



**Report on 2021 COVID-19 Related Fatalities including those
Dead on Arrival in the U.S. Territory of Guam**

**OFFICE OF EPIDEMIOLOGY AND RESEARCH & COVID-19 SURVEILLANCE UNIT
GUAM DEPARTMENT OF PUBLIC HEALTH AND SOCIAL SERVICES**

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Executive Summary:

In 2021, a total of 145 COVID-19 related deaths were reported to the Guam Department of Public Health and Social Services (DPHSS) from Guam's three hospitals. During the COVID-19 (Delta variant) surge from July 8 to December 31 there were 127 COVID-19 related deaths of which 49 (38.6%) were dead on arrival (DOA), accounting for 98% of all DOAs in 2021. An investigation by the DPHSS was launched to assess the common characteristics associated with the transmission and severity of these COVID-19 DOA cases.

Though overall vaccination coverage in Guam is high with 93.5% of the eligible population (age ≥ 5) vaccinated as of 1/22/2022, among individuals who died of COVID-19 in Guam in 2021 with known vaccination status, over 80% were not fully vaccinated. The majority of COVID-19 deaths in 2021 were among males and the elderly and over one-quarter had an education level of less than grade 12. Family interviews revealed that among those reporting household income, 67% had a combined household income of less than \$35,000 a year with 22% reporting a household income of less than \$10,000. Family interviews also revealed that at death, 23.8% of DOAs did not have health insurance and only two individuals had private or employer-based insurance. In addition, among DOAs and Non-DOAs the prevalence of comorbid conditions including diabetes, chronic renal disease and cardiovascular disease were elevated compared to the background population. The high proportion of DOAs observed in Guam in the summer and fall of 2021 is concerning and this analysis suggests that health and social disparities played a significant role in deaths, including DOAs, reported to DPHSS in 2021.

Background

In July 2021, an elderly, married Filipino couple were pronounced as dead on arrival (DOA) at local hospital(s) five days apart in the U.S. Territory of Guam. Postmortem PCR testing for SARS-coV-2 revealed that both were positive at time of death. The immediate cause of death was listed as acute respiratory distress syndrome due to COVID-19 associated pneumonia with a contributing cause listed as diabetes mellitus for both. In the following months, the Guam Department of Public Health and Social Services (DPHSS) observed an increase in COVID-19 related DOAs. COVID-19 vaccine uptake in Guam is high (93.5% fully vaccinated as of 1/22/2022). Similar to the U.S. general population, the proportion of persons vulnerable to severe outcomes of SARS-coV-2 infection on Guam is elevated due to the high prevalence of underlying medical conditions and risk factors. (i.e. obesity, diabetes). As COVID-19-related deaths including DOAs continued through 2021 (peaking in September) enhanced attention was given and efforts made by the Governor of Guam, the Physician's Advisory Group, and DPHSS, to inform the community, urge the necessity of receiving the COVID-19 vaccine, and encourage the elderly, people with chronic conditions and the immuno-compromised to seek treatment if infected, as monoclonal antibody treatments became available.

In 2021, a total of 145 COVID-19 related deaths were reported to DPHSS from Guam's three hospitals, based on death certificates received through 1/20/2022. During the COVID-19 (Delta variant) surge from July 8 to December 31 there were 127 COVID-19 related deaths of which 49 (38.6%) were DOAs, accounting for 98% of all DOAs in 2021. The high proportion of COVID-19 deaths and DOAs in the second half of 2021 raised concern among the public, elected officials and by public health authorities. An investigation by the DPHSS was launched to assess the common characteristics associated with the transmission and severity of these COVID-19 DOA cases. These data and additional analyses will provide more detail to elucidate why Guam experienced high DOA cases during the COVID-19 summer surge in 2021, despite high vaccination coverage on the island.

Methods:

The design of the DOA analysis compiled here includes data on all COVID-19 deaths from January 1, 2021 to December 31, 2021 with death certificates (n=146), interviews with family members of DOA cases, and comparative analyses of demographic, comorbidity and death certificate data between COVID-19 cases, COVID-19 related DOA and non-DOA deaths. For this investigation, all deaths were defined as detection of SARS-CoV-2 RNA in a respiratory specimen collected from a person in a postmortem specimen and a cause of death listed as COVID-19 on the death certificate. DOAs were defined as a death in a person who was unresponsive and/or with CPR in progress (e.g. cardiac arrest) and transported to a Guam hospital by emergency medical services and reported to DPHSS by the hospital as DOA. The majority of DOA cases were pronounced DOA within 30 minutes of arrival to a hospital (71%), another 12% within the first hour and 17% within 3.5 hours.

