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"PREPARING FOR THE NEXT PANDEMIC: LESSONS LEARNED AND THE PATH FORWARD"

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Introduction
Chair Wenstrup, Ranking Member Ruiz, and members of the Subcommittee, thank you for the opportunity to testify before you to discuss the Food and Drug Administration's (FDA or Agency) efforts regarding pandemic preparedness.

The COVID-19 pandemic, the response to Highly Pathogenic Avian Influenza (HPAI) in dairy cattle, as well as emergency-induced supply chain disruptions causing shortages of medical products have underscored the need to continue to optimize our nation's preparedness and response capabilities. These public health emergencies and threats also make clear the value and importance of vaccines, therapeutics, and diagnostics to address pandemic threats, and the role these products serve in saving lives. FDA works in close coordination and collaboration with our partners across all levels of government, to help facilitate the development, authorization, licensure, approval, clearance, and availability of critical, high-quality, safe, and effective medical products and ensure the continuity of the food supply to address current and future public health threats.

Additional authorities and funding as requested in the Fiscal Year (FY) 2025 President's Budget for federal agencies are necessary to address future challenges most effectively. The lessons learned and proposals I will discuss today will help bridge key gaps and barriers to enable a robust and timely response to future emergencies—by enhancing early detection; providing safe, effective, and accessible medical countermeasures (MCMs), such as personal protective equipment (PPE); maintaining health system capacity; and fortifying continuity of access to food and medical products. We look forward to continuing work with Congress to ensure future readiness.

FDA's Public Health Emergency Preparedness and Response Mission
FDA plays a key role in pandemic and public health emergency response. Preparation for future public health emergencies depends on diverse strategies—often decades in the making—as well as the establishment and refinement of authorities and flexibilities that allow the Agency to identify and mitigate risks while promoting innovation.

FDA used every tool in its toolbox during the COVID-19 public health emergency. We promptly issued guidance to industry to provide clear recommendations regarding data to satisfy applicable requirements and helped developers to advance the most promising candidate MCMs as quickly as possible. The Agency helped make COVID-19 vaccines available swiftly while upholding our rigorous scientific and regulatory standards by prioritizing and streamlining reviews. During the COVID-19 pandemic, FDA scientists and employees worked tirelessly, cooperatively, intensively, and efficiently alongside researchers and manufacturers to minimize the time between the clinical development process, manufacturing scale-up, and the regulatory review process. As the virus evolved, FDA leveraged what was known about the vaccines and their underlying technologies to streamline the authorization and approval of updated COVID-19 vaccines, as appropriate, that more closely targeted circulating variants. COVID-19 vaccines are one of the most significant and important public health interventions in our history, and the available data continue to demonstrate that the benefits of the authorized and approved COVID-19 vaccines outweigh their risks, producing a substantial reduction in the most serious outcomes

of COVID-19, including severe illness, hospitalization, and death.

FDA's unprecedented efforts during the COVID-19 pandemic were also instrumental in making in vitro diagnostic tests available to the public. The Agency authorized emergency use of over 500 COVID-19 tests, including point-of-care (POC) tests; rapid at-home tests; multi-analyte tests that can detect both COVID-19 and flu; and tests using various sample types, including saliva and breath samples. FDA encouraged development of at-home and over-the-counter (OTC) tests for COVID-19 early in the pandemic. FDA worked interactively with test developers and provided resources, including templates to help facilitate Emergency Use Authorization (EUA) requests, a recurring townhall series to provide information for test developers, guidance documents, and FAQs. Notably, the Agency granted marketing authorization under traditional premarket authorities for tests for COVID-19 and other conditions. This includes granting traditional marketing authorization of the first OTC test to detect both flu and COVID, paving the way for this type of device to be available for future respiratory virus seasons. FDA also authorized emergency use of numerous other devices, including ventilators, personal protective equipment such as respirators, and many others.

