CovID 19 Pandemic Statistical Analysis

Summary and Recommended Action

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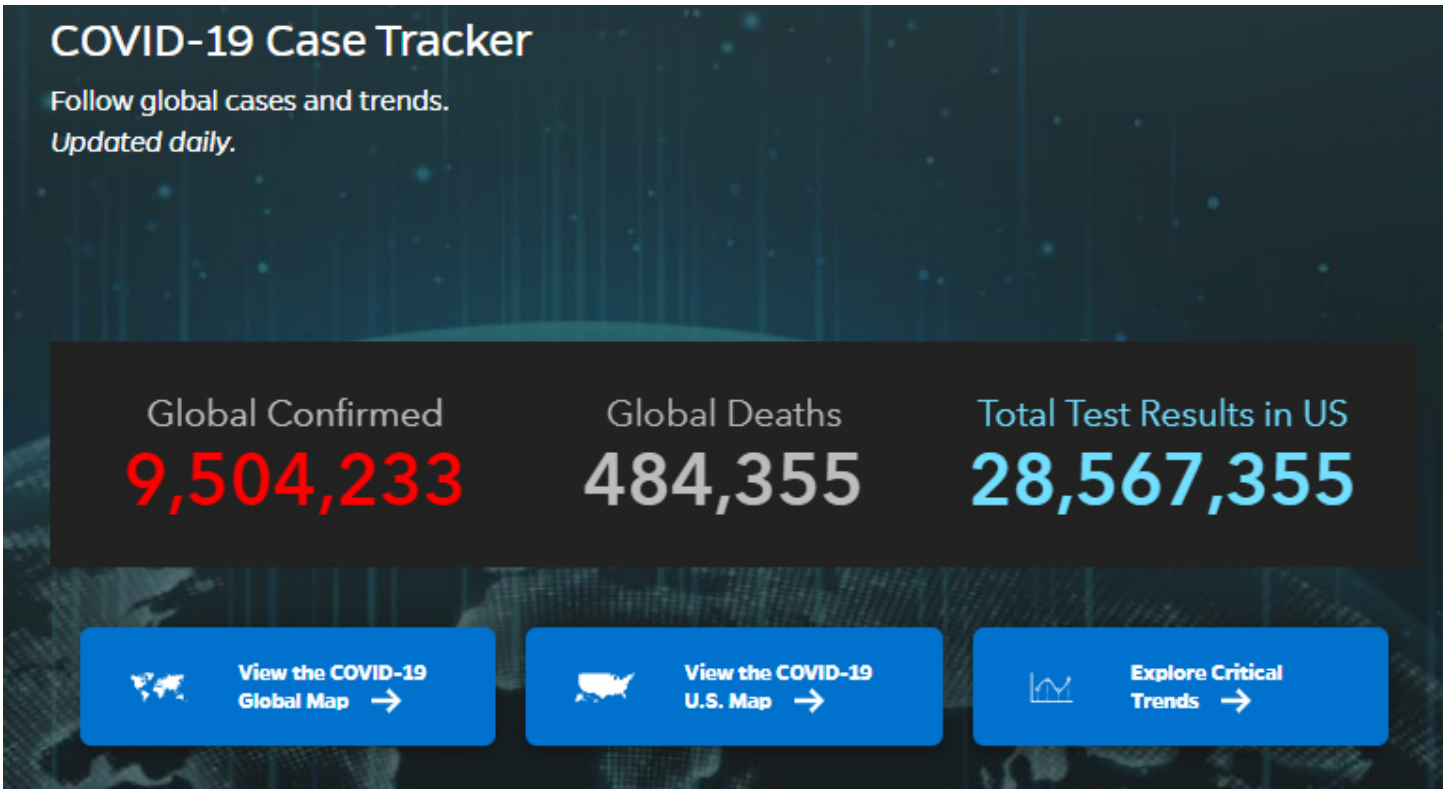
INTRODUCTION

In the early stages of the COVID-19 pandemic the US testing effort started late and rolled out slowly and unevenly. Federal public health authorities have elected not to publish complete testing data. From March through mid-May, the CDC published a case count for identified cases of lab-confirmed COVID-19 confirmed by testing. However, it significantly lagged behind other sources of this data, like the gold-standard Johns Hopkins University tracker.



