESP EM REABILITACAO DR ARNALDO PEZZUTI CAVALCANTI MOG	E	Estaduais-Direto	50	30			30	10	-							30						PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Alto do Tietê	MOGI DAS CRUZES	7473702	HOSP MUN DE MOGI DAS CRUZES PREF WALDEMAR COSTA FILHO	M	Municipais	17	13	10	-		10	10	10				18								EXCLUSIVO COVID
01	GRANDE S. PAULO	Alto do Tietê	POA	2082411	HOSPITAL MUNICIPAL DR GUIDO GUIDA	M	Municipais	28	28	15			-														PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	POA	116750	HOSPITAL DE CAMPANHA POA CONTRA COVID19	M	Municipais				30																EXCLUSIVO COVID
01	GRANDE S. PAULO	Alto do Tietê	SALESOPOLIS	2079380	SANTA CASA DE SALESOPOLIS	M	Priv.s. fins lucrativos	13	12	4			-														PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	SANTA ISABEL	2083240	SANTA CASA DE SANTA ISABEL	M	Priv.s. fins lucrativos	30	25	6			7	6	2												PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	SUZANO	2079860	SANTA CASA DE SUZANO	M	Priv.s. fins lucrativos	11	10				8	8													PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Alto do Tietê	SUZANO		HC SUZANO	E	Estaduais-Outros	-			80										10						EXCLUSIVO COVID
01	GRANDE S. PAULO	Franco da Rocha	CAIEIRAS	7580770	HOSPITAL ESTADUAL DE CAIEIRAS	E	Estaduais-Direta	-																			NÃO COVID
01	GRANDE S. PAULO	Franco da Rocha	CAJAMAR	2096136	HOSPITAL ENF ANTONIO POLICARPO DE OLIVEIRA	M	Municipais	18	18																		PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Franco da Rocha	FRANCISCO MORATO	2083026	SANTA CASA DE FRANCISCO MORATO	M	Priv.s. fins lucrativos	11	11		35																PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Franco da Rocha	FRANCISCO MORATO	3028399	HOSPITAL ESTADUAL PROF CARLOS DA SILVA LACAZ FCO MORATO	E	Estaduais-OSS	4	4	-	11		10	10	10						15						PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Franco da Rocha	FRANCO DA ROCHA	2746230	COMPLEXO HOSPITALAR JUQUERY FRANCO DA ROCHA	E	Estaduais-Direta	-	-																		NÃO COVID
01	GRANDE S. PAULO	Franco da Rocha	FRANCO DA ROCHA	2082507	HOSPITAL DE CLINICAS DE FRANCO DA ROCHA FRANCO DA ROCHA	E	Estaduais-Direta																				NÃO COVID
01	GRANDE S. PAULO	Franco da Rocha	FRANCO DA ROCHA	6878687	HOSPITAL ESTADUAL DR ALBANO DA FRANCA ROCHA SOBRINHO	E	Estaduais-OSS	30	30	-			11	11	5						10						PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Franco da Rocha	FRANCO DA ROCHA	2798220	HOSPITAL PREVINA	M													28								EXCLUSIVO COVID
