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Economic Impacts of the COVID-19 Crisis

An Orthopaedic Perspective

Afshin A. Anoushiravani, MD, Casey M. O'Connor, MD, Matthew R. DiCaprio, MD, and Richard Iorio, MD

Investigation performed at the Department of Orthopaedic Surgery, Albany Medical Center, Albany, New York, and the Department of Orthopaedic Surgery, Brigham and Women's Hospital, Boston, Massachusetts

Coronavirus Disease 2019 (COVID-19) is a highly infectious and sometimes deadly pathogen. It was first reported as an unknown form of pneumonia to the World Health Organization (WHO) at the end of December 2019[1]. A single-stranded RNA genome consistent with a coronavirus was isolated and given the name *severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)*, which the WHO labeled COVID-19 in early February 2020[2]. The disease has since spread globally, resulting in the ongoing pandemic, with more than a million confirmed cases worldwide. Initial reports had localized the disease to the Hubei province of China, but, by January 20, 2020, Japan, South Korea, and Thailand had reported their first cases[3]. The first case in the United States was identified in Washington State on January 21, 2020. On March 11, the WHO characterized the COVID-19 outbreak as a pandemic—the first since 2009[4]. Two days later, the President of the United States declared a national state of emergency[5], which reinforced the strong recommendations to curtail elective procedures as put forth by the Centers for Medicare & Medicaid Services (CMS)[6], the Surgeon General, and the American College of Surgeons (ACS)[7]. In the following weeks, 35 states, including Washington, Colorado, Massachusetts, and New York, went further, placing moratoriums on elective procedures in order to prevent spread of the virus and to preserve the supply of personal protective equipment (PPE) and ventilators[7,8]. The cessation of elective surgery has jeopardized the financial solvency of many health-care organizations already in distress as a result of the crisis.

The pandemic has challenged health-care organizations on many fronts, such as training medical staff on new protocols, securing scarce PPE and ventilators, and creating additional intensive care unit (ICU) and COVID-19 recovery beds, to name a few[9]. Without federal and state relief, the moratorium on elective procedures will further increase the financial burdens already threatening the viability of marginally resourced hospitals. Even without the pandemic, 22 health-care organizations filed for bankruptcy in 2019; this number will only increase in 2020[10].

Elective procedures account for 48% of hospital costs and potentially an even larger percentage of revenues[9,11]. Five musculoskeletal procedures (hip arthroplasty, knee arthroplasty, laminectomy, spinal fusion, and treatment of lower extremity fracture or dislocation) account for 17% of all operating room procedures in U.S. hospitals[11]. Without elective orthopaedic procedures, marginal health-care systems are at risk for insolvency.

The current pandemic has forced the health-care system into uncharted territory. Our health-care system relies disproportionately on elective surgical procedures as a revenue source, with these revenues being used to indirectly subsidize the care of other patients. Health care represents ≥18% of the gross domestic product, and the loss of 3 months of elective surgery will lead to an annual decrease of hospital revenue of approximately 12.5%[12]. Hospital profit margins on average are not able to overcome these losses. This will cause financial

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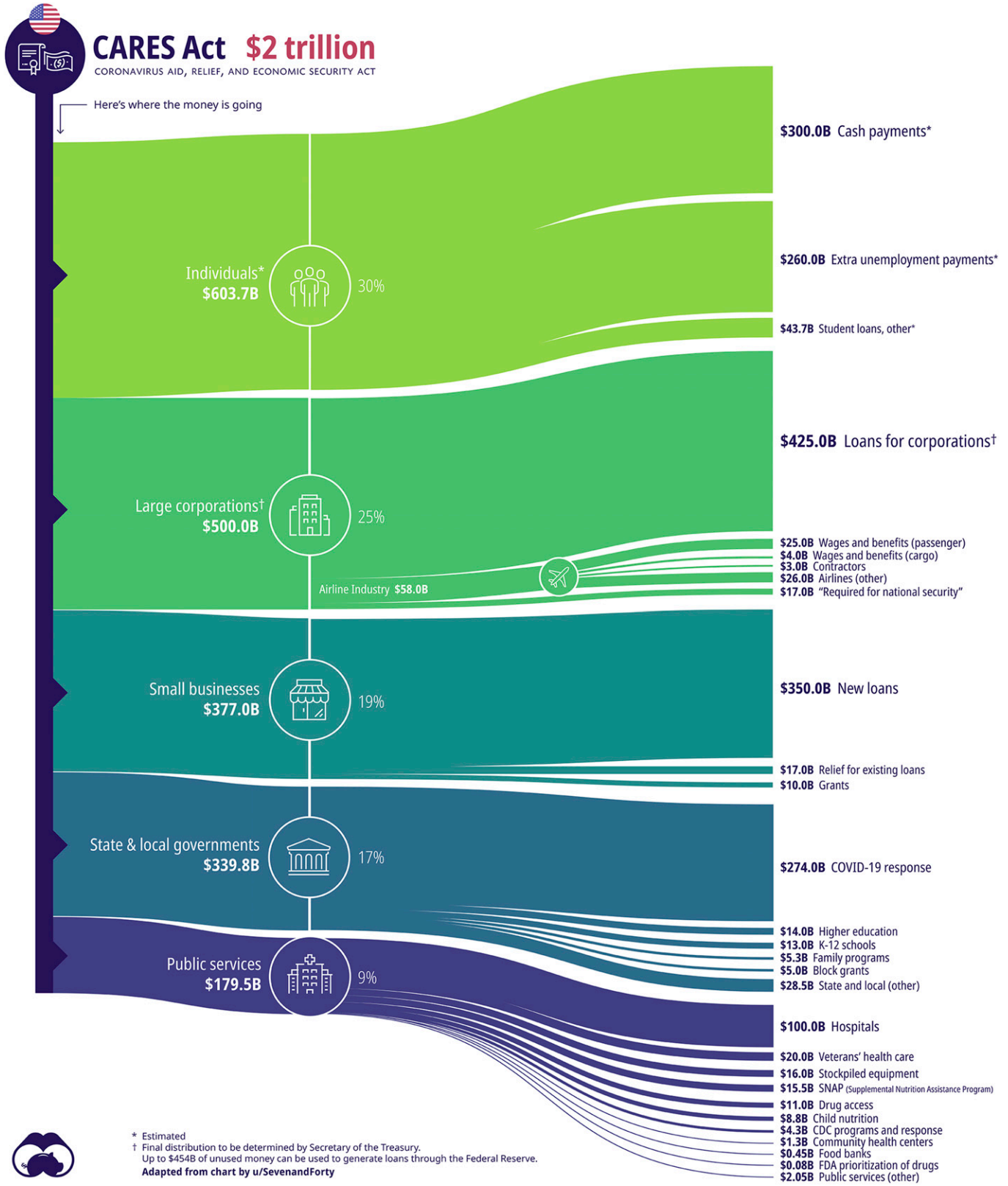

