August 2021

COVID-19

HHS's Collection of Hospital Capacity Data

Accessible Version

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GAO-21-600

GAO Highlights

COVID-19

HHS's Collection of Hospital Capacity Data

Why GAO Did This Study

The magnitude of the COVID-19 pandemic has underscored the importance of having quality data to help the federal government understand the health care system's capacity to provide care and to inform the allocation of resources. HHS launched HHS Protect in April 2020 to capture hospital capacity data. Throughout the public health emergency HHS has made changes to how information is collected and used.

The CARES Act includes a provision for GAO to report on its ongoing COVID-19 monitoring and oversight efforts. GAO was asked to examine HHS's implementation of HHS Protect. In this report, GAO describes (1) HHS's implementation of HHS Protect hospital capacity reporting requirements and the challenges experienced by reporting entities; (2) HHS's and stakeholders' use of the data, if at all; and (3) lessons learned about ensuring the collection of quality hospital capacity data during a public health emergency.

GAO reviewed agency guidance and HHS Protect hospital capacity dashboards and reports, and interviewed HHS officials as well as officials from three states that report or reported directly to HHS Protect on behalf of their hospitals. These states were selected for variation in geography and the mix of rural and non-rural hospital facilities. GAO also interviewed officials from public health stakeholder groups including hospital associations, epidemiological associations, and local health organizations. GAO provided a draft of this report to HHS for review and comment. HHS had no comments on the report.

What GAO Found

During the COVID-19 pandemic, the Department of Health and Human Services (HHS) made frequent and significant changes to the collection of hospital capacity data. In April 2020, HHS created a new data ecosystem—HHS Protect—to capture, among other things, national- and state-level data on inpatient and intensive care beds in use, supplies of personal protective equipment (PPE), and COVID-19 treatments. Subsequently, HHS changed the methods through which data could be reported to HHS Protect and also changed reporting requirements. According to HHS officials, this was done to capture more complete data and to capture more information, such as data on influenza-related hospitalizations and COVID-19 vaccines administered. Reporting entities said they experienced multiple challenges implementing the changes, including a lack of clarity on the requirements and logistical challenges such as having to adapt their systems to provide the data. As HHS made changes, HHS issued updated guidance to clarify reporting requirements.

HHS uses hospital capacity data to identify and address resource shortages and to inform the public. For example, according to HHS officials, HHS has used the data to provide assistance such as staff resources or supplies in 40 states. Additionally, HHS has shared the hospital capacity data to inform the public. However, public health stakeholders told GAO they have relied on state and local data for their purposes rather than data from HHS Protect. For example, epidemiological association officials said their members relied on state and local data for case investigation because they contained more detailed information and did not use HHS Protect data on hospital capacity. According to HHS officials, some states that may not be collecting their own data rely on HHS Protect capacity data to inform their public health response to the pandemic.

HHS agency officials and stakeholders identified the need for stakeholder engagement and improved communication among key lessons learned to better ensure the collection of quality hospital capacity data during a public health emergency. For example, HHS officials told GAO that there is a need for dialogue and external validation to ensure data quality and accuracy. They also noted that the need for a system like HHS Protect will continue beyond the COVID-19 pandemic. Officials GAO interviewed from stakeholder organizations and selected states noted that increased collaboration and communication—as well as more time to implement changes—would have facilitated the implementation of the changes to the data collection process. These lessons learned are consistent with GAO's January 2021 recommendation that HHS engage with stakeholders to review and inform the alignment of ongoing data collection and reporting standards through establishing an expert committee. HHS agreed with the recommendation, but as of June 2021, the department has not implemented it.

United States Government Accountability Office

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Abbreviations

ASPR	Office of the Assistant Secretary for Preparedness and Response
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare & Medicaid Services
COVID-19	Coronavirus Disease 2019
HHS	Department of Health and Human Services
ICU	Intensive care unit
NHSN	National Healthcare Safety Network
OCIO	Office of the Chief Information Officer
PPE	Personal protective equipment

August 5, 2021

Congressional Addressees

More than a year after the Department of Health and Human Services (HHS)—which is responsible for overseeing the public health response to the Coronavirus Disease 2019 (COVID-19) pandemic—declared a public health emergency for the United States, the nation is concurrently responding to and recovering from the pandemic. As of June 16, 2021, there were over 33,000,000 reported cases and more than 590,000 reported deaths in the United States.[1] In recent months, the number of cases and hospitalizations have declined largely due to the development and administration of vaccines, but as recently as February 2021, when the HHS Office of Inspector General surveyed hospitals regarding their capacity to care for patients during the COVID-19 pandemic, hospitals reported being overwhelmed. In particular, hospitals reported experiencing significant strain during surges in COVID-19 infections, with some reporting that they operated at over 100 percent capacity during surges.[2]

As we have noted in our work throughout the COVID-19 pandemic, the virus' rapid spread and magnitude have underscored the importance of having quality data to help the federal government understand the health care system's capacity—including the capacity of hospitals to admit and treat patients—to provide needed care and to inform timely and

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[1]Data on COVID-19 cases in the United States are based on aggregate case reporting to the Centers for Disease Control and Prevention (CDC) and include probable and confirmed cases as reported by states and jurisdictions. CDC COVID-19 counts are subject to change due to delays or updates in reported data from states and territories. According to CDC, the actual number of COVID-19 cases is unknown for a variety of reasons, including that people who have been infected may have not been tested or may have not sought medical care. CDC's National Center for Health Statistics COVID-19 death counts in the United States are based on provisional counts from death certificate data, which do not distinguish between laboratory-confirmed and probable COVID-19 deaths. Provisional counts are incomplete due to an average delay of 2 weeks (a range of 1–8 weeks or longer) for death certificate processing. The data were accessed on June 16, 2021. Data include deaths occurring from January 2020 through the week ending on June 12, 2021.