01	GRANDE S. PAULO	Franco da Rocha	MAIRIPORA	2084236	HOSPITAL E MATERNIDADE MAIRIPORA	M	Priv.s. fins lucrativos	15	15	-																	PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Grande ABC	DIADEMA	2080028	HOSPITAL MUNICIPAL DE DIADEMA HMD	M	Municipais	90	80	26	-		10	10	-			20						PT 1.266 de 15/05/2020	20	2.880.000,00	PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Grande ABC	DIADEMA	2084163	HOSPITAL ESTADUAL DE DIADEMA HOSPITAL SERRARIA	E	Estaduais-OSS	33	33	10	14		18	16	10						10						PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Grande ABC	DIADEMA	5451084	QUARTEIRAO DA SAUDE	M	Municipais																				PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Grande ABC	MAUA	2082349	HOSPITAL DE CLINICAS DR RADAMES NARDINI	M	Municipais	78	78	28	-		20	20	14												PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Grande ABC	MAUA	2751747	SANTA CASA DE MAUA	M	Priv.s. fins lucrativos	40	-				10	-													NÃO COVID
01	GRANDE S. PAULO	Grande ABC	RIBEIRAO PIRES	2081202	HOSPITAL E MATERNIDADE SAO LUCAS	M	Municipais	33	33	11			-														PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Grande ABC	SANTO ANDRE	6020917	HOSPITAL DA MULHER MARIA JOSE DOS SANTOS STEIN	M	Municipais	1	1				4	4													NÃO COVID
01	GRANDE S. PAULO	Grande ABC	SANTO ANDRE	0008923	CENTRO HOSPITALAR DE SANTO ANDRE DR NEWTON DA COSTA BRANDAO	M	Municipais	50	50				30	30	20			20									PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Grande ABC	SANTO ANDRE	2080273	HOSPITAL ESTADUAL MARIO COVAS DE SANTO ANDRE	E	Estaduais-OSS	67	67	24	20		39	40	27												PREFERENCIALMENTE COVID
01	GRANDE S. PAULO	Grande ABC	SANTO ANDRE	108746	HOSPITAL DE CAMPANHA PEDRO DELL ANTONIA	M	Municipais				180							20				2					EXCLUSIVO COVID
01	GRANDE S. PAULO	Grande ABC	SANTO ANDRE		HOSPITAL DE CAMPANHA ESTADIO BRUNO DANIEL	M	Municipais				110							10									EXCLUSIVO COVID
01	GRANDE S. PAULO	Grande ABC	SANTO ANDRE		HOSPITAL DE CAMPANHA UNIVERSIDADE FEDERAL DO ABC	M	Municipais				90							10									EXCLUSIVO COVID
01	GRANDE S. PAULO	Grande ABC	SAO BERNARDO DO CAMPO	2025361	HOSPITAL ANCHIETA	M	Priv.s. fins lucrativos	18	18	-			19	29													EXCLUSIVO COVID
		Grande ABC	SAO BERNARDO DO CAMPO	105767	HOSPITAL DE CAMPANHA - HOSPITAL ANCHIETA	M					81								19								COVID
01	GRANDE S. PAULO	Grande ABC	SAO BERNARDO DO CAMPO	2027356	HOSPITAL MUNICIPAL UNIVERSITARIO	M	Priv.s. fins lucrativos	3	3	-	-		7	7	-						5						NÃO COVID
01	GRANDE S. PAULO	Grande ABC	SAO BERNARDO DO CAMPO	2080776	HOSPITAL E PRONTO SOCORRO CENTRAL	M	Municipais	92	92	-	-		10	10													PREFERENCIALMENTE NÃO COVID
01	GRANDE S. PAULO	Grande ABC	SAO BERNARDO DO CAMPO	3323728	SANTA CASA DE MISERICORDIA DE SAO BERNARDO DO CAMPO	M	Priv.s. fins lucrativos	12	-	-	-		9	-													NÃO COVID
01	GRANDE S. PAULO	Grande ABC	SAO BERNARDO DO CAMPO	105759	HOSPITAL DE URGENCIA	M	Municipais	113	113		162		20	20					70			10					COVID