Data sources on all deaths include reports from hospitals, laboratory confirmation of recent positive COVID-19 infection, physician and hospital notes, if available, and death certificates. Additional data on DOAs include 21 completed family interviews (interview questionnaire appended as Appendix 3). Only 5 families refused to be interviewed and the remainder were unable to be contacted.

Results:

There were a total of 146 COVID-19 deaths reported to DPHSS from January 1, 2021 to December 31, 2021 with death certificates. In total there were 49 DOAs and 96 deaths that were not DOAs. The distribution of cases is presented in Figure 1. For this report data tables are presented as appendices.

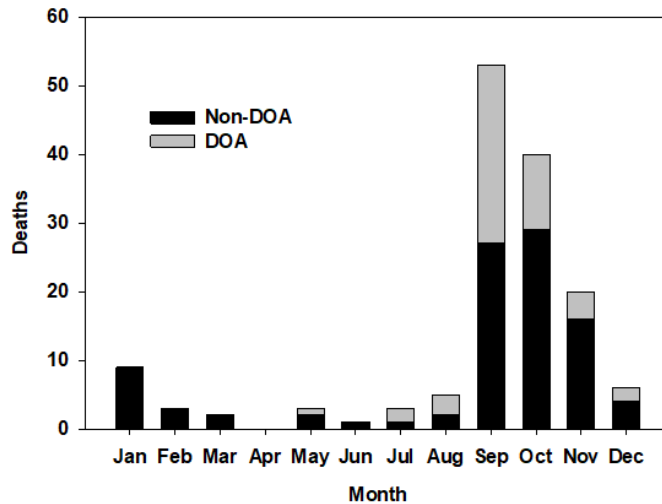


Figure 1. COVID-19 deaths occurring in Guam in 2021 (N=146), Dead on arrival (DOA) and Non-DOA cases by month.

Demographics

Both DOA (63.3%) and non-DOA (55.2%) cases skew toward males, but with higher proportions among the DOA cases. By age, both DOA (63.3%) and non-DOA (66.7%) are more likely to be elderly (60+ years). Among those aged 40–59, more are DOA (32.7%), than non-DOA (22.9%). By education, a high proportion of DOA cases had a lower education (8th grade or less, or some high school), and are less likely to be high school graduates. Throughout the COVID-19 pandemic on Guam it was noticed that Chuukese and other Pacific Islanders were disproportionately more likely to die due to COVID-19 compared to their proportions in the Guam population, for both DOA and non-DOA deaths. Chuukese are even more disproportionately represented in DOA cases. Chamorros are less likely and Filipinos slightly more likely to be represented as DOA cases given their proportions in Guam’s population. Most DOA and non-DOA cases are from the northern part of the island, which is Guam’s most populated area. Interestingly there are more DOA cases from the south compared to non-DOA cases. Information on cases can be found at:

<https://dphss.guam.gov/covid-19/>

Health

While both DOA (79.6%) and non-DOAs (65.6%) are more likely to be unvaccinated compared to the background population of Guam, the percentage of individuals who are unvaccinated is much higher among DOA cases (Table 1). Chronic conditions among non-DOA cases include diabetes, hypertension, cardiovascular disease, chronic lung disease, obesity and history of smoking. Among DOA cases, the biggest risk factors were diabetes, hypertension and chronic renal disease (Tables 5, 6, 12). It is important to note that all risk factors (e.g., smoking status, obesity) have been under-reported throughout the pandemic.

From death certificates we can note that the majority of COVID-19 related deaths in 2021 (both DOA and non-DOA), were a result of respiratory of conditions and complications of COVID-19 infection and as immediate or underlying causes of death causes of death. More of the DOA had cardiovascular events as an immediate cause of death. Contributory causes of death for both DOA and non-DOA include hypertension, diabetes, morbid obesity and renal conditions (i.e. ESRD), as well as respiratory or cardiovascular causes of death.

Family Interviews

A total of 21 family interviews were conducted for the DOAs representing 42% of all COVID-19 DOAs in 2021. As shown in Table 8, 47.6% of DOAs did not achieve a high school diploma and among those reporting household income, 44.4% reported an annual income of less than \$20,000. In 2021, 5 (23.8%) did not have health insurance and 11 (52.4%) were covered by Medicare or Medicaid. Overall, few acute COVID-19 symptoms were reported (Table 11). However, the most common symptoms were fatigue (28.6%) and dyspnea (23.8%). Interviews with a subset of the overall DOAs were reflective of the data presented from the larger analysis of DOAs with respect to comorbidities and risk factors (Tables 12 and 13).