[2]Department of Health and Human Services, Office of Inspector General, *Hospitals Reported that the COVID-19 Pandemic Has Significantly Strained Health Care Delivery*, OEI-09-21-00140 (Washington, D.C.: March 2021).

responsive decisions, including allocating resources.[3] In addition, we have noted that accurate, complete, consistent, and timely data are essential for monitoring trends at the state and regional level, and making informed comparisons between these areas and assessing the effect of public health response measures.

Responsibilities for detecting and responding to public health emergencies are dispersed among federal, state, and local public health entities and health care facilities throughout the country—which can make collecting comprehensive and reliable hospital data challenging. Within the first four months of the COVID-19 pandemic, on April 10, 2020, HHS launched a new data ecosystem—HHS Protect—for collecting and sharing national and state-level COVID-19 data.[4] Among other things, HHS Protect captures data on hospital capacity, including the number of ventilators and inpatient and intensive care beds in use as well as the supply of personal protective equipment (PPE) and the availability of therapies to treat the virus. Reporting entities include individual hospitals as well as states—or state hospital associations—reporting on behalf of their hospitals.

The Coronavirus Aid, Relief, and Economic Security (CARES) Act includes a provision for GAO to report on its ongoing monitoring and oversight efforts related to the COVID-19 pandemic.[5] You asked us to examine HHS's implementation of HHS Protect and its effect on the response to COVID-19. In this report, we describe

- HHS's implementation of HHS Protect, and the challenges encountered by reporting entities;

- how the department and public health stakeholders are using the data, if at all, and

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[3]We regularly issue government-wide reports on the federal response to COVID-19. For the latest report, see GAO, *COVID-19: Continued Attention Needed to Enhance Federal Preparedness, Response, Service Delivery, and Program Integrity,* GAO-21-551 (Washington, D.C.: July 19, 2021). Our next government-wide report will be issued in October 2021 and will be available on GAO's website at https://www.gao.gov/coronavirus.

[4]HHS Protect is a secure data ecosystem aimed at collecting, sharing, and analyzing near real-time COVID-19 data—including data on testing, information on supply chains, and state policies—from over 200 data sets maintained by federal, state, and local governments and industry.

[5]Pub. L. No. 116-136, § 19010(b), 134 Stat. 281, 580 (2020).

- lessons learned by the department and public health stakeholders about ensuring the collection of quality hospital capacity data during a public health emergency.

To describe HHS's implementation of HHS Protect and the challenges encountered by reporting entities, we reviewed federal regulations, guidance, and data collection templates HHS provided to hospitals for hospital capacity reporting as well as public comments on hospital capacity reporting. We collected information from officials representing various HHS offices and agencies throughout the department regarding the implementation process and HHS's reporting requirements, either through interviews or written responses to our questions. These included officials from the Office of the Chief Information Officer (OCIO), the Office of the Assistant Secretary for Preparedness and Response (ASPR), and the Centers for Disease Control and Prevention (CDC).[6] We also interviewed officials from stakeholder organizations representing both reporting entities and public health stakeholders. These stakeholders included five hospitals associations, two epidemiological associations, and an organization of local health officials selected to represent a wide range of perspectives such as from urban and rural hospitals, and state and local epidemiologists and health officials. We also interviewed state officials from a non-generalizable sample of three states—Florida, Iowa, and New Jersey—that had been certified to report on behalf of hospitals in their states.[7] We selected these states on the basis of their mix of rural and non-rural hospitals and geographic diversity.

To describe how the department and public health stakeholders are using the data, we reviewed HHS's reporting guidance, data collection templates, and data available on HHS Protect and healthdata.gov. We interviewed officials from OCIO, ASPR, and CDC about their use of the data. We also interviewed officials representing reporting entities—our three selected states and hospital associations—and public health stakeholders including the two epidemiological associations and the local health officials about their use of the data.

To describe the lessons learned by the department and public health stakeholders about ensuring the collection of quality hospital data during

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[6]OCIO manages HHS Protect with input from CDC and ASPR.

[7]Before reporting directly to HHS Protect on behalf of hospitals, a state must receive written certification from ASPR affirming that the state has an established functioning data reporting mechanism that can report data at the required frequency. As of April 2021, 32 states were certified to report to HHS Protect on behalf of hospitals in their states.

a public health emergency, we interviewed officials from various HHS offices and agencies described above and officials representing reporting entities and other public health stakeholders.

We conducted this performance audit from September 2020 to August 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

HHS has primary responsibility for leading the federal public health and medical response to emergencies. Various HHS offices and agencies are involved in collecting data and formulating this federal response. Specifically

- ASPR leads the nation's medical and public health preparedness for, response to, and recovery from public health emergencies. As part of this role, ASPR oversees the federal stockpile of vaccines, pharmaceuticals, and medical supplies and devices and aims to enhance medical surge capacity by organizing, training, and equipping federal public health and medical responders, as well as calling upon and deploying these personnel during responses.

- CDC is the nation's lead public health agency, and in this role, it conducts public health surveillance and provides technical assistance and guidance to state, territorial, tribal, and local health agencies.

- OCIO supports the department by leading the development and implementation of information technology infrastructure across the department.

HHS relies on information from a variety of federal, state, and local public health entities and health care facilities throughout the country to detect and respond to public health emergencies. Typically, clinicians at the local level—including hospital staff—are the most likely to be the first ones to detect a public health-related incident, and they are expected to report such an incident to state and federal authorities. For example, hospitals and nursing homes have long reported data on certain infections to CDC's National Healthcare Safety Network (NHSN), which

the agency uses to track and analyze certain infections.[8] In response to the COVID-19 pandemic, in March 2020, HHS began to collect data from hospitals on cases and capacity and subsequently launched HHS Protect in April 2020. According to HHS officials, prior to the establishment of HHS Protect, the reporting of hospital capacity data at the national level was fragmented; and as a data ecosystem that collects data from over 200 sources, HHS Protect represents an effort to integrate data elements.[9]

Frequent and Significant Changes to Reporting Requirements Created Challenges for Reporting Entities

During the COVID-19 pandemic, HHS made frequent and significant changes to requirements for the collection of hospital capacity data in an effort to capture more complete and consistent data from hospitals across the country. According to stakeholders, hospitals and states experienced multiple challenges including a lack of clarity on the requirements and the need to adapt systems to provide the data.