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01	GRANDE S. PAULO	Sao Paulo	SÃO PAULO	2080494	HOSPITAL DA CRUZ VERMELHA DE SÃO PAULO	M	Municipais													20							EXCLUSIVO COVID
01	GRANDE S. PAULO	Sao Paulo	SÃO PAULO	2079445	HOSPITAL SANTA ISABEL	M	Municipais													20							EXCLUSIVO COVID
01	GRANDE S. PAULO	Sao Paulo	SÃO PAULO	2078597	HOSPITAL ALEMÃO OSWALDO CRUZ	M	Municipais													20							EXCLUSIVO COVID
TOTAL 01								7.692	5.998	1.728	2.065	1.164	2.345	1.719	502	675	66	759	363	242	904	47	20	-	3.298	187.452.000	
02	ARAÇATUBA	Central do DRS II	ARACATUBA	2078775	SANTA CASA DE ARACATUBA HOSPITAL SAGRADO CORACAO DE JESUS	F	Priv.s. fins lucrativos	83	57	18	-		10	10	-	-	-			3	20						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Central do DRS II	ARACATUBA	2082675	ASSOCIACAO DE AMPARO AO EXCEPCIONAL RITINHA PRATES	M	Priv.s. fins lucrativos	-	-	-			-	-	-	-											NÃO COVID
02	ARAÇATUBA	Central do DRS II	ARACATUBA	7780745	CENTRO MEDICO ARACATUBA HOSPITAL CENTRAL	M	Privado	11	5	-	-		-	-	-	-											NÃO COVID
02	ARAÇATUBA	Central do DRS II	ARACATUBA		HOSPITAL DA MULHER	M	Municipais				-	39															EXCLUSIVO COVID
02	ARAÇATUBA	Central do DRS II	AURIFLAMA	2061756	SANTA CASA DE AURIFLAMA	M	Priv.s. fins lucrativos	27	17	7	-		-	-	-	-											PREFERENCIALMENTE COVID
02	ARAÇATUBA	Central do DRS II	BILAC	2080915	HOSPITAL BENEFICENTE PADRE BERNARDO BRAAKUIS	M	Priv.s. fins lucrativos	20	15	7	-		-	-	-	-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Central do DRS II	GUARARAPES	2081814	SANTA CASA DE GUARARAPES	M	Priv.s. fins lucrativos	35	22	12	-		-	-	-	-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Central do DRS II	VALPARAISO	2081105	SANTA CASA DE VALPARAISO	M	Priv.s. fins lucrativos	25	14	10	-		-	-	-	-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Consorcio do DRS II	ALTO ALEGRE	2081806	HOSPITAL PADRE JOAO W BRAEM	M	Municipais	12	10	6	-		-	-	-	-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Consorcio do DRS II	BIRIGUI	2078252	SANTA CASA DE BIRIGUI	M	Priv.s. fins lucrativos	40	25	12	-		8	8	-	-					10						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Consorcio do DRS II	BURITAMA	2079461	SANTA CASA DE MISERICORDIA SAO FRANCISCO BURITAMA	M	Priv.s. fins lucrativos	14	8	4	-		-	-	-	-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Consorcio do DRS II	CLEMENTINA	2080982	HOSPITAL DE CLEMENTINA	F	Priv.s. fins lucrativos	12	11	11	-		-	-	-	-					-						PREFERENCIALMENTE NÃO COVID
02	ARAÇATUBA	Consorcio do DRS II	PENAPOLIS	2078384	HOSPITAL ESPIRITA	M	Priv.s. fins lucrativos	-	-	-			-	-		-											NÃO COVID
02	ARAÇATUBA	Consorcio do DRS II	PENAPOLIS	2078503	SANTA CASA DE PENAPOLIS	M	Priv.s. fins lucrativos	74	52	7	11		8	8		10											PREFERENCIALMENTE COVID
02	ARAÇATUBA	Consorcio do DRS II	PENAPOLIS	310837	HOSPITAL DE CAMPANHA COVID 19 CENTRO REG DOS CONSORCIOS	M	Municipais				20							10									EXCLUSIVO COVID
02	ARAÇATUBA	Lagos do DRS II	ANDRADINA	2082691	SANTA CASA DE ANDRADINA	F	Priv.s. fins lucrativos	59	41	14	-		10	10	-	-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Lagos do DRS II	CASTILHO	2079356	HOSPITAL E MATERNIDADE JOSE FORTUNA	M	Priv.s. fins lucrativos	13	18	6	-		-	-		-					-						PREFERENCIALMENTE COVID
02	ARAÇATUBA	Lagos do DRS II	GUARACAI	2081520	HOSPITAL E MATERNIDADE DE GUARACAI	M	Priv.s. fins lucrativos	18	12	8	-					-											PREFERENCIALMENTE COVID