Summary

The high proportion of DOAs observed in Guam in the summer and fall of 2021 is concerning and this analysis suggests that health and other disparities played a significant role. The rise in at home deaths and deaths occurring during emergency transport suggests that some patients are delaying, avoiding, or are unable to access healthcare services until it is too late for those services to provide life-saving benefit.

The efficacy of COVID-19 vaccination for prevention of severe outcomes, including death has been shown to be high. Overall vaccination coverage in Guam is high with 93.5% of the eligible population (age ≥ 5) vaccinated as of 1/22/2022. This is in contrast to the individuals who died of COVID-19 in Guam in 2021: among those with known vaccination status, over 80% were not fully vaccinated. The availability to free COVID-19 vaccination on Guam is universal and health education campaigns in multiple languages, local media reporting, island mitigation strategies such as proof of vaccination to dine at restaurants and peer pressure have likely reached full penetration with regard to awareness of the existence of COVID-19 and vaccine availability. It is unlikely that lack of awareness is responsible for the low COVID-19 vaccination uptake among the deaths from COVID-19. It is unclear what factors led to vaccine refusal in the individuals who died of COVID-19 in 2021, but what does appear to be clear is that being unvaccinated is a significant risk factor for death from COVID-19.

The majority of COVID-19 deaths in 2021 were among males and the elderly and over one-quarter had an education level of less than grade 12. The family interviews revealed that among those reporting household income, 67% of the families interviewed had a combined household income of less than \$35,000 a year with 22% reporting a household income of less than \$10,000. Family interviews also revealed that in 2021, 23.8% of DOAs did not have health insurance and only two individuals had private or employer-based insurance. Because of the small number of family interviews conducted (n=20), caution should be used when interpreting these findings, however as

expected, they are consistent with the findings from the larger analysis. It is important to note that risk factors (obesity, current or former smoking) appear to be underreported in case investigation interviews throughout the pandemic, as can be noted by the population prevalence estimates from the 2019 CDC-BRFSS for chronic conditions and risk factors. It is also important to note that questions related to health and exposures were conducted by proxy and may introduce bias.

Among DOAs and Non-DOAs the prevalence of comorbid conditions including diabetes, chronic renal disease and cardiovascular disease were elevated compared to the background population. Because many chronic health conditions are associated with severe outcomes when infected with SARS-coV-2, it is important that chronic conditions are appropriately managed during the pandemic. Delaying care for conditions such as diabetes and immune disorders may reflect reluctance of patients to access routine care for chronic conditions responsible for the underlying cause of death out of fear of contracting SARS-coV-2 at a healthcare facility or limited access to routine appointments because of the strain of COVID-19 on the healthcare system. In any regard, SARS-coV-2 has played an immediate cause of death among some of the infected and likely a contributing cause in community-related deaths in the uninfected. Future work will include a comprehensive analysis of all cause and cause-specific mortality pre and post pandemic in an attempt to assess the full burden and cause of deaths during the COVID-19 pandemic.

This analysis confirms the importance of COVID-19 vaccination, particularly in the elderly and those with comorbid conditions in the prevention of severe clinical outcomes including death. In addition, our findings highlight that health and social disparities are common among individuals who died of COVID-19 in 2021 and particularly among those who were received at island hospitals DOA. Because the available data show that the COVID-19 pandemic disproportionately affects vulnerable or high-risk populations on Guam, DPHSS is currently conducting an island-wide community health needs assessment of social determinates of health to target vulnerable, hard to reach and high-risk populations and continues to encourage and facilitate vaccination among the remaining unvaccinated.

Appendix 1. DOA and all deaths—2021 (145 COVID-19-related deaths January 1–December 31, 2021)

Table 1

	Vaccination Status			
	Non-DOA		DOA	
	Frequency	Percent	Frequency	Percent
Unvaccinated	63	65.6	39	79.6
Fully Vaccinated	16	16.7	8	16.3
Partially Vaccinated	4	4.2	2	4.1
Unknown	13	13.5	0	0.0
Total	96	100.0	49	100.0

Table 2

	Demographics			
	Non-DOA		DOA	
	Frequency	Percent	Frequency	Percent
<u>Sex</u>				
Female	43	44.8	18	36.7
Male	53	55.2	31	63.3
<u>Age</u>				
<18	0	0.0	1	2.0
18–39	10	10.4	1	2.0
40–59	22	22.9	16	32.7
≥60	64	66.7	31	63.3
<u>Education</u>				
8 th Grade or Less	11	13.8	10	25.6
Some high school	9	11.3	0	0.0
High School Graduate	38	47.5	17	43.6
Some college	10	12.5	9	23.1
Associates Degree	1	1.3	2	5.1
Bachelor's Degree	9	11.3	1	2.6
Graduate Degree	2	2.5	0	0.0
Unknown	16	16.7	10	25.6

Note: DOA, dead on arrival

Table 3.