Fig. 1

Illustration showing the distribution of funds according to the CARES Act. (Reproduced, with permission, from: Routley N. The anatomy of the $2 trillion COVID-19 stimulus bill. Visual Capitalist. 30 Mar 2020. https://www.visualcapitalist.com/the-anatomy-of-the-2-trillion-covid-19-stimulus-bill/.)

TABLE I Microeconomic Effect on an Orthopaedic Surgery Practice Associated with Unanticipated Reduction in Projected Revenue in the Setting of Fixed Overhead Costs*

Scenario	Actual Revenue	Fixed Overhead	Gross Profit	Change in Gross Profit†
No crisis	$1,000,000	$600,000	$400,000	NA
Crisis	$750,000	$600,000	$150,000	−62.5%

*Assumptions: (1) $1 million projected revenue per physician per year, (2) fixed overhead is 60% of projected revenue, (3) crisis reduces actual revenue by 25%. †NA = not applicable.

constraints for hospitals and surgeons, leading to budget cuts and employee furloughs. Given the size of the health-care sector, this contraction will greatly contribute to growing unemployment and recession in the overall national economy.

In response to the crisis, the federal government passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act, a $2 trillion relief fund strategically aiding individuals, businesses, and state and local governments, while maintaining public services[13] (Fig. 1). Aside from the centerpiece deployment of "helicopter money"—a $1,200 direct payment to individuals and families—the bill designates $100 billion to hospitals and raises Medicare reimbursements by 20% for care rendered to COVID patients. Although it is still unclear how the $100 billion will be allotted (e.g., demand versus caseload, rural versus urban, academic versus community organizations), the Secretary of Health and Human Services (HHS) has been empowered to quickly oversee its distribution, providing hospitals with funding for expenses relating to constructing temporary structures and obtaining medical supplies (e.g., ventilators, PPE). In the absence of more specific guidelines, the funding will potentially disproportionately benefit larger health-care organizations[14].

Health-care systems are not solely affected. Orthopaedic practices spend >$33,000 per month per surgeon to maintain overhead for their offices[15]. Orthopaedic private practices face additional costs for maintaining ambulatory surgical centers and high medical malpractice costs, while reduced reimbursement rates have increased the capital expenditures needed to run a successful practice. As a result, orthopaedic practices have become reliant on elective procedures, exposing them to increased financial risk. The COVID-19 crisis has resulted in the rapid cancellation of elective procedures, replacing revenue

TABLE II Coronavirus Aid, Relief, and Economic Security (CARES) Act-Funded Programs Managed by the United States Small Business Administration (SBA)[18]