HHS Made Frequent and Significant Changes to Hospital Data Reporting Requirements to Capture More Complete and Consistent Data

As the pandemic unfolded, HHS launched HHS Protect as the primary COVID-19 hospital data collection system. HHS also made changes to

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[8]In 2005, CDC replaced its National Nosocomial Infections Surveillance (NNIS) system, which was introduced in the 1970s with NHSN, through which hospitals and other facilities report data using a uniform set of definitions on health care-associated infections, i.e. infections patients may acquire in a health care setting while receiving treatment for other conditions.

[9]The 2006 Pandemic and All-Hazards Preparedness Act required HHS to work with state, local, and tribal public health officials to establish a nationwide public health network to help manage infectious disease outbreaks or other public health emergencies and provide situational awareness capabilities. Pub. L. No. 109-417, § 202, 120 Stat. 2831, 2845 (2006) (codified, as amended, at 42 U.S.C. § 247d-4(c)). In our September 2017 report, we reported that HHS had made little progress in establishing the network of systems to share public health data. GAO, *Public Health Information Technology: HHS Has Made Little Progress toward Implementing Enhanced Situational Awareness Network Capabilities*, GAO-17-377 (Washington, D.C.: Sept. 6, 2017). We have ongoing work evaluating the status of HHS's efforts to establish this capability.

the methods through which hospital capacity data could be submitted. According to HHS officials, in addition to making changes to reporting methods, the department increased the number of required and optional reporting elements over time as new informational needs were identified. The changes to reporting methods HHS (or its agencies) introduced throughout the pandemic included:

March 29, 2020. Then-Vice President Pence, on behalf of the White House Coronavirus Task Force, requested hospitals to report data deemed critical for epidemiological surveillance and public health decision making to the newly developed Patient Impact and Hospital Capacity module in NHSN, which is primarily used to track certain healthcare-associated infections.

April 10, 2020. HHS launched HHS Protect and introduced TeleTracking as a reporting method, through which hospitals could report their capacity data to the HHS Protect platform. At that time, HHS provided five methods through which COVID-19 hospital capacity data could be reported:

1. States or state hospital associations could report on behalf of hospitals in that state directly to HHS Protect;

2. Hospitals could report through TeleTracking;

3. Hospitals could report their data to NHSN;

4. Hospitals could authorize their information technology vendor to share information directly with HHS; or

5. Hospitals could publish their data in a standardized format on their websites.[10]

HHS officials told us that the department made the changes to COVID-19 hospital capacity data reporting methods because it recognized that different options might work better in certain situations. For example, they told us that some states were already collecting this type of information from hospitals, and by allowing states—or state hospital associations—to report on behalf of hospitals HHS could ease the burden on hospitals. Also, according to these officials, since states and territories have differing reporting and data management capabilities, the various reporting methods provided

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[10]According to HHS officials, as of June 2021, a small number of hospitals were sharing their data directly through their information technology vendors, and no hospitals were publishing their data.

flexibility for reporting entities while maintaining data commonality at the national level.

July 15, 2020. HHS removed NHSN as a method for hospitals to report their capacity data.[11] According to HHS officials, the department opted to remove NHSN as an option in part because its hospital capacity data were incomplete. Additionally, HHS officials told us that during this time, the department had asked CDC to add new data fields in NHSN to capture information on the distribution of remdesivir—a therapeutic treatment for COVID-19—but that change would have taken too long to implement.[12]

In addition to making changes to reporting methods, HHS increased the number of data elements to be reported to HHS Protect as new informational needs were identified. Specifically,

July 15, 2020. HHS began asking hospitals to report data on their inventory of remdesivir.

December 18, 2020. HHS began asking hospitals to report data on the incidence of influenza cases.

January 8, 2021. HHS began asking hospitals to report in new fields for the inventory and number of courses administered of the COVID-19 therapeutics casirivimab/imdevimab and bamlanivimab.

January 12, 2021. HHS began asking hospitals to report on the number of hospital employees and patients who had received the COVID-19 vaccine.

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[11]CDC continues to collect COVID-19 infections and related information from nursing homes and long-term care facilities through NHSN. See 85 Fed. Reg. 27,550, 27,627 (May 8, 2020) (adding 42 C.F.R. § 483.80(g)).

[12]According to HHS officials, the White House Coronavirus Task Force directed CDC to add new data fields to NHSN within 4 days, but CDC officials told the task force that the agency would need more time than that to make the requested change if it were to maintain compliance with the Paperwork Reduction Act of 1995. Pub. L. No. 104-13, 109 Stat. 163. Under the act as amended, federal agencies generally may not collect information from more than 10 members of the public unless they take certain steps in advance, such as seeking public comment regarding the burden on respondents. See 44 U.S.C. § 3507; 5 C.F.R. § 1320.5. HHS sought public comment on the burden for hospitals to report to HHS Protect in January 2021.

April 7, 2021. HHS began asking hospitals to report in new fields for the inventory and number of courses administered of the COVID-19 therapeutic bamlanivimab/etesevimab.

HHS continues to update these data elements on a periodic basis. Additionally, effective September 2, 2020, the Centers for Medicare & Medicaid Services (CMS) began requiring hospitals participating in Medicare and Medicaid to report certain HHS COVID-19 capacity data elements as a condition of obtaining payment from Medicare and Medicaid.[13] According to HHS officials, the percentage of hospitals reporting increased after this change. Specifically, these officials told us that as of November 2020, over 80 percent of hospitals were reporting their capacity data to HHS Protect.