Source: https://coronavirus.jhu.edu -June 26, 2020

In early May the CDC began publishing case counts, deaths, and basic testing data in a new dashboard. The COVID Tracking Project at The Atlantic magazine compared the CDC's data with what we were compiling from state sources. We found that although case and death counts were very similar in the two datasets, there were substantial mismatches in the testing data. The same week, an investigation by Atlantic revealed that not only were several states mixing viral (diagnostic) and antibody (past infection indicator) test numbers in their public data reporting, the CDC was also mixing these test numbers, while labeling the data "viral tests."

As time passed the reliability of the number has become suspect and federal health authorities are warning that the COVID outbreak may go on through the end of year 2022. Our nation cannot battle this infection without the proper tools and data is the most important tool. This paper presents a multi-tiered solution to the issue.

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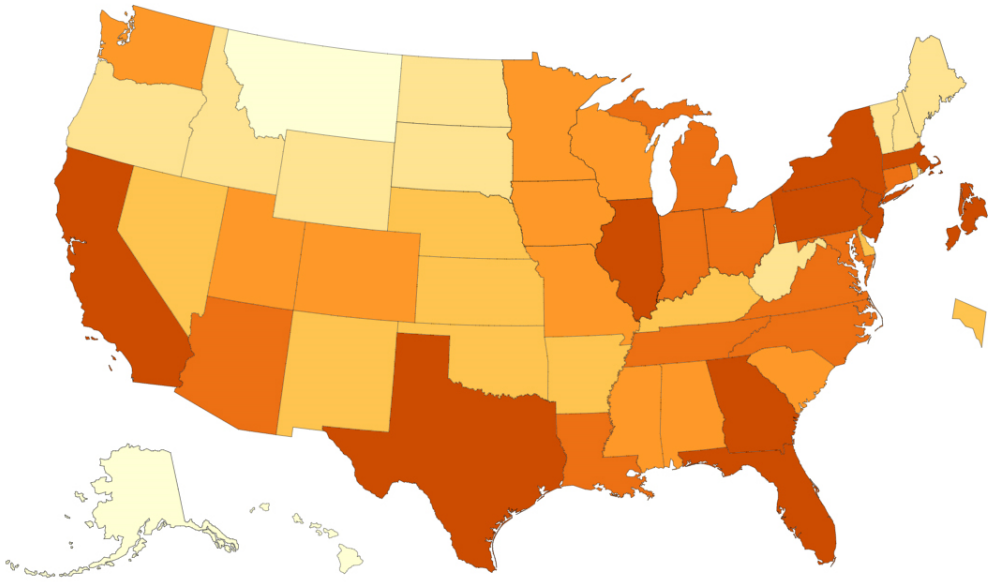
Total Number of COVID-19 Cases in the US Reported to the CDC, by State/Territory



Source https://www.cdc.gov/covid-data-tracker/index.html *- June 26, 2020*

PROBLEM STATEMENT

COVID 19 represents a grave danger to our nation and little has been done to improve reporting. Several organizations that stepped up to aggregate data from the thousands of data sources at the county and state levels. Overall, the quality of the data is poor and there is no standardization of data elements.

At the top of the data quality issues, is the problem of multiple testing. In the medical profession, requirements are in place that mandate additional testing before returning to work. An example follows for a fictitious Dr. Bob and ER doctor at ABC Medical Center:

> March 25th Dr Bob tests positive for COVID 19. He self isolates for 14 days. After the isolation period with absence of symptoms he must be retested. On April 16th, Dr. Bob submits a specimen for testing and outcome is positive. Now Dr. Bob will have to wait a few days before testing again. ABC Medical Center requires patient to have 2 negative tests 24 hours apart before being cleared to return to work. Dr Bob has been tested 4 times – 2 positive and 2 negatives. However, in the all of the reporting, this reflected as 4 new cases, 2 positives and 2 negatives.