The lessons learned from the COVID-19 pandemic help the Agency better respond to current emergencies. For example, FDA continues to facilitate availability of diagnostic tests as the United States experiences other outbreaks. Currently, FDA is working with other government agencies like the Centers for Disease Control and Prevention, and with test developers who may be interested in developing additional HPAI-specific tests. In addition, FDA's early engagement with stakeholders and work with private and public entities on mpox text development and availability led to the issuance of prompt guidance and templates building on the lessons learned from COVID.

FDA also approved and authorized several treatment options for COVID-19—including Paxlovid, and remdesivir—which reduce the risk of severe illness, hospitalization, and death. The COVID-19 pandemic highlighted the need to be able to stand up well-designed and powered clinical trials that could answer important therapeutic questions. The Agency has and will continue to support efforts to meet future COVID-19 vaccine and treatment needs, including pivoting as the virus adapts and continuing to help advance medical products to protect the most vulnerable populations. For example, FDA is working closely with sponsors to facilitate the development of monoclonal antibodies (mAbs) that target the virus and retain activity against currently circulating variants to address immediate unmet needs, such as pre-exposure prophylaxis for immunosuppressed patients, and to facilitate development of new products with conserved targets that are less susceptible to changes in SARS-CoV-2 (e.g., Pemgarda (pemivibart)). We are also leveraging lessons learned from the COVID-19 response in our everyday reviews, including review of rare disease therapies where ongoing and informal communication with the Agency can be especially beneficial.

Additionally, when tackling a public health crisis, accurate, science-based communication is of paramount importance. Improving trust in science-based organizations requires a collaborative effort. FDA is continuing to build effective relationships with the public, front-line clinicians (doctors, nurses, pharmacists, etc.), biomedical scientists, and educators. We are also working to improve how we can continue to provide accurate and reliable information about FDA-regulated

products to trusted messengers in communities to better inform the public about their choices about health and healthcare.

As we reflect on the devastating losses and lasting impacts the COVID-19 pandemic and more recent outbreaks have had worldwide, we are using the lessons learned and knowledge gained to be thoughtful about preparing for future public health emergencies and to inform our future response efforts both in times of crisis and in everyday best practices. This includes continuing to leverage existing relationships with entities outside FDA in emergency response situations. The Agency's capacity to drive future emergency responses depends on developing shared goals and maintaining open communication channels and continued collaborations with regulatory, academic, state, Tribal, local, territorial, and industry partners even in the absence of a crisis.

Facilitating Access to Safe and Effective Medical Products

As FDA prepares to combat future threats, ensuring access to safe and effective medical products continues to be of utmost importance. FDA provides support to this mission through its work in several preparedness areas.

Public health emergencies—whether the COVID-19 pandemic or more recently Hurricanes Helene and Milton—continue to expose supply chain vulnerabilities, including a lack of resiliency, the capability to withstand or mitigate disruptions, and redundancy, impacting the availability of multiple medical products. There is a need for greater transparency into medical product supply chains to improve resiliency in manufacturing, which will help to ensure continued access to critical products, including drug products, during emergencies when supply chains might be disrupted.

Drug Product Supply Chain

FDA works within its authorities to find ways to help prevent and mitigate drug shortages, and in Calendar Year (CY) 2023, we worked with manufacturers to successfully prevent 236 drug and biologic shortages. The COVID-19 pandemic served as a reminder that the drug supply chain is extremely vulnerable to supply disruptions and surges in demand. Prior to this pandemic, most shortages were seen in generic sterile injectables, a historically low margin business, where investment in buffer stocks and manufacturing upgrades have been difficult to achieve. When manufacturing issues disrupt supply, manufacturers of certain drugs are required to notify FDA. This notification requirement provides FDA more time to mitigate or prevent a shortage, and the Agency has relied on these notifications to help prevent supply disruptions. However, during the pandemic and since, we also saw unprecedented *demand* for drugs. Similar notifications of increases in *demand* from manufacturers would allow the Agency more lead time in mitigating supply impacts.

