

## Commentary

# COVID-19, Obesity, and the Art of Bathroom Cleaning: What Can a Pandemic Teach us About an Epidemic?

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## Abstract

The coronavirus disease (COVID-19) is an upper respiratory tract infection that can affect multiple body organ systems. Beyond the devastating mortality, the COVID-19 pandemic has tragically affected the world and its economies. Governments, societies, healthcare systems, healthcare providers and patients have responded in dramatic fashion. The COVID-19 pandemic has analogies to the obesity epidemic, regarding resource challenges, messaging, willingness to change, disparities, research, need for individual approaches, stigma, shaming, bullying, cost and matters of simple human dignity. This commentary was written near the peak of COVID-19 and integrates real time events along with published medical literature. The intent is to provide explanations about interventions that worked, those that did not work, and how lessons learned from the COVID-19 pandemic might apply to the obesity epidemic. It is hoped this review will provide a “time capsule” resource to look back upon, for those who may forget the turmoil, uncertainty, horribleness, sacrifice, and heroism during this most unique of experiences. It is hoped this review may be instructive when the next pandemic occurs. Mostly, when COVID-19 pandemic priorities abate, it is hoped the same degree of attention and resources will be prioritized towards addressing the obesity epidemic.

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## 1.0 Whatever it takes

I began work at age 14 years. When I entered college, I moved up the corporate ladder to midnight janitor. Out of economic necessity, the environmental services skillset I learned included the art of bathroom cleaning. I am currently Medical Director and President of a metabolic research center located in Louisville Kentucky USA ([www.lmarc.com](http://www.lmarc.com)). I am an Endocrinologist and Diplomate

of Obesity Medicine. With the possible exception of the “9/11” attack on US soil, I had no life-experience that prepared me for the once-in-a-generation coronavirus disease (COVID-19). Similar to other medical business owners, I am doing what is necessary to keep my patients and staff safe, while maintaining quality research conduct. Due to unexpected challenges in this most challenging of times, weeks ago, my Research Site Manager assigned extra duties for the staff. She has assigned me daily bathroom cleaning

duties for both floors of our research site. I am uniquely qualified

## **2.0 Perspectives**

*2.1 COVID-19 is a worldwide infectious viral disease (i.e., severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2), first identified in China in 2019.*<sup>1</sup> While it seems a lifetime ago, it has only been a few weeks that the prevalence of COVID-19 dramatically increased in the United States. The signs and symptoms of COVID-19 vary, and include upper respiratory tract infection, fatigue, cerebrovascular disease, skeletal muscle injury, and neurological manifestations (nerve pain and impairment of taste, smell, and vision).<sup>2</sup> Psychosocial manifestations extend beyond those infected.<sup>3</sup> At the time of this writing, the world is under the siege of a pandemic with millions infected, and world-wide projections of hundreds of thousands dead.<sup>4</sup> The world-wide economy is devastated; definitive treatment is lacking.<sup>1</sup> Prevention is key. No certainty exists when, or if life will ever go back to the “normal” of just a few weeks ago.

*2.2 Obesity is a disease, described at least since 25,000 B.C.*<sup>5</sup> Obesity has substantially increased in prevalence in the US since the 1980’s.<sup>6</sup> The symptoms of obesity vary, and include neurobehavioral, metabolic, biomechanical, and psychosocial adverse health consequences.<sup>7</sup> At the time of this writing, the world is under an increasing siege of an obesity epidemic, with approximately 2 billion of world adults having overweight or obesity.<sup>8</sup> Approximately 3 million die - *per year* - from the complications of obesity.<sup>9</sup><sup>10</sup> Over 40% of US adults have the disease of obesity, with the estimated US annual medical cost of obesity in the hundreds of billions of dollars.<sup>11</sup> Definitive treatment is limited. Prevention is key. No certainty exists when, or overweight and/or obesity will revert to the prevalence of just a few decades ago.