02	ARAÇATUBA	Lagos do DRS II	ILHA SOLTEIRA	2078513	HOSPITAL REGIONAL DE ILHA SOLTEIRA	F	Priv.s. fins lucrativos	43	30	12	-		4	4	-	-	10										PREFERENCIALMENTE COVID
02	ARAÇATUBA	Lagos do DRS II	MIRANDOPOLIS	2083019	HOSPITAL ESTADUAL DE MIRANDOPOLIS DR OSWALDO BRANDI FARIA	E	Estaduais-Direta	29	29	16	-		10	10	1	-											PREFERENCIALMENTE NÃO COVID
02	ARAÇATUBA	Lagos do DRS II	PEREIRA BARRETO	2083027	SANTA CASA DE MISERICORDIA DE PEREIRA BARRETO	M	Priv.s. fins lucrativos	17	16	16	-		-	-													PREFERENCIALMENTE COVID
02	ARAÇATUBA	Lagos do DRS II	SUD MENNUCCI	2081245	SANTA CASA DE SUD MENNUCCI	M	Priv.s. fins lucrativos	9	8	4	-																PREFERENCIALMENTE COVID
TOTAL 02								531	385	172	31	39	50	50	1	10	10	10	-	4	30	-	-				
03	ARARAQUARA	Central do DRS III	AMERICO BRASILIENSE	2075334	HOSPITAL NESTOR GOULART REIS AMERICO BRASILIENSE	E	Estaduais-Direta	-	-	-																	NÃO COVID
03	ARARAQUARA	Central do DRS III	AMERICO BRASILIENSE	6164300	HOSPITAL ESTADUAL AMERICO BRASILIENSE	E	Estaduais-OSS	32	32	10	-		10	10	10						10						PREFERENCIALMENTE COVID
03	ARARAQUARA	Central do DRS III	AMERICO BRASILIENSE	2090171	UNIDADE HOSPITALAR DR JOSE NIGRO NETO AMERICO BRASILIENSE	M	Municipais	12	12	10	-							-			-	-					PREFERENCIALMENTE NÃO COVID
03	ARARAQUARA	Central do DRS III	ARARAQUARA	2079763	CASA CAIRBAR SCHUTEL	M	Priv.s. fins lucrativos	-	-																		NÃO COVID
03	ARARAQUARA	Central do DRS III	ARARAQUARA	6949284	MATERNIDADE GOTA DE LEITE DE ARARAQUARA	M	Privado	5	3	-	-										-						PREFERENCIALMENTE COVID
03	ARARAQUARA	Central do DRS III	ARARAQUARA	2082527	SANTA CASA DE ARARAQUARA	M	Priv.s. fins lucrativos	60	40	20	10		14	14	10			10			-						PREFERENCIALMENTE COVID
03	ARARAQUARA	Central do DRS III	ARARAQUARA	7207203	PRONTO SOCORRO MELHADO	M	Municipais	18	18	-	-					-											EXCLUSIVO COVID
03	ARARAQUARA	Central do DRS III	BOA ESPERANCA DO SUL	2079402	SANTA CASA SAO VICENTE DE PAULO BOA ESPERANCA DO SUL	M	Priv.s. fins lucrativos	5	6	3	-				-												PREFERENCIALMENTE COVID
03	ARARAQUARA	Centro Oeste do DRS III	BORBOREMA	2081989	HOSPITAL SAO SEBASTIAO DE BORBOREMA	M	Priv.s. fins lucrativos	11	10	6	-																PREFERENCIALMENTE COVID
03	ARARAQUARA	Centro Oeste do DRS	IBITINGA	2082640	SANTA CASA DE CARIDADE E MATERNIDADE IBITINGA	M	Priv.s. fins lucrativos	38	19		-		10	4	-	5											PREFERENCIALMENTE COVID
03	ARARAQUARA	Centro Oeste do DRS	ITAPOLIS	2079836	SANTA CASA DE MISERICORDIA ITAPOLIS	M	Priv.s. fins lucrativos	44	27		-		9	4	-	5											PREFERENCIALMENTE COVID
03	ARARAQUARA	Centro Oeste do DRS	NOVA EUROPA	2747685	SANTA CASA DE MISERICORDIA NOVA EUROPA	M	Priv.s. fins lucrativos	6	4	2	-																PREFERENCIALMENTE COVID
03	ARARAQUARA	Centro Oeste do DRS	TABATINGA	2079399	SANTA CASA DE MISERICORDIA TABATINGA SP	M	Priv.s. fins lucrativos	16	10	8	-																PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	DESCALVADO	2081717	SANTA CASA DESCALVADO	M	Priv.s. fins lucrativos	40	25	17	21																PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	DOURADO	9379080	HOSPITAL E MATERNIDADE PUBLICO DE DOURADO	M	Privado	6	6	3	-																PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	IBATE	2092395	HOSPITAL MUNICIPAL IBATE	M	Municipais	10	10	4	-																PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	PORTO FERREIRA	2082522	HOSPITAL DONA BALBINA	M	Priv.s. fins lucrativos	27	13	4	-		5	4	3												PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	RIBEIRAO BONITO	2747693	SANTA CASA DE MISERICORDIA RIBEIRAO BONITO	M	Priv.s. fins lucrativos	8	5	5																	PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	SAO CARLOS	2080931	SANTA CASA DE SAO CARLOS	M	Priv.s. fins lucrativos	121	84	24	-		20	15	16	8					-						PREFERENCIALMENTE COVID
