

Ministério da Saúde

FIOCRUZ

Fundação Oswaldo Cruz



# Brazilian health system preparedness for COVID-19

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# Infrastructure

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- COE-COVID-19/SVS/MS (Public Health Emergency Operations Center/Health Surveillance Secretariat/Ministry of Health).
- National reference laboratories for respiratory diseases (IAL, IEC, FIOCRUZ)
- States' central laboratories (LACEN)
- State and municipality health secretariats

# Infrastructure

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- COE-COVID-19/SVS/MS (Public Health Emergency Operations Center, Health Surveillance Secretariat, Ministry of Health).

Example of activities:

Coordinate and publish contingency plan and action protocols according to WHO recommendations and experts' consultation.

Compile and publish official data (national and international case counts).

Coordinate public communication at the national level.

# Infrastructure

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- National reference laboratories for respiratory diseases: Instituto Adolfo Lutz (IAL), Instituto Evandro Chagas (IEC), and Fiocruz.

Perform high quality, internationally validated lab tests (PCR, genome sequencing, ...). Recognized by WHO as National Influenza Centers.

Responsible for cross-checking inconclusive lab results from LACENs, performing specific covid-19 tests for suspect cases that had negative result for other respiratory infection viruses from LACENs, ...

It is part of the Brazilian universal public health system (SUS).

# Infrastructure

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- States' central laboratories (LACEN)

Responsible for performing lab test for epidemiological surveillance, such as those related to respiratory illnesses (ILI and SARI cases).

Follows protocols established by the Ministry of Health (MH) and can opt, by agreement with the corresponding state government, to perform additional exams. For example, the LACEN at Paraná state tests the 4 seasonal coronaviruses as part of their panel for SRAG surveillance, even though it is not mandated by the MH.

It is part of the Brazilian universal public health system (SUS).

# Infrastructure

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- State and municipality health secretariats

Coordinate state/municipal level actions and protocols for disease surveillance.

Consolidate and submit to the federal agency the state's case notifications.

Promote training and protocol updates for health care professionals from the corresponding public health units.

It is part of the Brazilian universal public health system.

# COVID-19 protocols

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- Suspect case definition:
  - Fever AND at least one respiratory symptom (cough, difficulty breathing, ...) AND travel history to area of local transmission, as defined by WHO, in the last 14 days prior to symptoms onset;  
OR
  - Fever AND at least one respiratory symptom (cough, difficulty breathing, ...) AND history of close contact with covid-19 suspect case in the last 14 days prior to symptoms onset;
  - Fever OR at least one respiratory symptom (cough, difficulty breathing, ...) AND history of close contact with covid-19 laboratory confirmed case in the last 14 days prior to symptoms onset.

# COVID-19 protocols

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- Confirmed case:
  - Person with laboratory confirmed infection by covid-19, regardless of symptoms.
  
- Discarded case:
  - Case that meets suspect case criteria but has laboratory confirmation of infection by other infectious agent OR negative result for covid-19.



# COVID-19 suspect case lab flux

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- LACEN runs regular SARI pannel.
  - If positive for any infectious agent different from covid-19, the case is discarded;
  - If negative or inconclusive for any infectious agent different from covid-19, the sample is sent to the national reference laboratory for specific regular SARI pannel from NIC AND covid-19.

This protocol is based on the premise that the percentage of coinfection by multiple respiratory agents is significantly low. If that premise is not met for this particular virus, this protocol can lead to subnotification.

The literature reports respiratory virus coinfection at the order of 2%-27%, with RSV and Influenzas being the most common pair.

Rotzén-Östlund, M., Eriksson, M., Tiveljung Lindell, A., Allander, T., Zwegberg Wirgart, B. and Grillner, L. (2014), Children with multiple viral respiratory infections are older than those with single viruses. *Acta Paediatr*, 103: 100-104. doi:10.1111/apa.12440

# COVID-19 suspect case lab flux

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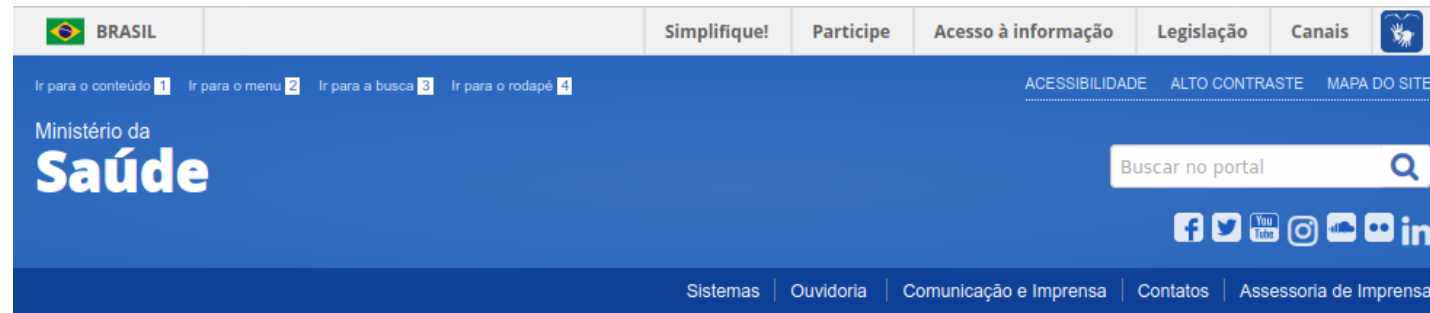
- As of March 2, the Ministry of Health announced that it will provide 30 thousand covid-19 kits for the LACENs so that they can run the test locally without need to send to national reference lab:

*"Inicialmente, serão distribuídos 10 mil kits de diagnóstico aos LACENs dos estados do Amazonas, Pará, Roraima, Bahia, Ceará, Pernambuco, Sergipe, Rio de Janeiro, Espírito Santo, Minas Gerais, Distrito Federal, Mato Grosso do Sul, Rio Grande do Sul, Paraná e Santa Catarina, contemplando todas as regiões do país. A Fundação Oswaldo Cruz (Fiocruz), no Rio de Janeiro, por meio do laboratório de Biomanguinhos, iniciará a produção e distribuição dos testes ainda nesta quarta-feira (4)"*

<https://www.saude.gov.br/noticias/agencia-saude/46472-brasil-amplia-diagnostico-para-o-coronavirus>

# Official information in Brazil

- Information center:  
<https://www.saude.gov.br/saude-de-a-z/coronavirus>



The screenshot shows the top navigation bar of the Brazilian Ministry of Health website. It includes a language selector for 'BRASIL', utility links like 'Simplifique!', 'Participe', 'Acesso à informação', 'Legislação', and 'Canais', and accessibility options such as 'ACESSIBILIDADE', 'ALTO CONTRASTE', and 'MAPA DO SITE'. The main header features the 'Ministério da Saúde' logo, a search bar labeled 'Buscar no portal', and social media icons for Facebook, Twitter, YouTube, Instagram, and LinkedIn. A secondary navigation bar contains links for 'Sistemas', 'Ouvidoria', 'Comunicação e Imprensa', 'Contatos', and 'Assessoria de Imprensa'.

[Novo Coronavírus - tire suas dúvidas](#)

VOCÊ ESTÁ AQUI: [PÁGINA INICIAL](#) > [SAÚDE DE A A Z](#) > [CORONAVÍRUS](#)

[Saúde de A a Z](#)

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[ASSUNTOS](#)

## Coronavírus: saiba o que é, como tratar e se prevenir

[O que é](#) [Transmissão](#) [Diagnóstico](#) [Tratamento](#) [Sintomas](#) [Prevenção](#)

### O que é coronavírus?

Coronavírus é uma família de vírus que causam infecções respiratórias. O novo agente do coronavírus foi descoberto em 31/12/19 após casos registrados na China. Provoca a doença chamada de coronavírus (COVID-19).

# Official information in Brazil

- Situation report:  
<http://plataforma.saude.gov.br/novocoronavirus>



The screenshot shows the top navigation bar of the Plataforma IVISQ website. The navigation bar includes the 'gov.br' logo, 'ACESSO À INFORMAÇÃO', 'PARTICIPE', 'LEGISLAÇÃO', and 'ÓRGÃOS DO GOVERNO'. Below the navigation bar is a banner for 'Plataforma IVISQ' with the text 'Plataforma Integrada de Vigilância em Saúde Ministério da Saúde' and a row of icons representing various health and safety concepts. The main heading is 'Notificação de casos de doença pelo coronavírus 2019 (COVID-19)'. Below the heading are two buttons: 'Brasil' and 'Mundo'. The main content area is titled 'Unidades da Federação com casos notificados segundo o Ministério da Saúde' and includes the text 'Dados atualizados em 02/03/2020 às 16:30'. A map of Brazil is visible at the bottom, with some states highlighted in grey.

gov.br

ACESSO À INFORMAÇÃO PARTICIPE LEGISLAÇÃO ÓRGÃOS DO GOVERNO

Plataforma  
**IVISQ**

Plataforma Integrada  
de Vigilância em Saúde  
Ministério da Saúde

Notificação de casos de doença pelo coronavírus 2019 (COVID-19)

Brasil Mundo

Unidades da Federação com casos notificados segundo o Ministério da Saúde  
Dados atualizados em 02/03/2020 às 16:30

