

As there is so much confusion, misinformation and denial on social media about the coronavirus we hope to explain, in plain language, why the experts see this as such an emergency. Many people are reading the claim online that this virus is a lot like the viruses that cause colds, and that if you get it, it will probably just seem like a bad cold and you are very unlikely to die. Depending on who you are, this may be true, but there is more to this story that is key to our outcome as a community.

This is a coronavirus that is new to the human population. Although it is related to the viruses that cause colds, and acts a lot like them in many ways, nobody has ever been exposed to this before, which means nobody has any immunity to it.

The virus is now moving explosively through the human population, spreading through respiratory secretions and 10 times more contagious than the flu or cold. Although many people will recover, about 20% will wind up with a serious pneumonia that will require hospitalization. Some will be so ill from the pneumonia that they will die. We estimate this may be 2-3%, but it is higher in Italy's experience, partially because the healthcare system was overwhelmed so rapidly. In those over age 70, the death rate is 8-20%. So if a child catches it on a playdate, they can easily transmit it to their grandmother as easily as touching the same doorknob or countertop.

Scientists measure the spread of an epidemic by a number called R_0 , or "R naught." That number is calculated this way: for every person who develops the illness, how many other people do they give it to before they are cured (or dead) and no longer infectious? The R_0 for coronavirus appears to be a number close to 3 – an extremely frightening number for such a deadly disease.

Suppose you catch the virus. You will give it to 3 other people, and they will each give it to three others, and so forth. Here is how the math works, where you, the "index case," are the first line:

1

3

9

27

81

243

729

2,187

6,561

19,683

59,046

177,147

531,441

1,594,323

4,782,969

14,348,907

So, in just 15 steps of transmission, the virus has gone from just one index case to 14.3 million other people. Those 15 steps might take only a few weeks. With school out and lots of playdates happening, maybe less. The first person may be a young and healthy Brookline child, but many of those 14 million people will be old and sick, and they may die because they got a virus that started in one person's throat.

R0 is not fixed – it can be lowered by control measures. If we can get the number below 1, the epidemic will die out. This is the point of the quarantines and social distancing, but we are not doing it fast enough.

In the US, we have to slow down the virus. American hospitals, Boston hospitals, have limited resources. We have a fixed number of ventilators and an impending calamity on our hands. Our Italian critical care colleagues have shared with us that they simply do not have enough resources (ventilators, physicians and nurse, critical care beds), and are forced to choose who lives and dies based on old tenets of wartime triage. Older patients do not even get a ventilator and die of their pneumonia. These are decisions nobody should have to face, and we are only 11 days behind Italy's fate. Their hospitals are quite advanced, and we are no better in Boston. As doctors, we are desperately trying to prepare for the onslaught of patients in the coming weeks. It is already beginning. This is an opportunity for you as the district leadership to be aggressive and help us fight this by "Flattening the Curve".

We implore you, as a group of Boston's doctors preparing to fight this, to help us. Please send a new email to ALL the Brookline school district families. Social distancing is painful. We know that kids have cabin fever, they are pleading to see their friends, they may have birthday parties coming up or

special events they have been looking forward to. All of us need to work and childcare is a big worry. But we need to overcome these issues and boredom for the coming weeks so that we can survive this with as few deaths as possible. What does that mean?

- 1) No playdates, not even 1:1.
- 2) No small gatherings, no meetings between a couple families, even for birthday parties.
- 3) Avoid trampoline parks, climbing gyms, restaurants, movie theaters, anything in an enclosed area. Many of these places are advertising increased cleaning and hygiene. This is not sufficient! Do not go.
- 4) Cancel planned vacations for the next month. Avoid airline travel that is not an emergency. Many airlines and rental agencies are offering penalty free cancellations.
- 5) Stay at home as much as possible. Work from home if you possibly can. You may have to go buy groceries and medicine, of course, but make the trips quick and purposeful.
- 6) Wash your hands thoroughly after you have been in public places, for a full 20 seconds, soaping up thoroughly and being sure to get between the fingers.
- 7) Please avoid disseminating social media claims that the situation is not serious or is being exaggerated. This is a national crisis and conveying misinformation to your friends and family may put their lives in danger.

Thank you for taking the time to read this and stay safe and healthy in the coming weeks.