Looking to future preparedness, and in accordance with the National Strategy for a Resilient Public Health Supply Chain, it is critical for the U.S. government to have visibility into the end-to-end supply chain data. The authorities provided under the Federal Food, Drug, and Cosmetic (FD&C) Act provisions, including those added by section 3112 of the Coronavirus Aid, Relief, and Economic Security Act (CARES Act, P.L. 116-136), enhanced FDA's visibility into drug and medical product supply chains and the tools available to the Agency to help identify, prevent, and mitigate drug shortages. To increase patient access to critically

needed medications in shortage or to prevent potential shortages, FDA leveraged these available tools by expediting reviews of submissions, prioritizing certain establishment inspections to address drug shortages, expediting reviews of submissions (including for COVID-19 therapeutic biologics), and exercising regulatory discretion where appropriate to help increase supplies of critically needed medications, including via temporary importation.

FDA is working within its authorities to help mitigate supply chain issues, but FDA's authorities were not designed with a complex 21st Century supply chain in mind, including consumer and provider expectations for the availability of essential products. Efforts are underway across government to address these challenges. However, the Agency has identified numerous gaps in its authorities to protect consumers, patients, and the supply chain generally. Providing greater transparency into supply chains is needed to improve resiliency in manufacturing and prevent and mitigate shortages of medical products and the food supply. These priorities will enhance national security and improve public health preparedness.

The FY 2025 President's Budget includes several critical legislative proposals intended to promote FDA's efforts to bolster supply chains and address current vulnerabilities. For drug products, this includes proposals to enhance FDA's insight into the human and animal drug supply chain to more effectively prevent or mitigate a shortage, including to understand supplier reliance on the sources of API, and to close a loophole that does not require manufacturers to notify FDA if a likely human drug shortage is caused by a spike in demand.

Additionally, in the FY 2025 President's Budget proposal FDA is seeking authority to require facilities at which drugs are manufactured to create, submit, and maintain Site Master Files (SMFs). This would improve the Agency's understanding of manufacturing activities and provide critical information that could assist FDA when conducting risk identification for sites for surveillance and for-cause based inspections. SMFs are internationally harmonized documents that typically contain specific information about the firm's manufacturing and product activities and quality management and quality control activities at the named site. SMFs also identify any closely integrated operations at adjacent and nearby buildings. For example, FDA could look to the SMF in cases of inadvertent cross-contamination of human drugs, animal drugs, and biologics by substances present at a manufacturing facility, but not referenced in an approved application or license or reflected in a supplement or other such report.

Another FY 2025 President's Budget proposal seeks authority to provide FDA with a formal, designated opportunity for a facility inspection and evaluation before distribution of certain non-application drug products and certain APIs in the United States for the first time. Under current law, for drugs that are not subject to premarket approval requirements, such as many over-the-counter drugs like hand sanitizers and certain eyedrops, and APIs for compounded drugs, FDA typically does not have such a formal, designated opportunity to inspect the manufacturing facilities before such products are first shipped to or distributed in the United States. Having such an opportunity for facility inspection would help enable FDA to identify potential safety issues related to manufacturing before a non-application drug product is first distributed.

Relatedly, as more manufacturers enter the vaccine and biotherapeutics industries, the ability of FDA's Office of Inspections and Investigations to respond robustly to future pandemics will

depend on operational readiness and surge capacity. Critical investments are needed, such as increasing the inspectorate's workforce capacity for oversight of medical products, including MCMs, and funding training and continuing education. A strong inspectorate is especially critical to provide oversight where products face potential shortages because inspections allow FDA to identify quality problems early and to work with firms to correct such problems before they threaten supply or patient safety. Additionally, FDA could achieve more effective and efficient oversight if it had improved authorities for conducting remote regulatory assessments. This could include extending FDA's authority to request records or other information in advance of or in lieu of inspections, to cover *all* FDA-regulated products. In the Food and Drug Administration Omnibus Reform Act of 2022 (FDORA), Congress recognized that remote records request authority was key to future preparedness by expanding this authority beyond drugs to include devices and to sites or facilities subject to bioresearch monitoring inspections. New authorities for mandatory remote interactive evaluations (such as remote livestreaming video of operations, teleconferences, and screen sharing) would additionally provide a tool for the Agency's oversight of the regulated industry to ensure a safe, reliable supply chain.