# Official information in Brazil

State	Suspect	Confirmed	Discarded
TOTAL	433	2	162
SP - São Paulo	163	2	48
RS - Rio Grande do Sul	73	0	10
MG - Minas Gerais	48	0	4
RJ - Rio de Janeiro	42	0	27
SC - Santa Catarina	36	0	4
DF - Distrito Federal	12	0	3
BA - Bahia	9	0	14
PR - Paraná	7	0	8
CE - Ceará	6	0	6
MS - Mato Grosso do Sul	6	0	1
ES - Espírito Santo	5	0	6
MT - Mato Grosso	5	0	0

State	Suspect	Confirmed	Discarded
PE - Pernambuco	4	0	10
AL - Alagoas	3	0	1
GO - Goiás	3	0	7
PA - Pará	2	0	2
RN - Rio Grande do Norte	2	0	6
PB - Paraíba	2	0	1
RO - Rondônia	1	0	0
AM - Amazonas	1	0	1
MA - Maranhão	1	0	1
PI - PiauÍ	1	0	2
SE - Sergipe	1	0	0

Ministry of Health, accessed 2020-03-02

# COVID-19 risk in Brazil

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Fake news can a serious public health issue!

The deterioration of traditional media confidence by the public, followed by adoption of alternative, unsupported by evidence, sources of (mis)information can lead to health risks such as:

- Adoption of ineffective treatment instead of validated/health professional appointed treatment;
- Disregard for vaccination calendar;
- Unnecessary rush to hospitals driven by fear, causing disruption or collapse of the unit's ability to properly tend to those in need.

# COVID-19 risk in Brazil

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Fake news can a serious public health issue!

Trying to minimize its effect, the SVS launched a dedicated website for debunking covid-19 related fake news:

<https://www.saude.gov.br/fakenews/coronavirus>

# COVID-19 risk in Brazil

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What about importation risk?



# COVID-19 risk in Brazil

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Territory	Average annual passenger	Population
China-Brazil	113.117 (~310/day)	1.439.323.776

# COVID-19 risk in Brazil

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(UK,FR,DE)-Brazil	970.924 (~2660/day)	216.943.464
USA-Brazil	2.535.940 (~6948/day)	331.002.651

# COVID-19 risk in Brazil

What about importation risk?

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(UK,FR,DE)-Brazil	970.924 (~2660/day) ~9x	216.943.464 ~1/7
USA-Brazil	2.535.940 (~6948/day) ~22x	331.002.651 ~1/4

# COVID-19 risk in Brazil

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What about dispersion inside the country?

- Need up-to-date international flow to properly assess invasion risk at different points-of-entry. Unfortunately, current ANAC regulation does not require aggregated trip counts data sharing, only direct flights.

# COVID-19 risk in Brazil

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What about dispersion inside the country assuming São Paulo becomes a source of local transmission?

# COVID-19 risk in Brazil

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**WARNING!!! THE FOLLOWING PRELIMINARY ESTIMATES CONSIDERS ONLY DISPERSAL FROM SÃO PAULO, BASED ON AIRLINE DATA FROM 2014. IT DOES NOT INCLUDE CASE IMPORTATION FROM OTHER COUNTRIES.**

# COVID-19 risk in Brazil

**WARNING!!! THE FOLLOWING PRELIMINARY ESTIMATES CONSIDERS ONLY DISPERSAL FROM SÃO PAULO, BASED ON AIRLINE DATA FROM 2014. IT DOES NOT INCLUDE CASE IMPORTATION FROM OTHER COUNTRIES.**

Destination	State	Effective distance	Relative eff. dist.
RIO DE JANEIRO	RJ	2.777	1.000
PORTO ALEGRE	RS	3.537	1.274
BRASÍLIA	DF	3.583	1.291
CURITIBA	PR	3.764	1.356
BELO HORIZONTE	MG	3.779	1.361
SALVADOR	BA	3.853	1.388
RECIFE	PE	4.069	1.465
FORTALEZA	CE	4.236	1.526
FLORIANÓPOLIS	SC	4.280	1.542
GOIÂNIA	GO	4.367	1.573
VITÓRIA	ES	4.625	1.666
CUIABÁ	MT	4.912	1.769

Destination	State	Effective distance	Relative eff. dist.
NAVEGANTES	SC	4.960	1.787
MACEIÓ	AL	5.042	1.816
CAMPO GRANDE	MS	5.048	1.818
FOZ DO IGUAÇU	PR	5.152	1.855
PORTO SEGURO	BA	5.275	1.900
RIBEIRÃO PRETO	SP	5.345	1.925
UBERLÂNDIA	MG	5.403	1.946
MANAUS	AM	5.422	1.953
NATAL	RN	5.438	1.958
LONDRINA	PR	5.462	1.967
SÃO JOSÉ DO RIO PRETO	SP	5.465	1.968
BELÉM	PA	5.573	2.007

# Thank you!

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Acknowledgment: all parties involved in the National Influenza Surveillance (SVS, DEIDT, GT-Influenza, LACENs, NICs, state and municipal health secretariats) for their collaboration.

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