According to Stakeholders, Hospitals Faced Logistical Challenges and a Lack of Clarity on the New Reporting Requirements

According to stakeholders we spoke with, the implementation of new reporting requirements throughout the course of the pandemic resulted in challenges for hospitals. Specifically, representatives from all five of the hospital associations we spoke with told us that reporting entities experienced logistical challenges in adapting staff resources or data systems to comply with reporting requirements. Stakeholders also told us that reporting entities were sometimes unclear on what information HHS was seeking or why the information was being collected. Below are some of the specific challenges identified by stakeholders:

Staff resources. Representatives from two hospital associations told us that staffing resources are more limited in smaller and rural hospitals as compared to larger, urban hospitals, making it difficult for some of these hospitals to meet the daily reporting requirements. For

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[13]Hospitals must meet certain conditions of participation—including health and safety standards—in order to receive payment from Medicare or Medicaid. Medicare is the federal health insurance program for persons age 65 or over, certain individuals with disabilities, and individuals with end-stage renal disease. Medicaid is a joint federal-state program that finances health care coverage for low-income and medically needy populations. CMS revised the conditions of participation to require COVID-19 reporting as specified by the agency. 85 Fed. Reg. 54,820, 54,873 (Sept. 2, 2020) (adding 42 C.F.R. § 482.42(e)(2020)).

example, smaller hospitals may not have staff available for weekend reporting.

Data systems. Representatives from all five of the hospital organizations we spoke with told us that hospitals' existing workflows often did not align with the requirements of TeleTracking or HHS Protect, requiring them to either create new data workflows or enter data manually. Additionally, one hospital association noted that the way HHS asked hospitals to report on PPE supplies was not consistent with how these data are collected and maintained by hospital systems. Specifically, the association noted that hospital systems' group purchasing organizations maintained that information, and the reporting elements did not align with the way hospital systems obtain and distribute supplies to individual hospitals within the system.[14] Stakeholders also told us that when HHS was rolling out new reporting requirements, hospitals did not have sufficient time to modify their collection systems to report on the new data elements. HHS subsequently built in more lead time for hospitals to adjust to new reporting requirements.

Clarity of reporting requirements. Various stakeholders told us there was a lack of clarity around HHS's requirements initially, but subsequently HHS issued clarifying guidance, and HHS officials told us they communicated with stakeholders throughout the implementation of HHS Protect. According to the various stakeholders, there was initially a lack of clarity regarding definitions and a lack of guidance on how to report some data elements. Officials from one hospital association and one state told us that HHS Protect did not initially have a data dictionary (i.e., a document that defines data elements) for how to report hospital capacity data at the time HHS Protect was implemented in April 2020. Stakeholders told us that the lack of clear definitions left data elements open to interpretation and people tasked with entering the data could interpret the data elements differently. For example, officials from one state told us that 80 percent of questions they received from hospitals about reporting hospital capacity data were related to the definitions, such as the

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[14]Group purchasing organizations are organizations that act as purchasing intermediaries that negotiate contracts between health care providers and vendors of medical products and services.

Data Quality Implications

Some stakeholders raised concerns about HHS Protect data quality. For example, several stakeholders noted that they had more confidence in National Healthcare Safety Network (NHSN) data quality than they do for HHS Protect data. Several stakeholders raised that HHS Protect and TeleTracking may lack sufficient data quality checks.

However, officials from the Department of Health and Human Services (HHS) told us that various validation checks are conducted to ensure data quality. For example, validation checks include checks for negative values, inconsistencies and anomalous data requiring further outreach or correction. HHS officials told us the agency also corrects data based on public input that identifies errors. For example, at times throughout the pandemic, HHS Protect data on inpatient and intensive care unit bed usage showed significantly different data than some state dashboards for those measures. According to the officials, members of the public brought this issue to the attention of HHS for a particular state and data quality teams were able to identify the issue and make corrections.

Source: GAO analysis. | GAO-21-600

definition of intensive care unit (ICU) beds.[15] Additionally, officials from one state we spoke to told us that their hospitals were confused about whether to include nursery beds in their reports. HHS subsequently provided guidance that clarified hospitals should include all ICU, emergency department, observation, neonatal ICU, pediatric ICU, newborn, and nursery beds in the hospital bed count. HHS officials told us they worked closely with stakeholders to understand questions they had about reporting and to provide clarity. For example, they held monthly webinars for reporting entities and provided clarification on the definition of ICU beds from November 2020 through January 2021.

From September 2020 to January 2021, HHS sought public comment on the implementation of COVID-19 hospital capacity reporting requirements and HHS's estimate that the reporting burden imposed by HHS Protect was 1.5 hours per day.[16] Public comments HHS received from technology vendors, hospitals, and care providers noted that the frequent changes to the reporting infrastructure, data elements, definitions, and purpose of reporting resulted in additional burdens for reporting entities. Commenters also noted that the time burden on hospitals was greater than HHS's estimate, with one commenter noting the agency did not take into account that reporting may require multiple staff, and others noting that it may require pulling data from multiple sources.

HHS Uses Hospital Capacity Data to Address Resource Shortages and Inform the Public;

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[15]We previously reported on potential confusion among reporting entities about what data to include. For example, in January 2021, we reported that as COVID-19 cases increased, some hospitals were able to reclassify (for the short term) some of their non-ICU beds as ICU beds. As a result, some hospitals may have included reclassified and traditional ICU beds in their total counts of ICU beds, but they were unsure how to accurately report the ICU bed counts to HHS Protect, according to experts interviewed for our January 2021 report. See GAO, *COVID-19: Critical Vaccine Distribution, Supply Chain, Program Integrity, and Other Challenges Require Focused Federal Attention,* GAO-21-265 (Washington, D.C.: January 28, 2021).