Another example is the White House where staffers are tested on a daily basis. One person would be tested at least 20 times in a month period. Sports leagues are the nearly the same with players having to be tested at least every other day.

This problem has been noticed in the media of late. According to Fox News and other outlets, a report issued by the Government Accounting Office detailed its findings on the coronavirus testing data that was collected at times included antibody tests that detect prior infections, and sometimes included counts on the number of samples tested, which could include multiple tests for one person. “The absence of complete and consistent COVID-19 testing data reported through May 31, 2020, has made it more difficult to track and know the infection rate, mitigate the effect of infections, and inform decisions on reopening communities,” the watchdog said.

While researching this subject a secondary set of needs was uncovered. Accessibility to testing is being hampered to the disparities in cost of testing. In a Daily Mail (U.K.) news story, two friends that planning a trip wanted peace of mind and got tested at a Texas ER. The man was charged $199 and paid cash on the way out the door. The woman has insurance and wanted to have a claim submitted to her insure. The claim amount was $6,408 and she was responsible for $928. Similar stories have been reported nationwide.

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Both insured and uninsured face nothing but uncertainty when it comes around to testing. Many individuals are waiting for local community based 'free' testing, only to find they are billed for these testing.

Conversely, those that test positive worry about the cost of treatment. In Seattle, one gentleman was presented with a bill for $1,122,501.04. Fortunately, at age 70, he was covered by Medicare and will not have to pay any of this. The same invoice for a person with an employer provided insurance would be responsible for all of the cost up to the out to pocket maximum (likely $3,000 to $5000 dollars). An uninsured individual or someone that had just lost their job (being unable to pay COBRA premiums) would be at the mercy of the entire bill. Some hospitals do have community resources that can help to reduce the bill with write-offs and access to charities that may be available to assign with bill. It would be highly likely that the patient may have to declare bankruptcy as a result of the bill.

The lack accessibility to testing and treatment has led to people with symptoms not seeking testing or treatment until the illness becomes unbearable.

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CHANGES NEEDED

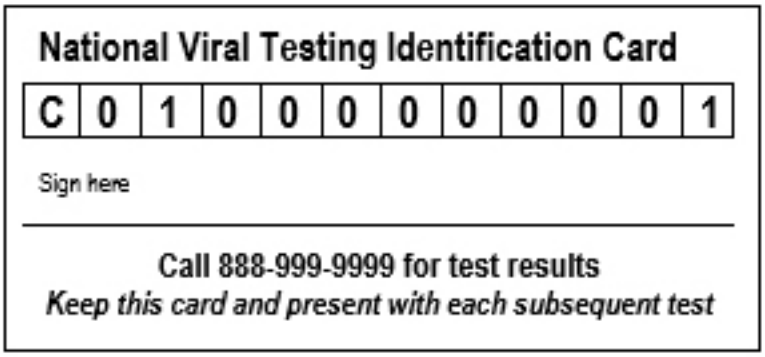
A single participant identifier

A single identifier per participant and virus year (**National Viral Testing Identification Number**) would eliminate the problem of multiple tests skewing results

A unique identifier for each testing participant that would be used for all instances of testing

Example – **C01234567890** – the value will be composed of 3 parts

- First character – identified type of test being performed – A (Antibody), C (COVID), F (Flu), M (MSRA) , P (swine Flu)and S (SARS)
- Second character – virus year – 0 (2020), 1 (2021), 2 (2022) and 3 (2023).
- Ten-character number beginning with 1,000,000,001 – this would need to be autogenerated.



The 'National Viral Testing Protocol – Initial Test' form 'NAT – A' would need to be preprinted with the ID number for distribution to all testing stations. Each form would have a 'National Viral Testing Identification Card' (NVTI) attached as well as two preprinted specimen labels. The NVTI card will be signed by the participant and retained for any other testing. The NVTI card will also contain a toll-free number that participant can call to get the test results.