## **3.0 Resource challenges**

*3.1 Managing the COVID-19 pandemic is impaired by lack of access to diagnosis, evaluation, treatment, and prevention.* Regarding diagnosis, governmental “regulatory state” bureaucracy contributed to unreliable initial COVID-19 testing in the US. The delay in initial COVID-19 diagnostic testing exacerbated the pandemic.<sup>12 13</sup> Regarding treatment

and prevention, especially in highly infected areas, “*personal protective equipment*” (i.e., PPE such as masks, gloves, safety suits), cleaning/paper supplies (hand sanitizers, disinfectant sprays, paper towels, toilet paper), hospital beds, and critical care equipment are in short supply. This has resulted in surreal “*ventilator rationing*,” “*ventilator sharing*,” and adaptation of sports snorkel masks as emergency ventilators.<sup>14</sup>

Conversely, other governmental responses have proven remarkably quick and aggressive. Regarding clinical care, some of the privacy rules of the Health Insurance Portability and Accountability Act are waived.<sup>15</sup> Regarding clinical research, the US Food and Drug Administration has provided (non-binding) guidance, fundamentally altering how clinical trials are to be conducted during this time.<sup>16</sup> Regarding the federal government, both major political parties almost unanimously approved trillions of dollars within just a few weeks, to address the COVID-19 pandemic.<sup>17</sup> Other initiatives include embracement/reimbursement of telemedicine health care.<sup>18</sup>

Federal, state, and local governments have taken the extraordinary measures of canceling airline travel and outlawing some interstate travel. Some businesses are closed, while others are restricted to curbside/delivery services (e.g., restaurants, grocery stores, and e-cigarette shops). Government has decreed many people stay home – sometimes arresting people walking in parks,<sup>19</sup> or arresting fathers playing with their daughters at parks.<sup>20</sup> The eerie void in traffic in the streets of New York City and Los Angeles highlights how unthinkable things can be accomplished, given the will. Regarding local governments, states have implemented variable measures at variable times. The lack of a uniform objective and accountable responses to this coronavirus pandemic likely have contributed to suboptimal outcomes in many states.<sup>4</sup>

*3.2 Optimal management of the obesity epidemic is impaired by resource challenges,<sup>21</sup> often with a lack of access to diagnosis, evaluation, treatment, and prevention.*<sup>22 23 24</sup>

Use of body weight or body mass index in individuals is often inadequate in assessing the degree of adiposity.<sup>7</sup> Not all hospitals have sufficient bariatric hospital beds; imaging machines may not always have the necessary higher weight allowances.<sup>1</sup> Insufficient governmental implementation of

evidenced-based interventions and delayed public health prioritization<sup>25</sup> have helped exacerbate the obesity epidemic.

The US Congress has not yet passed the “Treat and Reduce Obesity Act of 2019” (TROA), which seeks to expand Medicare coverage of obesity via care by obesity medicine specialists and other providers, and expand behavioral therapy and/or use of anti-obesity pharmaceutical agents.<sup>26</sup> Often-cited reasons for the relative failure to act is the (supposed) lack of available funding and lack of governmental jurisdiction over a “*lifestyle*” issue.<sup>27</sup> The eerie void in providing basic medical care to patients with the disease of obesity highlights how unthinkable things can happen, given the lack of will. The lack of a uniform objective and accountable responses to the obesity epidemic have likely contributed to suboptimal outcomes in many states.<sup>28 29</sup>

#### **4.0 Messaging**

*4.1 Early in the onset of the COVID-19 pandemic, some denied (and continue to deny) its importance.* Just a few critical weeks of government inaction likely contributed to worse outcomes.<sup>13</sup> Earlier intervention utilizing application of an evidence framework for population management might have prevented much of these adverse outcomes. The good news is that the public was ultimately provided concise, clear and uniform messaging regarding preventive behavior measures, such as frequent hand washing, covering nose and mouth when coughing or sneezing, staying at least 6 feet away from others (“*social distancing*” or “*physical distancing*”), and avoidance of mass gathering.<sup>30</sup>

Patients with COVID-19 or exposed to COVID-19 are quarantined. Patients without COVID-19 are often advised to stay home if they are sick, have traveled from overseas, or traveled from highly infectious areas.<sup>30</sup> These simple measures have likely helped prevent and/or slow the spread of COVID-19.<sup>31</sup> During the COVID-19 pandemic, populations, individuals, and health care providers have access to updates on effective public health initiatives.<sup>32</sup> In the US, the Johns Hopkins coronavirus resource center website is essential daily reading.<sup>4</sup>