[16]In addition to the accuracy of the estimated burden, HHS sought public comment on the necessity and utility of the proposed information collection for the proper performance of HHS functions, ways to enhance the quality, utility, and clarity of the information to be collected, and the use of automated collection techniques or other forms of information technology to minimize the information collection burden.

Public Health Stakeholders Have Relied on State and Local Data for Their Purposes

HHS uses hospital capacity data to identify and address shortages in capacity, supplies, and staffing and to inform policymakers and the public about key pandemic-related information. Public health stakeholders and the states we spoke with told us they have relied on state and local data for their purposes rather than data from HHS Protect. According to HHS officials, other states have relied on HHS Protect data to inform their responses to the pandemic.

HHS Uses Hospital Capacity Data to Identify and Address Shortages in Capacity, Supplies, and Staffing

According to early guidance issued by HHS, hospital capacity data reported to HHS Protect was to be used to facilitate planning, monitoring, and resource allocation. Initially, HHS used the data to inform its allocation of remdesivir, a therapeutic treatment for COVID-19 cases. The allocation strategy evolved over months, but the final allocation process was based on the state's share of hospitalized COVID-19 patients as reported to HHS Protect. Specifically, HHS allocated remdesivir to a state based on the state's share of national confirmed or suspected COVID-19 hospitalized patients during a 7-day reporting period. According to HHS, the federal government had no role in the allocation of remdesivir after September 30, 2020.[17]

Subsequently, in October 2020, HHS implemented an interagency effort intended to provide actionable information to state, local, tribal, and federal entities, as well as private sector entities. Interagency teams analyze HHS Protect hospital capacity data to identify shortages in capacity, staffing or PPE supplies—such as respirators, gowns, and gloves—which may require federal intervention. Federal teams follow-up with states to validate the data indicating shortages and, if appropriate,

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[17]According to ASPR, the memorandum of understanding between HHS and remdesivir's manufacturer ended on September 30, 2020, after which hospitals were to work directly with distributors to purchase remdesivir.

provide resources.[18] Since its implementation in October 2020, HHS officials told us that they have facilitated the distribution of supplies or staff resources in 40 states. Officials told us that, as of June 2021, there were about 2,600 instances where shortages were flagged. States were alerted and resolved the shortage in about 1,500 of these instances, and additional federal support—such as medical teams or supplies—was required in about 100 instances, according to HHS officials. In the remaining instances, the information was validated but no action was needed.

According to HHS officials, both short- and long-term plans related to data collection from hospitals are under consideration. Specifically, officials told us that, in partnership with other stakeholders, the department plans to re-evaluate the data being collected and streamline reporting requirements to focus on the most critical information.

HHS Has Shared Some Hospital Capacity Data to Inform the Public and Policymakers

HHS has shared hospital capacity data—including data on the percentage of hospitals reporting and the percentage of hospital beds in use—publicly on both the HHS Protect and Healthdata websites.[19] HHS officials told us they share these data to keep the public informed about the status of the pandemic, to help guide a data-driven response to COVID-19, and to inform local or regional policies, such as re-opening policies.

There are multiple dashboards shared on the HHS Protect website presenting national and state-level data on the completeness of reporting—e.g., the percentage of hospitals in each state reporting—as well as the estimated number and percentage of inpatient and ICU beds in use. In addition to the dashboards, the website includes links to the

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[18]Officials from two of our three selected states confirmed that HHS conducted outreach to the state when facility data indicated shortages; however, officials from one state noted that by the time HHS followed up, the shortages had been resolved; officials from the other state noted that HHS Protect data may erroneously indicate shortages because it does not capture hospitals' access to shared supplies within a hospital system.

[19]The Healthdata website contains the reported data. HHS, *HHS COVID-19 Datasets*, accessed on June 04, 2021 https://healthdata.gov. HHS Protect contains the analysis of the data. HHS, *Hospital Utilization,* accessed on May 21, 2021, https://protect-public.hhs.gov/.

underlying data reports containing detailed information on the frequency of individual hospitals reporting on each required element. (See figure 1 for the dashboard on overall completeness of reporting.) As of June 2, 2021, at least 95 percent of hospitals in all states except for Alaska and Colorado were reporting some capacity data to HHS Protect.[20]