All secondary testing would use 'National Viral Testing Protocol – Supplemental' form 'NAT – B'. This form will only contain the National Viral Testing Identification Number and the specimen labels that would be hand written using the NVTI card provided to the participant.

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Standardized data format for collection of demographic data

There are great differences in the data elements for the 56 states and territories as well as across the 3145 counties.

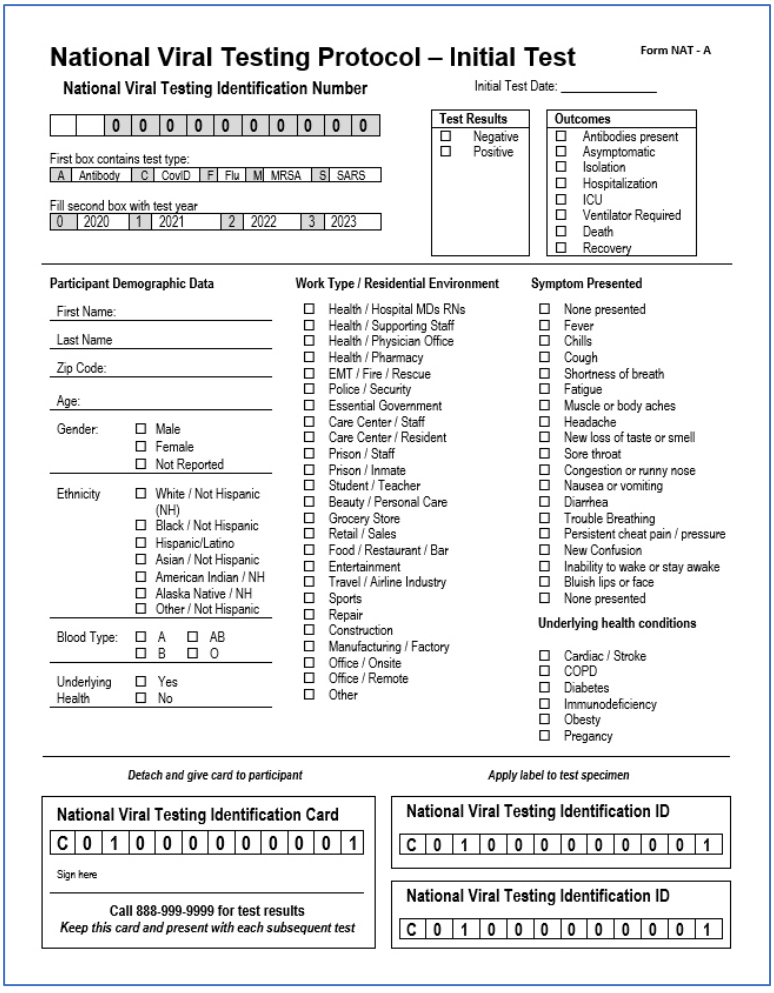
USA Facts collects data from the above sources on a daily basis and has developed a data quality grade for each state. Twenty-five states have an ‘A’ or’ A+’ grade. Thirty-one are deemed lacking with a grade lower that ‘A’

The USA Facts data also does not contain demographic data elements that would be helpful in analysis and examination of trends. Also, there is no way to report multiple tests by a single person.

Upon review of available statistics and reporting, we have concluded the following data elements are required.

- Initial Test Date
- Participant First and Last Name
- Zip Code
- Age
- Ethnicity
- Gender
- Blood Type
- Underlying Health Conditions
- Work type / Residential Environment
- Symptoms Presented

All of these data elements are contained within the NVTI form.