Medical Device Supply Chain and Safety

U.S. preparedness and our national security depend on a strong domestic supply chain for medical devices. The COVID-19 pandemic demonstrated that by the time there is an emergency, it is often too late to prevent shortages. Supply chain disruptions were already beginning to occur even before COVID-19 cases were identified in the United States, as other nations had outbreaks and needed PPE, testing supplies, and other devices in excess of available supply. For example, the United States and other countries saw a shortage of gowns caused by a recall prior to the pandemic. FDA received information about supply chain challenges with gowns *after* there was already a shortage. If FDA had device shortage authorities in place prior to the COVID-19 pandemic, mitigation efforts for N-95 respirators, surgical masks and other PPE, testing supplies, ventilators and other essential devices could have begun much earlier in the United States.

The CARES Act added manufacturer notification requirements to help FDA identify and address device shortages (section 506J of the FD&C Act) before they occur. However, these authorities are temporally tied to a public health emergency (PHE). Since manufacturing disruptions that may lead to shortages occur outside a PHE, the temporal limit hurts FDA's ability to mitigate and prevent device shortages. This contrasts with other product shortage authorities, such as drugs and critical foods, that require notifications for certain discontinuances and interruptions in manufacturing whether there is a PHE or not. By the end of CY 2022, FDA's Center for Devices and Radiological Health had taken or informed mitigation actions on more than 350 potential and actual shortages of critical devices, ranging from pediatric tracheostomy tubes to tests and testing supplies. FDA also used information gathered under these authorities to perform assessments that enabled us to:

- Expedite premarket reviews and inspections;
- Issue guidance documents, letters to healthcare providers, and enforcement discretion;
- Publish communications, including conservation strategies to provide end users with information on device shortages; and
- Work with the Administration for Strategic Preparedness and Response (ASPR) on Defense Production Act priority ratings and other actions by U.S. government

entities, such as the Department of Defense and the Department of Transportation. Each of these departments depend on the information from FDA when implementing mitigations.

Regardless of whether they occur during a formally declared PHE or other major crisis, we know that medical device shortages most often impact our most vulnerable and underserved populations—such as children and rural populations. As an example, rural hospitals often do not have the funding to purchase multiple types of critical equipment, such as X-ray machines and washers and sterilizers to clean and sterilize reusable medical devices. When these devices and equipment cannot be serviced or replaced because of a lack of parts or materials, patients may have to drive hours to seek the care they need or forego care altogether. It is therefore critical to ensure FDA receives information as early as possible so the Agency can intervene before harm comes to patients. The Agency continues to see supply chain disruptions—including those for neonatal/pediatric hemodialysis catheters, blood culture vials, and infant duodenoscopes—but FDA did not receive notification from manufacturers. FDA receives some information about supply chain interruptions from patients, health care providers, and professional associations, but these typically come only after patients are already being impacted. The United States remains vulnerable while it does not have the device shortages authorities it needs.

To protect patients, build a more resilient domestic supply chain, and help reduce dependence on foreign sources, it is critical that Congress remove the temporal limitation that requires manufacturers to notify FDA about interruptions or discontinuances in the manufacture of certain devices only during or in advance of a PHE, as outlined in the FY 2025 President's Budget request.

Diversifying the Medical Device Supply Chain

The COVID-19 pandemic magnified the problem of substandard and fraudulent products from international firms, largely from China. While this issue is not new, it has become more pervasive and widespread.[1] In addition, based on our extensive investigations, including a review of device premarket submissions, facility inspections, and data analysis, FDA has observed a troubling increase in issues such as data falsification, violation of quality system regulations, and marketing of products without FDA authorization among a range of products. This situation makes the United States vulnerable to having ineffective or unsafe products enter the supply chain, which compromises our nation's response PHEs and routine patient care. Further, we are not always able to understand the relationships between different Chinese firms, including intermediaries in the supply chain, which complicates FDA's ability to ensure that import controls comprehensively prevent exposure to the public.