Figure 1: Percentage of Hospitals with Capacity Data Reported to HHS Protect by State, as of June 2, 2021.
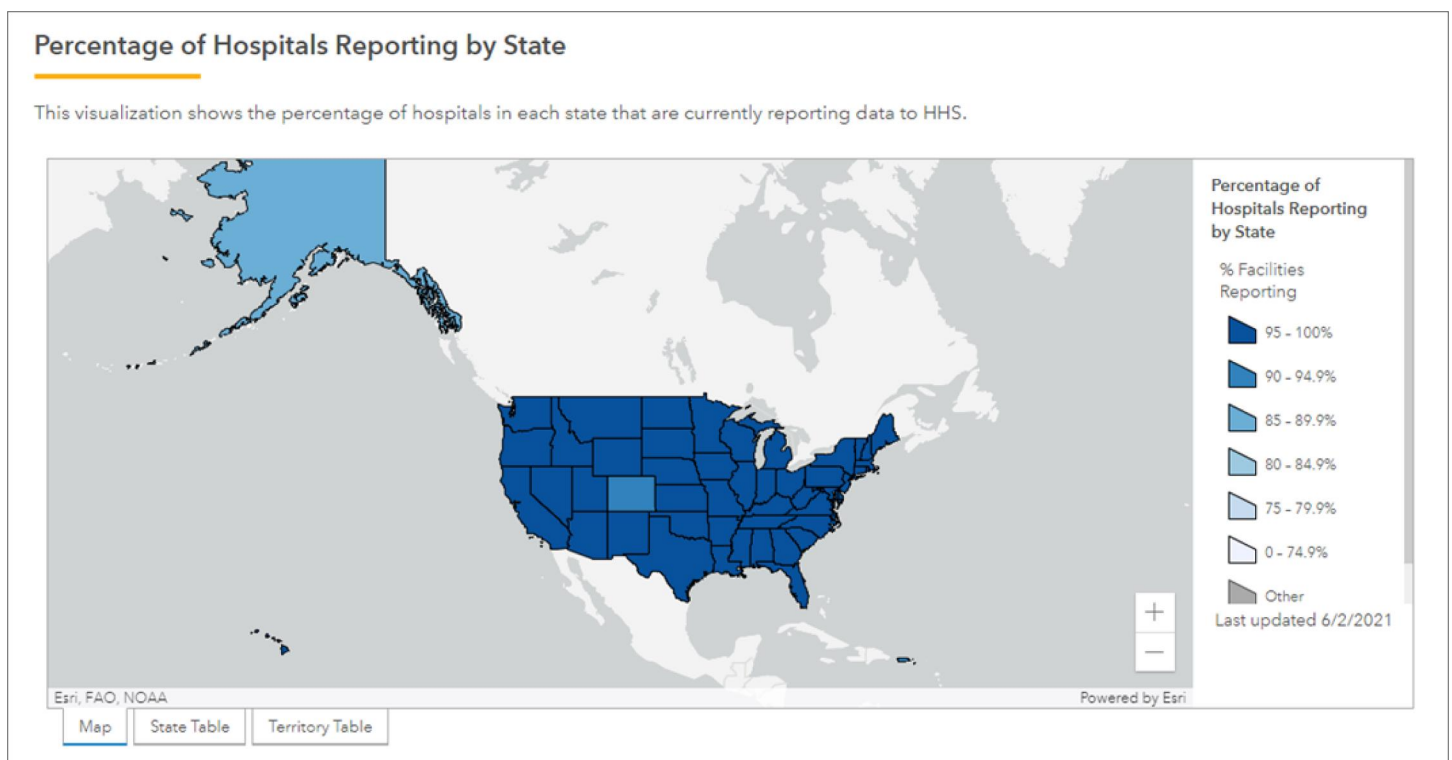
Source: Screenshot of the HHS Protect Public Data Hub website, Percentage of Hospitals Reporting by State visualization, taken on June 14, 2021. | GAO-21-600

Note: The data reflects the percentage of hospitals in each state whose data are reported to HHS Protect through any method of reporting.

HHS has also developed an interactive map graphic to display national and state-level data on the total number of inpatient beds and the number and percent of inpatient beds in use for all patients and COVID-19 patients, respectively. The dashboard also indicates the number of hospitals reporting on these three specific data elements. These data are updated daily. Selection of a specific state will show the utilization

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[20]Approximately 87.5 percent of hospitals in Alaska and 93.4 percent of hospitals in Colorado had reported their capacity data to HHS Protect.

numbers and rates as well as the number of hospitals reporting on these elements for that state (see fig. 2).