National Viral Testing Protocol – Initial Test Form NAT - A

National Viral Testing Identification Number

Initial Test Date: _____

0 0 0 0 0 0 0 0 0 0

First box contains test type:

A	Antibody	C	CovID	F	Flu	M	MRSA	S	SARS

Fill second box with test year

0	2020	1	2021	2	2022	3	2023

Test Results
- ☐ Negative
- ☐ Positive

Outcomes
- ☐ Antibodies present
- ☐ Asymptomatic
- ☐ Isolation
- ☐ Hospitalization
- ☐ ICU
- ☐ Ventilator Required
- ☐ Death
- ☐ Recovery

Participant Demographic Data

First Name:

Last Name

Zip Code:

Age:

Gender: ☐ Male ☐ Female ☐ Not Reported

Ethnicity: ☐ White / Not Hispanic (NH) ☐ Black / Not Hispanic ☐ Hispanic/Latino ☐ Asian / Not Hispanic ☐ American Indian / NH ☐ Alaska Native / NH ☐ Other / Not Hispanic

Blood Type: ☐ A ☐ AB ☐ B ☐ O

Underlying Health: ☐ Yes ☐ No

Work Type / Residential Environment
- ☐ Health / Hospital MDs RNs
- ☐ Health / Supporting Staff
- ☐ Health / Physician Office
- ☐ Health / Pharmacy
- ☐ EMT / Fire / Rescue
- ☐ Police / Security
- ☐ Essential Government
- ☐ Care Center / Staff
- ☐ Care Center / Resident
- ☐ Prison / Staff
- ☐ Prison / Inmate
- ☐ Student / Teacher
- ☐ Beauty / Personal Care
- ☐ Grocery Store
- ☐ Retail / Sales
- ☐ Food / Restaurant / Bar
- ☐ Entertainment
- ☐ Travel / Airline Industry
- ☐ Sports
- ☐ Repair
- ☐ Construction
- ☐ Manufacturing / Factory
- ☐ Office / Onsite
- ☐ Office / Remote
- ☐ Other

Symptom Presented
- ☐ None presented
- ☐ Fever
- ☐ Chills
- ☐ Cough
- ☐ Shortness of breath
- ☐ Fatigue
- ☐ Muscle or body aches
- ☐ Headache
- ☐ New loss of taste or smell
- ☐ Sore throat
- ☐ Congestion or runny nose
- ☐ Nausea or vomiting
- ☐ Diarrhea
- ☐ Trouble Breathing
- ☐ Persistent cheat pain / pressure
- ☐ New Confusion
- ☐ Inability to wake or stay awake
- ☐ Bluish lips or face
- ☐ None presented

Underlying health conditions
- ☐ Cardiac / Stroke
- ☐ COPD
- ☐ Diabetes
- ☐ Immunodeficiency
- ☐ Obesty
- ☐ Pregancy

Detach and give card to participant

National Viral Testing Identification Card

C 0 1 0 0 0 0 0 0 0 0 1

Sign here

Call 888-999-9999 for test results

Keep this card and present with each subsequent test

Apply label to test specimen

National Viral Testing Identification ID

C 0 1 0 0 0 0 0 0 0 0 1

National Viral Testing Identification ID

C 0 1 0 0 0 0 0 0 0 0 1

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A singular testing methodology

Today, the tests are ordered by a variety of sources, using a variety of testing vendors and the result is reported to multiple sources. Due to the immediacy of the pandemic a standard methodology is missing. Much of today's process was been trial and error, with error being the operative word.

The result of this disorganization is the analytical and statistical mess. This mess has caused constant change in instructions for the public. Confusion also is present in the testing and recording processes.

We recommend ordering the initial test with the 'NAT – A' form mentioned above. Supplemental tests would be ordered using the 'NAT – B' form. Data collection for supplemental tests to be limited to collect the participants NVTID number.

Universally accessible data entry tool

There is no standardized data entry tool today. Every state, county and testing organizations handle their data differently.

The standard form NAT – A can be used as the foundation for a data entry tool. A web enabled encrypted site accessible with adequate authentication.

For an initial test, the NVTI would be entered and empty form would be displayed. A data entry agent would complete the form with the demographic info as well as the test results data. On supplemental testing only the NVTI would be entered, the previously submitted data would be displayed and the supplemental test results would be added to the record.

A comprehensive database for reporting

Conceptually, a simple database containing just three tables is all that would be needed to start collected data.