Program	Amount*	Stipulations
Paycheck Protection Program (PPP)	Up to $10 million	• Maximum loan value is equal $10 million or 2.5× average monthly payroll in 2019 (whichever is less) • 100% temporary guarantee on all loans, regardless of size • At least 75% of forgiven amount must have been used for payroll • Maximum interest rate capped at 1% • Waives requirement to show inability to secure credit elsewhere • Waives SBA-levied fees • Loans to be repaid in 2 years
SBA Economic Injury Disaster Loan (EIDL) and Loan Advance	Loan advance: $10,000 Loan: up to $2 million	• Loan advance does not need to be repaid • Secured loan up to $2 million and $25,000 unsecured • Interest rates of 3.75% and 2.75% for small businesses and nonprofits, respectively • Loan amount may be forgiven if used for payroll • Maximum of 30 years to repay • Can be combined with PPP
SBA Express Bridge Loans	Up to $25,000	• Designed to bridge the gap while applying for SBA Economic Injury Disaster Loans • Will be repaid in full or in part by proceeds from Economic Injury Disaster Loans
SBA Debt Relief Program	NA	• SBA will pay principal and interest of new loans issued prior to September 27, 2020 • SBA will pay principal and interest of current loans for a 6-month period
SBA Express Loan	Up to $1 million	• Processed within 36 hours

*NA = not applicable.

with liabilities as seen in the hypothetical example shown in Table I. The moratorium on elective procedures, combined with the high overhead costs of maintaining a private orthopaedic practice, has placed orthopaedic groups in a difficult position. New England Orthopedic Surgeons, based in Springfield, Massachusetts, has had to withhold all surgeon pay and furlough 168 employees[16]. Similarly, the Rothman Institute, in Philadelphia, has made the decision to retain employees in lieu of paying its surgeons[17]. Many other orthopaedic groups are facing the same challenges. Emergency funding from the government loan programs offers potential aid for private orthopaedic practices during this crisis.

The CARES Act has designated an additional $350 billion in new loans to small businesses, which include private orthopaedic practices[13]. The United States Small Business Administration (SBA) now has several programs available for businesses with ≤500 employees (Table II)[18]. The program most applicable to private orthopaedic practices is the Paycheck Protection Program (PPP), which provides a maximum of $10 million or 2.5 times the average monthly payroll in 2019 (whichever is less). In addition, regulators have reduced all SBA-levied fees, the maximum interest rate is locked at 1%, and a guarantor is no longer needed. These loans are eligible for full or partial forgiveness if used to fund (1) payroll, (2) utilities, (3) rent, (4) mortgage, and/or (5) existing business debt. To maintain eligibility for forgiveness, businesses must not terminate contracts with current employees or must rehire employees and maintain employment until the end of June. If the number of employees is reduced during the first 8 weeks after loan distribution, the amount of forgiveness will decrease, and, if the employees who were laid off made <$100,000 per year, the amount of forgiveness may further decrease. Notably, the PPP can be combined with other SBA programs, including the Economic Injury Disaster Loan (EIDL) program; however, these programs have funding caps and are being dispensed on a rolling basis. Unfortunately, given the high capital expenditure inherent to orthopaedic surgery practices, the PPP and EIDL loans will not be sufficient for the largest groups. It is still unclear which loan programs these large groups will qualify for.

We are in the midst of a health-care crisis that presents unique challenges for all Americans. During times of hardship, it is important that all health-care professionals, regardless of their training, come together and do what is best for their patients, families, and colleagues. Orthopaedic surgeons have done their part in drastically reducing non-urgent surgical case volumes with the goal of minimizing exposure and preserving PPEs. We recommend a continued reduction in all nonessential procedures as we move through the most critical period. In addition, we strongly recommend that all private orthopaedic practices review the SBA PPP guidelines and how they best apply to their groups. The programs and relief funds that have been instituted should ease the economic burden; however, it is imperative that orthopaedic surgeons take an active role. Last, clear communication among orthopaedic practices, health-care organizations, and both state and national orthopaedic societies (e.g., New York State Society of Orthopaedic Surgeons [NYSSOS][19], Massachusetts Orthopaedic Association [MOA][20], American Academy of Orthopaedic Surgeons [AAOS][21]) helps to enhance our response.

When the time comes that we are emerging from the peak in COVID-19 cases, great care will need to be taken when returning to elective surgical cases in order to ensure the safety of surgical staff, patients, and the care team. The availability of accurate, timely testing for all who are involved in surgical care will be necessary. The continued availability of ventilators, beds, blood supplies, medications, and appropriate PPE for the surgical and care teams will be necessary. A second outbreak in the autumn in North America remains a threat. Reliable antibody tests demonstrating immunity would go a long way toward accelerating our ability to go back to a more normal health-care reality. National guidelines for returning to normal elective surgical schedules will help to ensure a smooth, safe transition. ■

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Afshin A. Anoushiravani, MD[1]
Casey M. O'Connor, MD[1]
Matthew R. DiCaprio, MD[1]
Richard Iorio, MD[2]

[1]Department of Orthopaedic Surgery, Albany Medical Center, Albany, New York

[2]Department of Orthopaedic Surgery, Brigham and Women's Hospital, Boston, Massachusetts

Email address for R. Iorio: riorio@bwh.harvard.edu

ORCID iD for A.A. Anoushiravani: 0000-0003-2683-9894
ORCID iD for C.M. O'Connor: 0000-0001-9376-9801
ORCID iD for M.R. DiCaprio: 0000-0003-4979-0210
ORCID iD for R. Iorio: 0000-0001-8083-8687

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