*4.2 Early in the onset of the obesity epidemic, some denied (and continue to deny) its importance.*<sup>33</sup> The decades of insufficient governmental action has likely contributed to

worse obesity outcomes. Earlier intervention utilizing application of an evidence framework for population management might have prevented much of these adverse outcomes.<sup>34 35</sup> While messaging regarding obesity management exists,<sup>36 37</sup> current obesity messaging has not proven sufficiently effective to substantially stem the obesity epidemic.<sup>38</sup> Nonetheless, during the obesity epidemic, health care providers have had access to obesity-centered information, via medical organizations who have issued obesity guidances.<sup>7 9 35 39 40 41</sup>

#### **5.0 Messaging challenges**

*5.1 While much of the messaging during this COVID-19 pandemic is clear, this clarity does not extend to all messaging.* It is sometimes unclear when/if patients should see clinicians. Some of the messaging suggests the two groups of patients who should not see a clinician include: (a) those who are sick, and (b) those who are not sick (with presumably everyone else good-to-go).

Currently, state-by-state and US COVID-19 total cases and death (promoting gloom and doom) can be found everywhere. However, state-by-state running graphs of new cases (providing hope regarding the infection peak and beyond) are more difficult to find. Reports suggest states may be withholding favorable objective data, with the calculation that potential good news might be a bad thing. It is feared by some that balancing relentlessly tragic news with hopeful news may cause people to abandon preventive measures. [“*I get a sense that public health officials don’t want to give too much in the way of good news. They don’t want people slacking off.*”<sup>42</sup>] This is ironic given that the relentless bad news of COVID-19 profoundly increases mental stress and anxiety,<sup>3</sup> and given that good news has the potential to relieve some of this stress and anxiety.

During the COVID-19 pandemic, government officials frequently asked protective personal equipment (PPE) be prioritized for health care providers. (“*The US Surgeon General Dr. Jerome Adams’ message, posted to Twitter on Saturday, was a response to face mask shortages as people stocked up due to coronavirus concerns. “Seriously people,” he began, and though it’s a tweet, you can almost hear the exasperation in his plea. “STOP BUYING MASKS!” “They are NOT effective in preventing general public from catching Coronavirus, but if healthcare providers can’t get them to*

*care for sick patients, it puts them and our communities at risk!" he continued.*")<sup>43</sup> Shortly afterwards, the US Centers for Disease Control (CDC) and Prevention recommended the public wear *"cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g., grocery stores and pharmacies) especially in areas of significant community-based transmission."* It is true the CDS also states: *"The cloth face coverings recommended are not surgical masks or N-95 respirators. Those are critical supplies that must continue to be reserved for healthcare workers and other medical first responders."*<sup>44</sup> However, it is unclear the degree the public understands the recommendations of mask-wearing in public is intended to refer to cloth face coverings. It is unclear the degree the public is willing to make or use cloth coverings. It is unclear the degree the public will simply choose to purchase medical masks, which exacerbates health care provider difficulty in purchasing masks for medical staff and patients. Government recommendations are difficult to implement without available resources to achieve them, with limited resources being made even more limited with a lack of coordinated, and sometimes seemingly contradictory recommendations.

While true government mandates have prioritized PPE to hospitals, these mandates do not always apply to medical practices or research sites on the frontlines of patient care. As a result, PPE inventory management often demands a high percent of daily attention, which is attention that might otherwise be spent on caring for patients. Furthermore, the higher demand for masks and other PPE enhances the incentives for sellers to engage in *"price gouging,"* increasing the prices of masks multifold their original costs,<sup>45</sup> which represents monetary resources that might better be allotted to providing COVID-19 medical care.