FDA will continue to take steps to address these issues within our current authorities, including through inspections, warning letters, import alerts, recalls, and safety-related communications. Despite extensive efforts using FDA's existing authorities, the entities responsible for developing, manufacturing, importing, and distributing these products into the United States have demonstrated the ability to evade the Agency's oversight.

[1] *See e.g.,* www.fda.gov/medical-devices/safety-communications/update-evaluating-plastic-syringes-made-china-potential-device-failures-fda-safety-communication

Overseeing and Monitoring Products Critical to Public Health
FDA has also seen that supply disruptions for other critical products can have an immense impact on families. Preventing food shortages is vital to public health, and we are grateful that Congress included a provision in FDORA to require manufacturers of infant formulas and medical foods, which are critical foods, to notify FDA of potential shortages. Looking forward, as outlined in the FY 2025 President's Budget request, parallel authority to require notifications during a declared PHE of anticipated interruptions in the supply chain of additional categories of foods designated by FDA would help the Agency better ensure the continuity of the food supply and avoid shortages of nutritionally important food products.

Finally, across all these areas, FDA's partnerships with state, local, and U.S. territorial governments continue to play an important role in the protection of public health, particularly as FDA partners with them in the regulation of products, helping to ensure the safety and integrity of supply chains, and assisting in enforcement against products that are being unlawfully sold. As outlined in the FY 2025 President's Budget, FDA is proposing to amend the FD&C Act to allow for disclosure of non-public information to state, local, and U.S. territorial government agencies with counterpart functions related to FDA-regulated products while ensuring confidentiality of non-public information (such as confidential commercial information) provided by FDA. New provisions for the disclosure of non-public information to these agencies with complementary functions related to FDA-regulated products, and a federally consistent expectation for disclosure, could achieve faster and more effective action to protect the public health during national PHEs, other state/local disaster declarations, outbreaks, or other public health events, and for routine regulatory oversight.

Vaccine Surveillance and Monitoring
Over 270 million people received more than 676 million doses of COVID-19 vaccines in the United States. Vaccine safety is a top priority for the federal government, and we take reports of health problems following COVID-19 vaccination very seriously. FDA and its federal and state partners cooperate to conduct intensive monitoring of U.S. COVID-19 vaccine safety using a variety of overlapping approaches. FDA also collaborates with international partners to understand the safety of these vaccines globally. Through the Biologics Effectiveness and Safety Initiative, part of the FDA Sentinel Initiative, FDA can analyze information occurring in millions of health insurance claim submissions or electronic health records (EHR) recorded in large data systems. FDA's ability to analyze claims information is limited by the fact that some vaccinations are not recorded in health insurance claims data. Additionally, FDA needs to quickly verify information or access additional information to evaluate the adverse events of interest. A coordinated federal public health data reporting authority, as outlined in the FY 2025 President's Budget request, would help the Agency to more swiftly identify adverse event patterns and trends associated with the use of vaccines or other MCMs, and swiftly be able to communicate with health care providers and patients about safety signals.

Fostering Medical Countermeasure Development
As part of the Prepare for and Respond to Existing Viruses, Emerging New Threats, and Pandemics Act, Congress required FDA to establish a platform technology designation program to support the development and review of certain platform technologies that can be incorporated

or used in more than one drug or biological product. In May 2024, FDA issued draft guidance entitled, *Platform Technology Designation Program for Drug Development.*[2] This guidance outlines eligibility factors for receiving a platform technology designation, potential benefits of receiving a designation, how to leverage data from designated platform technologies, how to discuss a planned designation request as part of a milestone meeting, the recommended content of a designation request submission, and the review timelines for a designation request. This program is intended to result in efficiencies in drug and selected biologics product development, manufacturing, and review processes for drug product applications that incorporate designated platform technologies, which will be particularly valuable during a pandemic. Of note, the guidance includes platforms in mRNA vaccines as one example of a potential platform technology that could be eligible for the designation program.