03	ARARAQUARA	Coracao do DRS III	SAO CARLOS	5586348	HOSPITAL UNIVERSIT DA UFSCAR PROF DR HORACIO C PANEPUCCI	M	Priv.s. fins lucrativos	28	28	5																	PREFERENCIALMENTE COVID
03	ARARAQUARA	Norte do DRS III	MATAO	2080063	HOSPITAL CARLOS FERNANDO MALZONI MATAO	E	Priv.s. fins lucrativos	89	51	17	10		18	15	5	1		2									PREFERENCIALMENTE NÃO COVID
03	ARARAQUARA	Norte do DRS III	TAQUARITINGA	2078295	SANTA CASA DE TAQUARITINGA	M	Priv.s. fins lucrativos	66	35	20	-		8	6	-						-						PREFERENCIALMENTE COVID
TOTAL 03								648	418	169	41	-	99	72	41	11	-	22	-		10	-	-				
04	BAIXADA SANTISTA	Baixada Santista	BERTIOGA	2083272	HOSPITAL MUNICIPAL DE BERTIOGA	M	Municipais	25	15	-	20				-	-		10			-						PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	CUBATAO	2078473	HOSPITAL DR LUIZ CAMARGO DA FONSECA E SILVA	M	Priv.s. fins lucrativos	38	20	-	20		7	7	1	10					-						PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA	2754843	HOSPITAL SANTO AMARO	M	Priv.s. fins lucrativos	50	50	-	-		20	20	-	10											PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA	7544529	INST DE INFECT EMILIO RIBAS II BAIXADA SANTISTA	E	Estaduais-OSS	27	27	5	-		13	13	6	-	-				7						PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA		PAM RODOVIARIA	M	Municipais				14																PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	GUARUJA		HOSPITAL DE CAMPANHA GUARUJÁ	M	Municipais				10																EXCLUSIVO COVID
04	BAIXADA SANTISTA	Baixada Santista	ITANHAEM	6894183	RESSURGIR CENTRO DE REEDUCACAO PSICOSSOCIAL	M	Privado	-	-	-	-					-											NÃO COVID
04	BAIXADA SANTISTA	Baixada Santista	ITANHAEM	2087804	HOSPITAL REGIONAL JORGE ROSSMANN DE ITANHAEM	E	Estaduais-OSS	30	30	15	15		20	-	10	10	-				10						PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	MONGAGUA	3024458	HOSPITAL E MATERNIDADE DR ADONIRAN CORREIA CAMPOS MONGAGUA	M	Municipais	12	12		-					-					-						NÃO COVID
04	BAIXADA SANTISTA	Baixada Santista	PERUIBE	9297715	MATERNIDADE MUNICIPAL DE PERUIBE	M	Municipais	-	-		15		-	-		-					6						NÃO COVID
04	BAIXADA SANTISTA	Baixada Santista	PERUIBE		UNIDADE HOSPITALAR MATERNIDADE/COVID/CAMPANHA	M	Municipais					22															EXCLUSIVO COVID
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	2730097	COMPLEXO HOSPITALAR IRMA DULCE O S S	M	Municipais	54	54	48	-		20	20	2	20	-		10		-	4					PREFERENCIALMENTE COVID
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105568	HOSPITAL DE CAMPANHA COVID19 FALCÃO	M	Municipais					90															EXCLUSIVO COVID
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105582	HOSPITAL DE CAMPANHA COVID19 QUIETUDE	M	Municipais					11															EXCLUSIVO COVID
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105740	HOSPITAL DE CAMPANHA COVID19 RODRIGÃO	M	Municipais					85															EXCLUSIVO COVID
04	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	6817890	ASSOCIAÇÃO HOSPITALAR CASA DE SAUDE DE SANTOS	M													30								EXCLUSIVO COVID
04	BAIXADA SANTISTA	Baixada Santista	SANTOS	2079753	SANTA CASA DE SANTOS	M	Priv.s. fins lucrativos	149	70	-	30		71	40	-	30		10			-	5		FT 1.089 de 04/05/2020	20	2.880.000,00	PREFERENCIALMENTE COVID