*5.2 While much of the messaging during the obesity epidemic has been clear, this clarity does not extend to all obesity-related messaging.* The relative lack of payment for obesity management<sup>26</sup> not only limits clinical visits, but suggests to many (including both patients and providers) that obesity is not truly a disease. At minimum, it suggests the US government believes the disease of obesity is not as great a priority compared to other metabolic diseases, such as diabetes mellitus, hypertension, and dyslipidemia (for which basic medical care is reimbursed). This is ironic given that patients with obesity are educated that diabetes mellitus,

hypertension and dyslipidemia are often due to complications of obesity (adiposopathy or "sick fat").<sup>46</sup>

The good news is that patients with obesity may best be motivated via a balance of education on the adverse consequences of these metabolic conditions, accompanied by knowledge of metrics that track how improvement in these metabolic conditions can be achieved with healthful weight reduction.<sup>7 39 40 41</sup>

Other counterproductive messaging toward implementation of evidenced-based approaches to obesity include *"fad diets,"* most unproven to be safe or effective<sup>47</sup> and multiple obesity myths.<sup>7 48</sup> Medical nutrition therapy is critical in treating obesity. Government recommendations regarding healthful nutrition are made more difficult to implement when healthful nutrition options are not readily available, as may occur in areas of *"food deserts."*<sup>49</sup>

Finally, without enough attention and prioritization by government towards research into effective obesity treatments, patients often turn to, and become susceptible to the messaging and marketing of *"weight loss supplements."* Most supplements for weight loss have unproven effect, and many are unsafe.<sup>7</sup> Billions of dollars in the US per year are spent on weight loss supplements,<sup>50</sup> which represents monetary resources that might better be allotted to providing evidenced-based obesity medical care.

## **6.0 Willingness to change**

*6.1 Determining readiness and willingness to change, and implementing change is critical in containing the COVID-19 epidemic.* Recommended behavior changes include frequent hand washing, covering nose and mouth when coughing or sneezing, and staying at least 6 feet away from others (*"social distancing"* or *"physical distancing"*).<sup>30</sup>

Unfortunately, those not ready to change or unwilling to change have impaired COVID-19 containment. Despite the devastation of COVID-19 and governmental directives to do otherwise, media report individuals engaged in strategic herd immunity *"coronavirus parties"*<sup>51</sup> and pandemic twerking on Florida beaches.<sup>52</sup> YouTube videos record people deliberately coughing in people's faces, licking grocery food, and spitting on packages – presumably for the entertainment value. We witness firsthand how annual celebrations in cities

during a pandemic has tragic consequences,<sup>53</sup> especially in cities with high rates of obesity.<sup>54</sup>

In response, the government is engaged in unprecedented reactions to a lack of preventive behavior. For example, when a father broke quarantine to attend a father-daughter dance, health officials threatened to “*issue a formal quarantine that will require him and the rest of his family to stay in their home by the force of law.*”<sup>55</sup> The government has also issued directives to medical providers to avoid travel, avoid scientific conferences, and avoid needlessly exposing patients to others. [Meanwhile, some government officials continued to travel, attend fund raisers, and got infected with COVID-19.<sup>56</sup>]

The willingness to change has extended to medical practices as well. To keep sufficient hospital beds available and preserve PPE, “*nonessential medical procedures*” are often cancelled/delayed. Many clinician offices have implemented preventive rigorous pre-visit phone call queries questionnaires and temperature checks before patients enter medical treatment areas – sometimes with temperatures taken while patients are still in their cars. Once in the building, patients are often immediately brought to an exam room, and not left waiting in the exam room exposed to others. Medical staff are trained to maintain “*physical distancing.*” In addition to standard universal precautions, when available, medical staff often wear masks (when available). When practical, medical practices have expanded “*work-from-home*” capabilities and have embraced telemedicine.

**6.2 Determining readiness and willingness to change, and implementing change is critical in obesity management.**<sup>57 7</sup>  
<sup>58</sup> Various behavioral techniques and approaches are most effective, when individualized based upon patient presentation.<sup>59</sup> Elements for optimal success include behavior recommendations that are evidenced-based, doable and accessible, sustainable, measurable, and behavior recommendations that engage the patient in self-ownership.<sup>7</sup>

Unfortunately, those not ready or unwilling to change have impaired obesity containment. Despite the obesity epidemic, we witness firsthand how state fair gatherings often have unhealthful nutrition<sup>60</sup> (e.g., donut cheeseburgers, spam curds, and a seemingly endless number of foods that are deep fried, such as “*picnic on a stick,*” fried chicken skins, fried Frito pies, fried butter, fried cookie dough, fried mars bars,

fried cheese cake, fried bubblegum, fried jelly beans, fried sugar cubes, fried peanut butter and jelly sandwiches, as well as deep fried ice cream cheese burgers). In response, the government has engaged in “*patchy*” progress of obesity prevention, mostly deferring to industry and person self-regulation.<sup>61 62</sup>