NVT_Demo		NVT_Health		NVT_Results	
KID	Autonumber (1000000001)	KID	Autonumber	KID	Autonumber
NTVID		**NTVID**	**FK**	**NTVID**	**FK**
FName		HealthType	Symptom / Condition	TestVendor	Choose 1
Lname		Value	Drop Down (multiple)	TestType	Choose 1
ZipCode		InitialTestDate		Result	Negative / Positive
Age	Choose 1			TestDate	
Gender	Choose 1			RecordedBy	
Enthicity	Choose 1				
BloodType	Yes/No				
UnderlyHealth					
initialTestDate					
RecordedBy					

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Universally accessible testing

Many have looked at some affordability challenges that could arise from, or prevent timely access to, COVID-19 testing and treatment. Several key questions are answered on the accessibility and affordability of COVID-19 testing and treatment.

COVID-19 testing

All forms of public and private insurance, including self-funded plans, must now cover FDA-approved COVID-19 tests and costs associated with testing with no cost-sharing.

Medicare covers FDA-approved COVID-19 tests and costs associated with testing with no cost-sharing. Also covered are serology tests that can determine whether an individual has been infected with COVID-19

Medicaid covers testing with no cost sharing with 100% federal financing.

Uninsured patients as at risk for all costs from COVID-19 testing. if the up-front expense is unaffordable, it could deter some patients from getting a test.

Source:https://www.kff.org/coronavirus-covid-19/issue-brief/five-things-to-know-about-the-cost-of-covid-19-testing-and-treatment/

Universally accessible treatment

COVID-19 is a non-discriminating virus without respect for age, ethnicity, gender and health conditions. There has not yet been comprehensive federal legislation to limit cost-sharing for treatment of COVID-19, such as hospitalization for those who become very ill.

COVID-19 treatment costs will depend on the type of coverage an individual has and may present a much larger affordability concern for patients than testing. Many people are able to recover on their own without treatment, but others with more serious cases require hospitalization. Currently there is no curative treatment for COVID-19, but hospitalization to treat the symptoms of the disease could be very expensive, particularly for people who are uninsured or underinsured.

Analysis by the Peterson-KFF Health System Tracker, found that for people with large employer-sponsored insurance who require hospitalization for pneumonia (a common complication of COVID-19), out-of-pocket costs could top $1,300

People with private coverage through small businesses and the individual market will likely face even higher levels of cost-sharing as they have much higher deductibles.

People with Medicare in the traditional Medicare program who are admitted to a hospital for COVID-19 treatment would be subject to the Medicare Part A deductible, as well as daily copayments for extended inpatient hospital and skilled nursing facility (SNF) stays. COVID-19 treatment-has requires related outpatient services covered under Part B, would be subject to $198 deductible and 20 percent coinsurance.

For the more than one-third of all beneficiaries in Medicare Advantage plans, cost-sharing requirements for inpatient care typically vary across plans, often based on the length of stay. In response to the COVID-19 emergency, most Medicare Advantage insurers are voluntarily waiving cost sharing for COVID-19 treatment.

People with Medicaid have little to no cost-sharing and COVID-19 treatment may pose affordability challenges.

People who are uninsured people needing treatment for COVID-19 will be they could be subject to thousands of dollars in costs, unless they can identifier free or reduced cost services.

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Standards for Cost Sharing for COVID 19 Testing and Treatment		
Population segment	Testing	Treatment
Employer Insurance	**No cost-sharing** (including self-funded plans and HDHPs)	Cost-sharing can be applied. Cost-sharing may be waived depending on the state, insurer, and/or employer. AHIP details specific insurer decisions here.
Individual Market	No cost-sharing (this requirement applies to grandfathered plans but does not apply to short-term limited-duration plans)	Cost-sharing can be applied. Cost-sharing may be waived depending on the state and insurer. AHIP details specific insurer decisions here.
Medicare	No cost-sharing	Cost-sharing can apply in both traditional Medicare and Medicare Advantage plans. In Medicare Advantage, depends on the insurer. AHIP details specific insurer decisions here.
Medicaid / CHIP	No cost-sharing To be eligible for a 6.2 percentage point increase in the regular Medicaid match rate during the public health emergency period, states must cover COVID-19 testing and treatment costs without cost-sharing	To be eligible for a 6.2 percentage point increase in the regular Medicaid match rate during the public health emergency period, states must cover COVID-19 testing and treatment costs without cost-sharing
Uninsured	Patients face full price unless they can find free or reduced-cost test. States can choose to cover costs through Medicaid with 100% federal financing (including costs for those in short-term limited-duration plans) New federal program will reimburse providers	Patients face full price unless they can find free or reduced-cost treatment. Providers can apply to be reimbursed by the federal government ("The Emergency Fund") for treating uninsured patients, though providers are not required to participate in the program and uninsured consumers are not guaranteed free care; Trump Administration guidance is not fully clear on whether people with short-term policies would be considered uninsured for purposes of the Emergency Fund