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Dados Estabelecimento

CNES	CNPJ Próprio	Nome Fantasia	
0105589	---	HOSPITAL DE CAMPANHA COVID 19 FALCAO	
Tipo de Estabelecimento		**Gestão**	**Natureza Jurídica(Grupo)**
HOSPITAL GERAL		MUNICIPAL	ADMINISTRAÇÃO PÚBLICA
CNPJ Mantenedora		**Nome da Mantenedora**	
46.177.531/0001-55		MUNICIPIO DE PRAIA GRANDE	
Cadastrado em		**Atualização na Base Local**	**Última atualização Nacional**
06/04/2020		29/04/2020	10/05/2020

Hospitalar - Leitos

Descrição	Leitos Existentes	Leitos SUS
ESPEC - CLINICO ()		
51 - CLINICA GERAL	95	95

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Dados Estabelecimento

CNES	CNPJ Próprio	Nome Fantasia	
0105562	—	HOSPITAL DE CAMPANHA COVID 19 QUIETUDE	
Tipo de Estabelecimento		**Gestão**	**Natureza Jurídica(Grupo)**
HOSPITAL GERAL		MUNICIPAL	ADMINISTRAÇÃO PÚBLICA
CNPJ Mantenedora		**Nome da Mantenedora**	
46.177.531/0001-56		MUNICIPIO DE PRAIA GRANDE	
Cadastrado em		**Atualização na Base Local**	**Última atualização Nacional**
06/04/2020		06/05/2020	10/05/2020

Hospitalar - Leitos

Descrição	Leitos Existentes	Leitos SUS
ESPEC - CLÍNICO ()		
33 - CLÍNICA GERAL	7	7

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Dados Estabelecimento

CNES	CNPJ Próprio	Nome Fantasia	
0106740	—	HOSPITAL DE CAMPANHA COVID 19 RODRIGAO	
Tipo de Estabelecimento		**Gestão**	**Natureza Jurídica(Grupo)**
HOSPITAL GERAL		MUNICIPAL	ADMINISTRAÇÃO PÚBLICA
CNPJ Mantenedora		**Nome da Mantenedora**	
46.177.531/0001-65		MUNICIPIO DE PRAIA GRANDE	
Cadastrado em		**Atualização na Base Local**	**Última atualização Nacional**
06/04/2020		29/04/2020	10/05/2020

Hospitalar - Leitos

Descrição	Leitos Existentes	Leitos SUS
ESPEC - CLINICO ()		
33 - CLINICA GERAL	89	89

Voltar para o topo

ANEXO DELIBERAÇÃO CIB Nº 38, 26-05-2020

RELAÇÃO DE AMPLIAÇÃO DE LEITOS CLÍNICA MÉDICA E UTI ENVIADAS AO MS PARA FINS DE HABILITAÇÃO DE UTI

DRS	DRSNOME	REGSAUDE	MUNICIPIO	2	NOME	GESTÃO	GRUPO DE HOSPITAIS	L Clin exist	L Clin SUS	Leito Clínico existente convertido para COVID	LEITO CLINICO PARA AMPLIAÇÃO FUTURA	UTI AD exist	UTI AD SUS	Leito UTI AD existente Convertido para COVID	UTI Adulto ampliação - habilitação imediata, 1ª remessa	Leitos de UTI Adulto ampliação - habilitação imediata, 4ª remessa.	UTI Pediatrica Ampliação - habilitação imediata	TIPOLOGIA DOS HOSPITAIS
4	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	2716097	COMPLEXO HOSPITALAR IRMA DULCE O S S	M	Municipais	54	54	44		20	20	2	20	10	4	PREFERENCIALMENTE COVID
4	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105589	HOSPITAL DE CAMPANHA COVID19 FALCÃO	M	Municipais				90							EXCLUSIVO COVID
4	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105562	HOSPITAL DE CAMPANHA COVID19 QUIETUDE	M	Municipais				11							EXCLUSIVO COVID
4	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	105740	HOSPITAL DE CAMPANHA COVID19 RODRIGÃO	M	Municipais				88							EXCLUSIVO COVID
4	BAIXADA SANTISTA	Baixada Santista	PRAIA GRANDE	6817890	ASSOCIAÇÃO HOSPITALAR CASA DE SAUDE DE SANTOS	M										20		EXCLUSIVO COVID

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BRASÍLIA - DF

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MINISTÉRIO DA SAÚDE
GABINETE DO MINISTRO

PORTARIA Nº 1.424, DE 27 DE MAIO DE 2020

Habilita leitos da Unidade de Terapia Intensiva - UTI Adulto Tipo II - COVID-19 e estabelece recurso do Bloco de Manutenção das Ações e Serviços Públicos de Saúde - Grupo Coronavírus (COVID 19), disponibilizado ao Estado de São Paulo e Municípios.