Conversely, for many providers of obesity medicine, a willingness to change has altered medical practices. Practical office accommodations for those engaged in obesity medicine include armless chairs, wide chairs with arms, and/or firm sofas in waiting rooms and exam rooms, wide exam tables that avoid or prevent tipping, stool or step with handles to help patients climb onto the exam table, extra-large patient gowns, large adult blood pressure cuffs or thigh cuffs, extra-long needles to draw blood, large vaginal specula, and weight scales with the capacity to measure patients who weigh more than 400 pounds (preferably located in a private area wherein the weight value is only seen by the patient and provider).<sup>7</sup> When practical, obesity medical practices are substantially embracing telemedicine.<sup>63</sup>

### **7.0 Disparity, research, individual approach, stigma, shaming, bullying, costs, human dignity and the big deal of small acts of humanity**

**7.1 Early evidence suggests COVID-19 may be more severe in minorities, such as blacks and Hispanics.**<sup>64 65</sup> On an international level, while some political concerns may obstruct or delay COVID-19 research,<sup>66</sup> COVID-19 research remains a priority.<sup>67</sup> On a local level, many clinicians find small groups of local leaders or local societal members making universal recommendations as to how individual medical practices should operate during the COVID-19 pandemic, which has proven challenging to many clinicians and their staff. On a patient level, individuals with COVID-19 are susceptible to stigma and shaming, with racist bullying of people of Asian descent as the result of the COVID-19 pandemic.<sup>68 69</sup> On a government level, beyond the loss of health insurance and benefits, some seem to have lost the connection between having a job and self-worth,<sup>70</sup> and instead believing that providing weeks of unemployment pay is the same as having a fulltime job. On an employee level, through all the surrounding unemployment, some employees feel it unfair they should have to use personal time off to avoid the health risks of a deadly pandemic, rather

than use these days for a vacation. On a very human level, amongst all the surrounding disease and death, many wonder when things will return to a simpler time. Many long for the day when they can resume something as simple as going to their hairstylist/barber.<sup>71</sup>

*7.2 Longstanding evidence suggests the severity of obesity may be greatest in minorities, such as blacks and Hispanics.*

<sup>72</sup> On a national level, despite obesity being the most prevalent of the listed diseases applicable to US National Institute of Health research funding, the current and projected research dollars are less, and sometimes far less than other diseases with much lower prevalence.<sup>73</sup> On a local level, many clinicians find state government regulations impair obesity medicine practices during the obesity epidemic.<sup>26</sup> On a patient level, individuals with obesity are susceptible to stigma, shaming, and bullying.<sup>74</sup><sup>1</sup> On a government level, obesity increases disability which increases health care expenditures.<sup>75</sup> Individuals with obesity are less likely to be hired,<sup>76</sup> with job loss often exacerbating excess weight gain.<sup>77</sup> On a very human level, among all the surrounding complications and mortality of obesity, many patients with obesity long for a simpler time when they could comfortably sit in an airplane seat, comfortably go to the bathroom, or easily purchase desired clothes and effortlessly dress themselves.

## **8.0 COVID-19 and Obesity**

Risk factors for susceptibility to infection and poorer outcomes regarding viral upper respiratory tract infections (such as the COVID-19 pandemic) include obesity, diabetes, and hypertension.<sup>1</sup><sup>78</sup><sup>79</sup> In addition to endocrinopathies, among the adverse adiposopathic consequences of the disease of obesity include pro-inflammatory immunopathies that contribute to metabolic disorders such as hyperglycemia, high blood pressure, dyslipidemia, cardiovascular disease, and cancer.<sup>80</sup><sup>46</sup><sup>7</sup> Patients with obesity often have disruption of their innate and acquired immunity, that when coupled with pro-inflammatory responses, not only increase the potential for infections, but may also worsen the outcomes of infections, and delay recovery time.<sup>79</sup> This especially applies to upper respiratory tract/lung infections. Individuals with obesity often have lung dysfunction, breathing abnormalities (reduced tidal volume and reduced forced expiratory volume - FEV1), sleep apnea, and day

and/or nighttime hypoxia.<sup>7</sup> As such, many patients with obesity have little margin to tolerate further hypoxia.