Figure 2: National Estimated Inpatient Bed Utilization by State, as of June 13, 2021
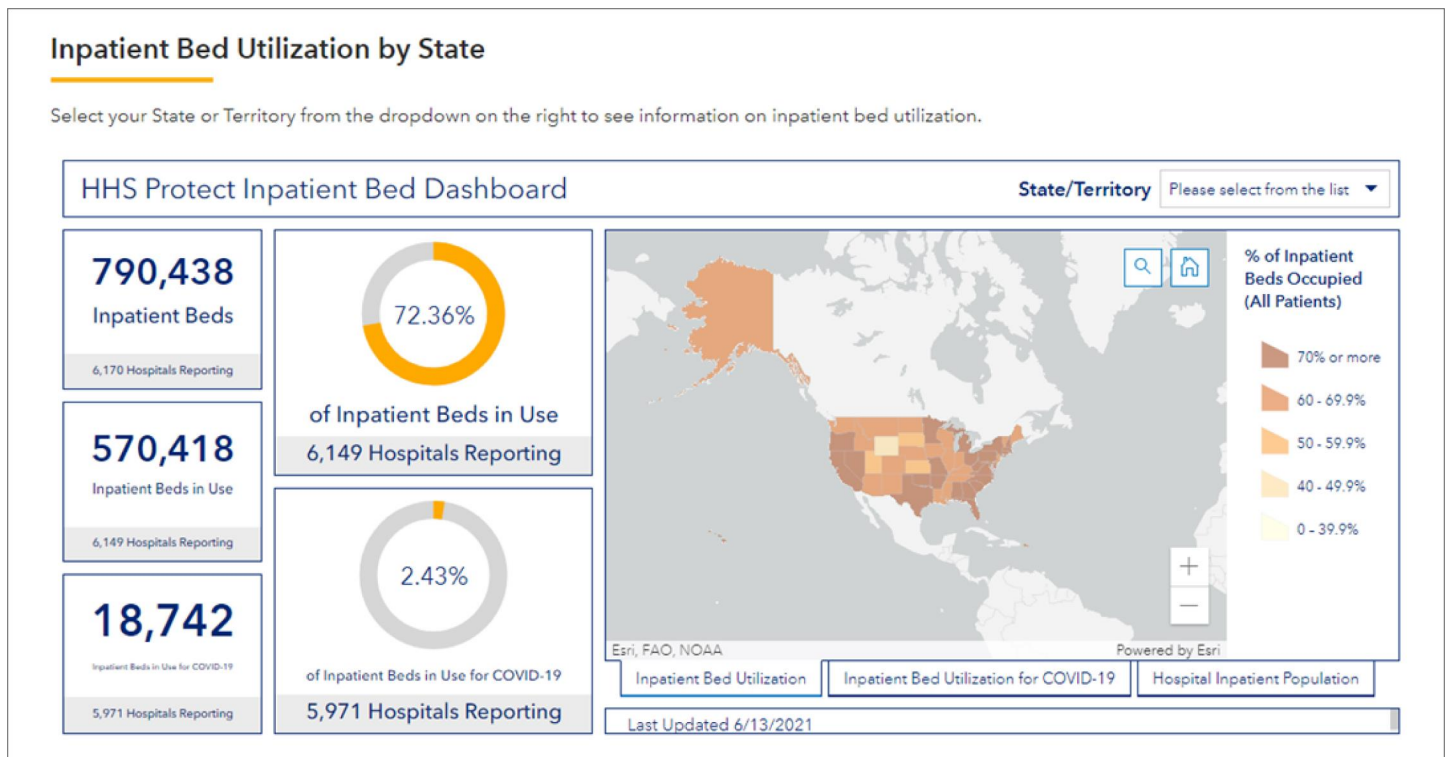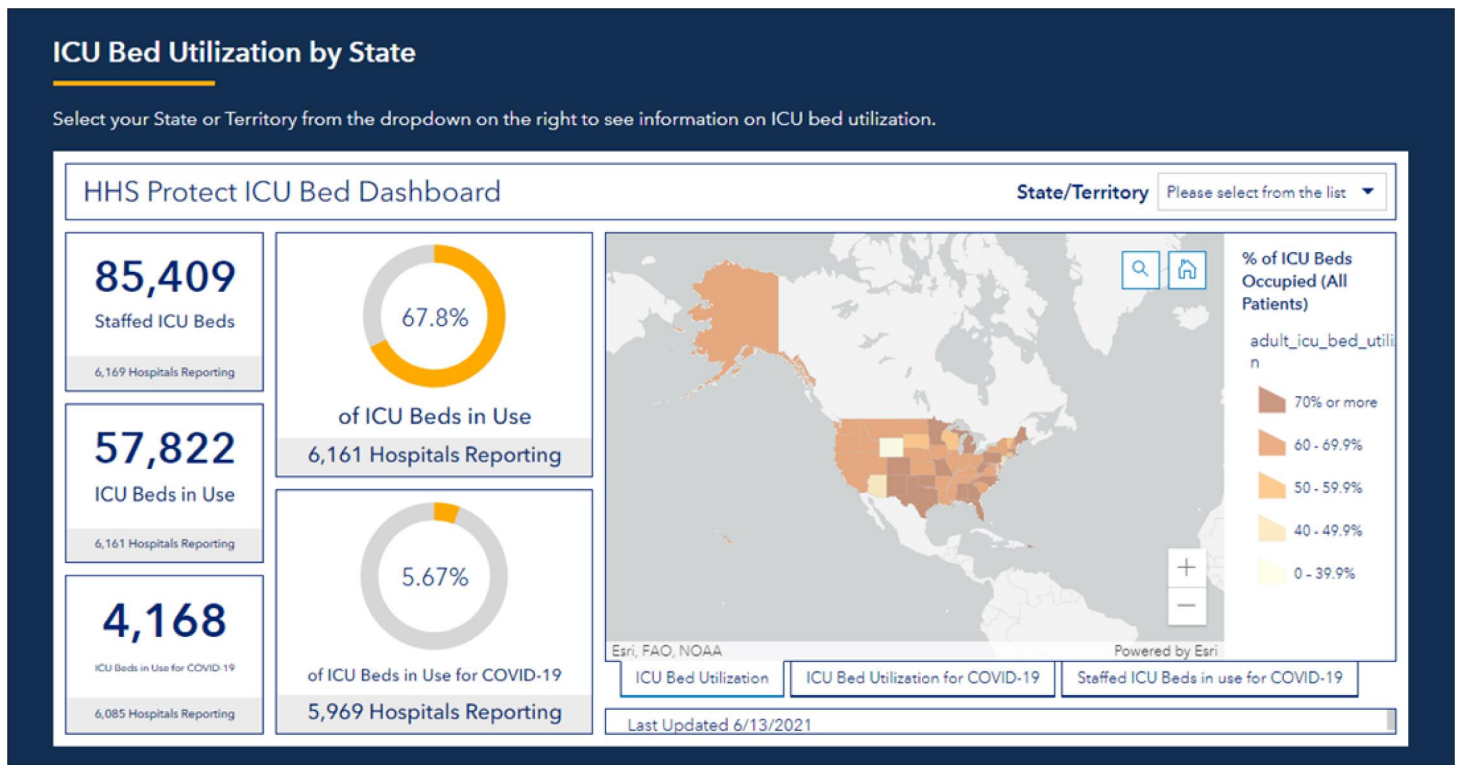

Source: Screenshot of the HHS Protect Public Data Hub website, Inpatient Bed Utilization by State visualization, taken on June 14, 2021. | GAO-21-600

Note: The number of hospitals reporting each data element varied, with some hospitals not reporting all three data elements.

Similarly, HHS Protect presents an interactive map graphic to illustrate national and state-specific ICU bed utilization rates for all patients and COVID-19 patients, respectively. The dashboard also indicates the number of hospitals reporting on these specific data elements. These data are updated daily. Selection of a specific state will show the utilization for that state. See fig. 3.

Figure 3: National Estimated Intensive Care Unit (ICU) Bed Utilization by State, as of June 13, 2021

Source: Screenshot of the HHS Protect Public Data Hub website, ICU Bed Utilization by State visualization, taken on June 14, 2021. | GAO-21-600

Note: The number of hospitals reporting each data element varied, with some hospitals not reporting all three data elements.

HHS Protect also presents interactive map graphics to illustrate facility-level reporting frequency and capacity information. By entering in a zip code or address, the graphics identify facilities in a user-selected radius, how frequently the facility reports data to HHS Protect, and provide the total number of beds, the number of beds occupied, and bed utilization rates, for inpatient and ICU beds, respectively.