O MINISTRO DE ESTADO DA SAÚDE, SUBSTITUTO, no uso das atribuições que lhe conferem os incisos I e II do parágrafo único do art. 87 da Constituição, e

Considerando a Lei nº 13.979 de 2020, que dispõe sobre as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Coronavírus (COVID-19) responsável pelo surto de 2019;

Considerando a Portaria nº 356/GM/MS, de 11 de março de 2020, que dispõe sobre a regulamentação e operacionalização do disposto na Lei nº 13.979, de 6 de fevereiro de 2020, que estabelece as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do Coronavírus (COVID-19);

Considerando a Portaria nº 237/SAES/MS, de 18 de março de 2020, que inclui habilitações, leitos e procedimentos para atendimento exclusivo dos pacientes com COVID-19;

Considerando a Portaria nº 568/GM/MS, de 26 de março de 2020, que autoriza em caráter emergencial, a habilitação temporária de leitos de UTI, para uso exclusivo de pacientes de COVID-19, pelo período de 90 (noventa) dias, podendo ser prorrogado;

Considerando a Portaria nº 828/GM/MS, de 17 de abril de 2020, que altera a Portaria de Consolidação nº 6/2017/GM/MS, para dispor sobre os Grupos de Identificação Transferências federais de recursos da saúde; e

Considerando a correspondente avaliação da Coordenação Geral de Atenção Hospitalar e Domiciliar do Departamento de Atenção Hospitalar e de Urgência - CGAHD/DAHU/SAES/MS, constante do NUP-SEI nº 25000.069378/2020-19, resolve:

Art. 1º Ficam habilitados leitos de Unidade de Terapia Intensiva - UTI Adulto Tipo II - COVID 19, dos estabelecimentos descritos no Anexo a esta Portaria.

Parágrafo único. A habilitação de que trata o caput ocorrerá, excepcionalmente, pelo prazo de 90 (noventa) dias, podendo ser prorrogada. Finalizada a situação de emergência de saúde pública, de importância internacional decorrente do Coronavírus (COVID-19), nos termos do art. 4º, §1º, da Lei nº 13.979 de 2020, essas habilitações poderão ser encerradas a qualquer tempo.

Art. 2º Fica estabelecido recurso do Bloco de Manutenção das Ações e Serviços Públicos de Saúde - Grupo Coronavírus (COVID 19), a ser disponibilizado ao Estado de São Paulo e Municípios, em parcela única, no montante de R$ 61.344.000,00 (sessenta e um milhões e trezentos e quarenta e quatro mil reais).

Parágrafo único. Os recursos de que trata o caput equivalem aos 90 (noventa) dias.

Art. 3º O Fundo Nacional de Saúde adotará as medidas necessárias para a transferência, regular e automática, do montante estabelecido no art. 2º, aos Fundos Estadual e Municipais de Saúde, em parcela única, mediante processo autorizativo encaminhado pela Secretaria de Atenção Especializada à Saúde.

Art. 4º Os recursos orçamentários, objeto desta Portaria, correrão por conta do orçamento do Ministério da Saúde, 321 devendo onerar o Programa de Trabalho 10.122.5018.21C0.6500 - Enfrentamento da Emergência de Saúde Pública de Importância Internacional Decorrente do Coronavírus - Plano Orçamentário CV20 - Medida Provisória nº 940, de 2 de abril de 2020.

Art. 5º Esta Portaria entra em vigor na data de sua publicação.