Additional factors complicating the outcomes of infection with the disease of obesity include debilitation, immobility, orthopedic challenges, polypharmacy, and sometimes prohibitive health care costs.<sup>81</sup> But while true that the monetary costs are important (increased health expenditures and loss of jobs/productivity),<sup>82</sup> the very human costs of obesity are important as well. This includes not only adverse physical adverse consequences,<sup>83</sup> but the mental stress and other psychological adverse consequences of the disease of obesity.<sup>7</sup><sup>84</sup>

The mental stress of obesity may be compounded by the fear of COVID-19, COVID-19 related loss of businesses, loss of jobs, loss of health care coverage, worsening of major CVD risk factors, and disruption of cardiovascular disease preventive care.<sup>85</sup> Mental stress can substantially worsen diabetes mellitus, hypertension, and cardiovascular disease. Increased mental stress can impair immune function.<sup>7</sup><sup>86</sup><sup>87</sup> In total, mental stress may potentially worsen chronic illnesses, further impair immune function,<sup>88</sup> potentially increase the susceptibility of patients to COVID-19 infection and worsen outcomes after infection occurs. Mental stress often worsens obesity itself, via worsened nutrition (preference for “comfort food”) and reduced physical activity.<sup>89</sup>

The potential for worsening nutrition and reduced physical activity may be compounded by governmental recommendations and/or mandates that people “stay home.” For many, “staying home” may promote less healthful eating and may promote physical inactivity. The potential of worsening of obesity as the result of increased mental stress from COVID-19 and decreased physical activity has the potential to further worsen obesity promoted chronic diseases (e.g., diabetes mellitus, hypertension, immunopathies, cardiovascular, and lung disease). This may further increase the potential risk of COVID-19 infection and worsens COVID-19 outcomes.

Another major challenge to patients with obesity during the time of COVID-19 is the recommendation that many patients defer medical care unless an urgency – which may disproportionately delay preventive medical care. In states wherein infection rate and death rates are very high due to COVID-19, this may be a reasonable trade-off. But just as

with patients, a “one size fits all” approach to medical intervention and care may not always be the best approach. In areas of the US where COVID-19 infection and death rates are relatively low, it is unclear that, in all cases, the benefits of the overwhelming prioritization of medical resources to COVID-19 will exceed the potential increase in morbidity and mortality of substantial deferral of “non-emergent” medical care to patients with obesity, diabetes mellitus, hypertension, dyslipidemia, cardiovascular disease, and cancer.<sup>90</sup> This may especially be true with the loss of business, loss of jobs, loss of health insurance, and increased stress of COVID-19 among those both infected and not infected. The potential malalignment of medical priorities has prompted organizations such as the American College of Cardiology to recommend that patients with signs and/or symptoms of heart attack and stroke not delay medical attention over COVID-19 fears.<sup>91</sup>

### **Whatever it takes**

During this most unique time of COVID-19, many healthcare providers have lost their lives.<sup>92</sup> Some of those who died from COVID-19 heard the last words from their children via remote “walkie talkie,”<sup>93</sup> while others had funerals with restrictions placed on the number of loved ones who could attend.<sup>94</sup> Yet none of the tragic stories of this unique point in time negates the extraordinary commitment, kindness, sacrifice, and heroism of health care providers, who bravely combated the once-in-generation attack upon their health, families, friends, businesses, employees, and in some cases, lives. Going forward, it is hoped we now better appreciate the need for early testing and prevention. It is hoped we better understand the role of a comprehensive, coordinated, evidenced-based, team approach to pandemics such as COVID-19, and epidemics such as obesity. It is hoped we better understand the devastating effects of mental stress on not just those affected by COVID-19 and/or obesity, but the impact of these diseases upon family, friends, and colleagues. Finally, it is hoped we better understand the need for reliable, and aggressive research to both prevent and treat devastating diseases whether they be pandemics or epidemics. As we do so, and as I am armed with Clorox spray, containers of antiseptic bathroom wipes, and grout cleaner for my daily bathroom chores, I hope we learned the basic approach of:

Whatever it takes.

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