Respectfully,

Erika Rangel, MD, Director of Surgical Critical Care, Brigham and Women's Faulkner Hospital

Shawn Rangel, MD, Pediatric Surgery, Children's Hospital Boston

Asaf Bitton, MD, Executive Director Ariadne Labs and Internal Medicine, BWH

Daniel O'Connor, MD, Pediatrics, Longwood Pediatrics and Children's Hospital Boston

Beth O'Connor, MD, Pediatrics, Roslindale Pediatrics

Vandana Madhavan, MD, Clinical Director of Pediatric Infectious Disease, MGH

Parag Amin, MD, Pediatrics, Centre Pediatrics

Christy Cummings, MD, Neonatology, Children's Hospital Boston

Eric Bluman, MD, Orthopedic Surgery, BWH

Trimble Augur, MD, Internal Medicine, Hebrew Rehabilitation Center

Dasha Weir, MD, Pediatric gastroenterology

Amy Evenson Warren, Transplant Surgery, BIDMC

William Oldham, MD, PhD, Pulmonary and Critical Care Medicine, BWH

James Kryzanski, MD, Neurosurgery, Tufts Medical Center

Ben Zendejas-Mummert, MD, Pediatric Surgery, Children's Hospital Boston

Johanna Iturrino Moreda, MD, Gastroenterology, BIDMC

David Berg, MD, Cardiology and Cardiac Critical Care, BWH

Jennifer Crombie, MD, Hematology Oncology, BWH

Jenifer Lightdale, MD, Chief of Pediatric Gastroenterology, U
Mass Memorial Hospital

Wayne Tworetzky, MD, Pediatric Cardiology, Children's
Hospital Boston

Elaine Yu, MD, Endocrinology

Jonathan Li, Infectious Disease

Nancy Cho, MD, Surgical Oncology, BWH

Eric Sheu, MD, Minimally Invasive Surgery, BWH

Reza Askari, MD, Director, Surgical Critical Care, BWH

Cindy Lien, MD, Internal Medicine and Palliative Care, BIDMC

Hannah Parker, MD, OB/GYN

Alysa E. Doyle, PhD, Center for Genomic Medicine, MGH

Christopher Smith, MD, Internal Medicine, Charles River
Medical Associates, Wellesley, MA

Maya Greer, NP, Children's Hospital Boston

Rusty Jennings, MD, Pediatric Surgery, Children's Hospital
Boston

Emily Oken, MD, Professor of Population Medicine, BWH

Chinwe Ukomadu, MD, Head of Clinical Hepatology, Novartis

Jennifer Kaufman, MD, Internal Medicine, BWH

Ann Poduri, MD, MPH, Pediatric Neurology

Susan Yehle Ritter, MD, Rheumatology

Diego Martinucci, MD Psychiatry, Atrius Health

Shih-Ning Liaw, MD, Pediatric Palliative Care, Dana-Farber
Cancer Institute/Boston Children's Hospital

Wolfram Goessling, MD, Gastroenterology and Oncology, MGH

Paola Daza, Pediatrics, MGH

Juan Matute, Neonatology, MGH

John Ross, MD, Internal Medicine, BWH

Megan Sandel, MD, Pediatrics, Boston Medical Center

Kathy Calvillo, MD, Surgery, BWH

Christine Greco, MD, Anesthesia, Children's Hospital Boston

Niteesh Choudhry, MD, PhD, Internal Medicine, BWH and
Harvard T.H. Chan School of Public Health

Chandru Krishnan, MD, Ophthalmology, Tufts Medical Center

Amy Ship, MD, Internal Medicine, Associate Director of Medical
Education, Atrius Health

Yen-Lin Evelyn Chen, MD, Radiation Oncology, MGH

Daihung Do, MD, Dermatology, BIDMC

Chloe Zera, MD, MPH, Maternal Fetal Medicine, BIDMC

Alejandra Barrero-Castillero, MD, MPH, Neonatology, Children's
Hospital Boston

Jesse Esch, MD, Pediatric Cardiology, Children's Hospital
Boston

Alison Packard, MD, OB/GYN, MGH

Vik Khurana, MD PhD, Chief Division of Movement Disorders,
BWH

Tu-Mai Tran, MD, MSc, Family Medicine, BMC

Yu Liu, MD PhD, Internal Medicine, Bristol Myers Squibb

Yih-Chieh Chen, MD

Lily Li, MD, Allergy and Immunology, BWH