COVID-19 preventative care

A COVID-19 vaccine will most likely be covered for nearly all insured people without cost-sharing, under the Affordable Care Act's requirement that federally-recommended preventative care be covered without cost-sharing for anyone enrolled in private insurance, Medicare, or in the Medicaid expansion.

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CONCLUSION

A standardized methodology must be applied to Viral / Antibody testing from a statistical perspective. With the presidential declaration of emergency due the COVID pandemic and immediate impact to our economy, the following should be implemented:

Universally adopted participant identifier - National Viral Testing Identification Number.

- The **National Viral Testing Identification Number** will be required for all testing and treatment
- The leading character of the number will designate the type of test. 'C' meaning COVID.

Universally adopted testing methodology and protocol including:

- Standardized demographic elements to be included in test request form.
- Standardized methodology of submission of test requests, including designation as initial test versus supplemental testing.
- Creation of universally accessible data entry tool for test demographic and results data.
- Require that correct entry of testing data is mandatory for payment of test costs.

Creation of database to contain the require testing data for reporting.

Universal access to testing and treatment for all without expense to the participant.

- Federal government will set a standard accepted cost for testing and will bear the cost.
- Federal government will set a standard accepted cost for treatment based upon current Medicare costs and will bear the cost
- Universal access means all U.S. residents, with regard to citizenship status or insurance coverage.
- A **National Viral Testing Identification Card** with a **National Viral Testing Identification Number** beginning with a 'C' will be required as eligibility for testing and treatment.
- Health Insurers will not be involved in the testing and treatment.

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ABOUT THE AUTHOR

Joseph K Bellis III (also known by the nom de plume – Joe Kidd) is the Principal Consultant at KIDD Consulting. Joseph has over 45 years of experience working with small to large business including 20 plus year consulting for Fortune 10 company. Additionally, he has a keen interest in government policy and politics having been a candidate for multiple federal office from 2000 to 2010.

Since 2011, he has been active writing policy papers for candidates, appointed officials and government agencies. Joseph also reviews and provides commentary on many of the high-profile pieces of federal legislation that are considered in the US Congress. While outspoken with a conservative lean he pushes an “All Lives Matter” philosophy. Joseph also believes that America needs to stand up and squelch the ‘cancel culture’ that permeates society today.

Additionally, Joseph is not shy about telling our elected federal offices when they are failing to get the job done and pushing praise when on the rare occasion, they do get something right.

Joseph uses the Joe Kidd alias to keep his published findings, ideas and policy statement separate from his professional career. Several books published under the Joe Kidd name are available on Amazon and at the website – joe-kidd.com.

Joseph is a process analyst who can get to the bottom of any problem that any business might encounter. He specializes in getting the root of problem processes and defining much more efficient solutions. He only suggests the best solutions with documentation, processes, and results to support the solution.

Joseph will not recommend sticking a square piece into someone's round hole and has rooted out inefficiency in process across multiple industries:

- advertising and marketing,
- data analytics and modeling,
- database design,
- printing and publishing,
- small business planning and incorporation,
- healthcare analytics including
    - hospital and ER utilization,
    - care planning models,
    - chargemaster review and
    - concierge practice planning
- Medicare and Medicaid eligibility
- public policy at the federal level

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