EDUARDO PAZUELLO

ANEXO

UF	IBGE	MUNICÍPIO	ESTABELECIMENTO	CNES	GESTÃO	TIPO	CÓDIGO E DESCRIÇÃO DA HABILITAÇÃO	Nº DE LEITOS NOVOS	TOTAL DE Nº LEITOS	VALOR CUSTEIO DIARIA COVID-19 (MES)	VALOR
SP	350160	AMERICANA	HOSPITAL MUNICIPAL DR WALDEMAR TEBALDI	2058790	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350160	AMERICANA	HOSPITAL SAO FRANCISCO DE AMERICANA	2082179	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350320	ARARAQUARA	SANTA CASA DE ARARAQUARA	2082527	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350550	BARRETOS	HOSPITAL DE AMOR NOSSA SENHORA	9662561	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	36	36	1.728.000,00	5.184.000,00
SP	350000	BAURU	HOSPITAL ESTADUAL BAURU	2790602	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	9	9	432.000,00	1.296.000,00
SP	350635	BERTIOGA	HOSPITAL MUNICIPAL DE BERTIOGA	2083272	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350000	BOTUCATU	HOSPITAL DAS CLINICAS DA FACULDADE DE MEDICINA DE BOTUCATU	2748223	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	30	30	1.440.000,00	4.320.000,00
SP	350000	BRAGANCA PAULISTA	HOSPITAL UNIVERSITARIO SAO FRANCISCO NA PROVIDENCIA DE DEUS	2704900	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350760	BRAGANCA PAULISTA	HOSPITAL BRAGANTINO	9549846	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350000	CAMPINAS	HOSPITAL DAS CLINICAS DA UNICAMP DE CAMPINAS	2079798	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	19	37	912.000,00	2.736.000,00
SP	350950	CAMPINAS	MATERNIDADE DE CAMPINAS	2022621	MUNICIPAL	UTI ADULT	26.12 - UTI ADULTO II -	4	4	192.000,00	576.000,00

						O II - COVID-19	COVID-19				
SP	350950	CAMPINAS	CASA DE SAUDE	2081946	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	8	8	384.000,00	1.152.000,00
SP	350950	CAMPINAS	HOSPITAL METROPOLITANO CAMPINAS	2811626	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	15	15	720.000,00	2.160.000,00
SP	351870	GUARUJÁ	HOSPITAL SANTO AMARO	2754843	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	351907	HORTOLÂNDIA	HOSPITAL E MATERNIDADE MUNICIPAL GOVERNADOR MARIO COVAS	2087715	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
[redacted]	352590	JUNDIAÍ	HCSVP HOSPITAL SAO VICENTE	2788435	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	46	46	2.208.000,00	6.624.000,00
SP	353870	PIRACICABA	HOSPITAL DOS FORNECEDORES DE CANA DE PIRACICABA	2087057	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	8	8	384.000,00	1.152.000,00
SP	350000	PIRACICABA	HOSPITAL REGIONAL DE PIRACICABA	9425802	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	18	18	864.000,00	2.592.000,00
SP	353870	PIRACICABA	SANTA CASA DE PIRACICABA	2772310	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	5	5	240.000,00	720.000,00
SP	354100	PRAIA GRANDE	COMPLEXO HOSPITALAR IRMA DULCE O S S	2716097	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	20	20	960.000,00	2.880.000,00
SP	354780	SANTO ANDRE	CENTRO HOSPITALAR DE SANTO ANDRE DR NEWTON DA COSTA BRANDAO	8923	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	20	20	960.000,00	2.880.000,00
SP	354850	SANTOS	SANTA CASA DE SANTOS	2025752	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	30	480.000,00	1.440.000,00
SP	354850	SANTOS	HOSPITAL SANTO ANTONIO SANTOS	2080354	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	5	5	240.000,00	720.000,00
SP	354850	SANTOS	SECAO HOSPITAL MUNICIPAL DR ARTHUR DOMINGUES PINTO	2698471	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	13	13	624.000,00	1.872.000,00
SP	354850	SANTOS	COMPLEXO HOSPITALAR DOS ESTIVADORES	6998704	MUNICIPAL	UTI ADULTO II -	26.12 - UTI ADULTO II - COVID-19	10	20	480.000,00	1.440.000,00

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						COVID-19					
SP	354850	SANTOS	SECAO PRONTO SOCORRO CENTRAL SEPROSC	2042894	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	5	5	240.000,00	720.000,00
SP	355100	SÃO VICENTE	HOSPITAL SAO JOSE SAO VICENTE	2080729	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	355100	SÃO VICENTE	HOSPITAL MUNICIPAL DE SAO VICENTE	3021378	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	11	11	528.000,00	1.584.000,00
SP	350000	SOROCABA	HOSPITAL REGIONAL DE SOROCABA	9491112	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
SP	350000	SUMARE	HOSPITAL ESTADUAL SUMARE	2083981	ESTADUAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	24	24	1.152.000,00	3.456.000,00
SP	355540	UBATUBA	SANTA CASA DE MISERICORDIA DE UBATUBA	2702193	MUNICIPAL	UTI ADULTO II - COVID-19	26.12 - UTI ADULTO II - COVID-19	10	10	480.000,00	1.440.000,00
TOTAL	426	474	20.448.000,00	61.344.000,00							

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