Given the potential use of platform technologies in products incorporating human genome editing technology, such as CRISPR, in its July 2024 guidance agenda,[3] FDA's Center for Biologics Evaluation and Research (CBER) announced its intent to issue draft guidance on the Use of Platform Technologies in Human Gene Therapy Products Incorporating Human Genome Editing. The guidance is intended to provide additional clarity specific to these types of products. Even outside of the platform technology designation program (for those platforms that do not qualify for the designation, e.g., because they are not yet part of an approved product), FDA is evaluating how we can implement the spirit of the provision by leveraging data and information about platform technologies across related products during the development process.

Further, enhancing FDA's regulatory capabilities and readiness to respond to emerging pathogens; helping ensure blood safety and availability; and expeditiously reviewing new vaccines, updates of existing vaccines and other medical products are all vital to the Agency's continued success in preparation and response to public health threats. During the COVID-19 pandemic the Agency saw that FDA staff need to be prepared to continue to address the current pandemic needs while also preparing for potential future pandemics and staying on top of our daily work to help ensure blood safety and availability and regulate vaccines and other medical products. With additional resources, as requested in the FY 2025 Budget, the creation of a specialized program to defend against emerging pathogens and other threats, would position the Agency to respond to emerging and identified threats of concern and focus experienced resources to work quickly on MCM development to address these concerns. In consultation with our federal government partners, the program could: further accelerate the review of critical MCM product applications; provide recommendations and guidance to developers of vaccines and other medical products and to relevant federal partners; use real-world data to study the safety and effectiveness of products for addressing biological incidents and identify which products may be best suited for specific pathogens or for use in different populations; and facilitate product development including advances in manufacturing. It could also support applied scientific research within CBER that contributes to development and review of biological products to counter biological incidents and emerging pathogens.

[2] www.fda.gov/regulatory-information/search-fda-guidance-documents/platform-technology-designation-program-drug-development

[3] www.fda.gov/vaccines-blood-biologics/biologics-guidances/guidance-agenda-guidance-documents-cber-planning-publish-during-calendar-year-2024

Animal Health and Pandemic Preparedness

The COVID-19 pandemic and the emergence of HPAI in dairy cattle also highlighted the importance of the connection between animal health and pandemic preparedness. National preparedness efforts need to include reducing the spread of diseases between animals and humans, maintaining a secure food supply from animal agriculture, and strengthening supply chains for animal drugs along with animal health and welfare. FDA's Animal and Veterinary Innovation Agenda supports the development of innovative, safe and effective products and streamlined and clarified regulatory processes so industries we regulate can have access to an array of modern technologies to monitor, prevent, control, and treat increasing animal health challenges, such as zoonotic and animal infectious disease threats, leading to healthier animals and communities.

Similarly, as on the human side, the Agency has identified areas where current authorities for animal health do not meet preparedness needs. For example, FY25 legislative proposals seek to require manufacturers to notify FDA of a shortage of animal drugs caused by either a decrease in production or an increase in demand.

Conclusion

FDA continues to advance its mission to protect and promote public health by helping to ensure the safety of human and animal food, and the safety and effectiveness of medical products. The Agency is continuing to monitor its policies, the marketplace, and national needs, and will continue to adapt as the circumstances and needs of the nation evolve to be ready for the next emergency. The Agency takes our public health mandate very seriously and works each day to be prepared for future pandemics and emergencies. FDA looks forward to continuing to work with Congress on the Agency's public health emergency preparedness and response mission and strengthening FDA's authorities to continue building a resilient supply chain for critical medical products, foods, and medical countermeasures. Thank you again for the opportunity to testify.