Public Health Stakeholders and Some States Relied on State and Local Data Sources to Inform Their Response to COVID-19; According to HHS, Other States Relied on HHS Protect Data

Representatives from the public health stakeholder organizations we spoke with told us that they have not used the hospital capacity data in HHS Protect and instead rely on state and local data sources which they

said were more useful for their purposes.[21] Officials from our three selected states told us that their states had infrastructure in place prior to the implementation of HHS Protect to collect data on hospital capacity, and relied on these data to inform the public health response to COVID-19.[22] During the pandemic, state officials from all three states told us they relied on the data they collected through their own systems. Officials from two of the states told us that they had developed their data collection questions through collaboration and coordination with reporting entities, and that their questions were more useful to state public health decision-makers than HHS Protect data. For example, HHS Protect requires hospitals to report on the number of beds in use, and officials from one state told us they asked instead for the number of beds available, which provided more pertinent information for their purposes. They also told us that the state had implemented an automated feed from hospitals to provide bed utilization data every 10 minutes, giving the state more timely information on hospital capacity. According to HHS officials, states that were certified to report to HHS Protect were more likely to have had state-based hospital capacity data collection efforts to help inform their responses to COVID-19. However, the officials told us that at least five states relied on HHS Protect hospital capacity data to inform their responses, and that they were aware of several hundred users accessing the data across other states.[23]

Additionally, representatives from both epidemiological associations and the local health official organization we spoke with told us their members rely on data that was already being collected by their state and local entities to inform their response to COVID-19. For example, representatives from one epidemiological association told us that their members did not find HHS Protect data useful for their purposes, noting

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[21]Hospitals may not need to use HHS Protect data to monitor local capacity because they have access to capacity data in real time. For example, one way that hospitals could use capacity data is to inform transfers of patients; however, representatives from one hospital association noted that their members have not used the hospital capacity data as reported to HHS Protect data for transferring patients because the data are not a good tool for making such decisions. These representatives told us these decisions are best handled at the local level where facilities monitor capacity in real time.

[22]For example, one of our selected states adapted a system used to collect capacity information during natural disasters to collect information on COVID-19-related hospitalizations and supplies on a daily basis.

[23]Officials told us that they field multiple password reset requests from states, suggesting there are active users of the data.

that they require more granular data for case investigation than is available from HHS Protect.

Key Lessons Learned Include Need for Better Communication and Stakeholder Engagement

When we asked HHS officials and other stakeholders what key lessons they learned about ensuring the collection of quality hospital capacity data during a public health emergency, they offered a variety of lessons. HHS officials identified the need for timely quality data to support the federal government's response to pandemics, among other things. Representatives from hospital associations, epidemiological associations, and the three states we interviewed offered several lessons learned from their experiences on the implementation of HHS Protect. Officials from stakeholder organizations focused on lessons pertaining to collaboration, communication, and stakeholder buy-in.

According to HHS officials, lessons learned include:

- Timely, complete, high-quality data on national supplies, staffing, bed availability, and therapeutics at the facility-level for hospitals across the country is critical to guide the national response to a pandemic like COVID-19.

- Because a system to meet these critical needs did not exist and had to be stood up in response to the COVID-19 pandemic, it necessitated the iterative development and implementation of HHS Protect over time.

- There is a need for a system that serves the functions HHS Protect serves and that need will continue beyond the COVID-19 pandemic. HHS Protect can be leveraged to create a long-term all-hazards system that can be quickly adapted to support future public health emergencies.

- Dialogue and external validation of data is essential to ensure quality and accuracy of HHS Protect data.

- CDC officials specifically noted that ensuring the completeness, quality, and usefulness of HHS Protect data requires the continued involvement of CDC staff with expertise in public health, health care

infections, and outcomes analysis to contribute to data collection and analysis.

Stakeholders, including representatives from hospital and epidemiological associations and officials from our three selected states noted the following lessons learned:

- Implementing significant changes to the data collection process during the middle of an emergency could have been better facilitated by more stakeholder engagement.

- Allowing for lead time for reporting entities to understand the data request and align workflow processes, such as building interfaces with existing data systems, could have helped to ensure quality data collection.

- Engaging reporting entities and testing data elements and definitions to get input and buy-in could have helped ensure reporting entities had a shared understanding of the data elements.

- Improving communication regarding changes in reporting, and providing access to subject matter experts who can answer questions on data content could have led to improved reporting entity responsiveness and data quality. For example, officials from stakeholder organizations we spoke with told us that clear guidance and documentation, such as clear data dictionaries, timely feedback to hospitals on errors, and transparency around the use of data during the initial phases of implementation of HHS Protect would have been helpful.

The lessons learned regarding the need for collaboration around shared definitions and data collection goals are consistent with our January 2021 recommendation that HHS engage with stakeholders through establishing an expert committee, to review and inform the alignment of ongoing data collection and reporting standards related to key health indicators.[24] In our prior work, we found that involving reporting entities can help ensure that the collection of additional data elements would be useful and feasible and developing shared definitions through collaboration can help ensure the collection of standardized quality data to inform the federal government's response to the public health emergency. HHS agreed with our recommendation, and officials told us HHS has engaged in on-going discussions with stakeholders; however, as of June 2021, HHS had not

[24]GAO-21-265.

yet established an expert committee, citing resource constraints and the ongoing pandemic.

Agency Comments

We provided a draft of this report to HHS for review and comment. HHS officials told us that they had no comments on the draft report.

We are sending copies of this report to the Secretary of Health and Human Services, appropriate congressional committees, and other interested parties. The report is also available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or at farbj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix I.

Jessica Farb
Director, Health Care

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Appendix I: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

In addition to the contact named above, Gerardine Brennan (Assistant Director), Jasleen Modi (Analyst-in-Charge), and Kendra Sippel-Theodore made key contributions to this report. Also contributing were Samuel Amrhein, Eric Peterson, and Jennifer Rudisill.

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