Residence at death among 145 COVID-19-related deaths January 1–December 31, 2021				
	Non-DOA		DOA	
	Frequency	Percent	Frequency	Percent
Central	36	37.5%	17	34.7%
North	43	44.8%	22	44.9%
South	14	14.6%	9	18.4%
Saipan (off-island)	1	1.0%	0	0.0%
Unknown	2	2.1%	1	2.0%
Total	96	100.0%	49	100.0%

Table 4.

Ethnicity among 145 COVID-19-related deaths January 1–December 31, 2021								
	Non-DOA		DOA		Census 2020 projections based on 2010	(A)*	(B)**	(C)***
	n	%	n	%	One ethnic group	Percent one ethnic group (N=152,553)	Percent ≥1 ethnic group (N=168,322)	Mean of (A) and (B)
Chamorro	35	36.5	14	28.6	Chamorro	41.1	37.3	39.2
Chuukese	19	19.8	13	26.5	Chuukese	7.8	7.0	7.4
Other Pacific Islander	14	14.6	3	6.1	Other Pac Islander	5.5	5.0	5.3
Filipino	23	24.0	14	28.6	Filipino	29.0	26.3	27.7
Other Asian	1	1.0	1	2.0	Other Asian	6.5	5.9	6.2
White	1	1.0	2	4.1	White	7.8	7.1	7.5
Black	1	1.0	1	2.0	Black	NA	NA	NA
Unknown	2	2.1	1	2.0	Unknown	0.0	NA	0.0
					Other	2.2	2.0	2.1
					≥2 ethnic gps.	NA	9.4	9.4
					Total	100.0	100.0	100.0
Total=145	96	100.0	49	100.0	Total=168,489	15,784	152,705	NA

Note: One DOA was removed from the analysis due to lack of information (John Doe remains unidentified). *Percent presented represents proportion of one ethnic group (n=152,533). **Percent presented represents proportion of one or more ethnic groups (n=168,322).

Table 5.

Chronic disease and risk factor summary–2021				
Disease or risk factor	Guam COVID-19 deaths (%) non-DOA (n=96)	Guam COVID-19 deaths (%) DOA (n=49)	Guam COVID-19 cases (%), excluding deaths (n=23,385)	GUAM 2019 BRFSS population crude prevalence estimates (%)
Diabetes*	41.7	22.2	6.1	11.7
Chronic renal disease	0	26.7	0.7	2.9
Chronic lung disease	13.5	0	3.4	4.2
Cardiovascular disease	24	4.4	1.9	2.9
Hypertension	39.6	22.2	9.1	30.3
Obesity (BMI > 30)	10.4	6.7	0.2	33.6
Current smoking	7.4	0	7.9	23.4
Former smoking	2.5	0	5.8	17.2

Note: Data are from COVID-19 case investigation line list and/or hospital medical records (deaths only). *Diabetes excluding pregnancy related diabetes and pre-diabetes

Table 6.

2021 COVID-19 Related deaths—Immediate, Underlying and Contributory Causes of Death						
	Immediate Causes of Death*		Underlying Causes of Death*		Contributory Causes of Death*	
	Non-DOA	DOA	Non-DOA	DOA	Non-DOA	DOA
Respiratory**	56	20	0	0	24	7
Cardiovascular***	7	10	0	0	7	0
Hypertension	0	0	0	1	0	0
Complications of COVID-19 infection	22	12	2	0	11	5
Diabetes mellitus (or complications)	1	0	1	0	0	1
Critical bleeding conditions	0	1	0	0	0	0
Renal (kidney conditions), including ESRD	2	0	2	0	3	0
Multi-organ failure	0	0	0	0	1	0
Sepsis	4	0	0	0	0	0
Infections****	0	0	0	0	0	0
Morbid obesity	0	0	0	0	0	0
Tobacco	0	0	0	0	0	0
Cancer	1	2	0	0	1	0
Dementia	0	0	0	0	0	0
Chronic lung disease*****	2	0	0	0	0	0
Other	1		1	0	7	0
Unknown	0	4	0	0	0	0

Note: *Can be numerous/multiple listed; **[e.g. ARDS, respiratory failure, and pneumonia], ***[e.g. cardiac arrest, cardiopulmonary arrest]; ****[e.g. bacteremia]; *****[e.g. COPD, asthma]

Appendix 2. Frequency tables of family interviews (n=21)

Table 7.

Interviewee's Relationship to the Decedent		
	Frequency	Percent
Child	8	38.1
Cousin	1	4.8
Grandchild	1	4.8
Parent	4	19.1
Sibling	3	14.3
Spouse	4	19.1
Total	21	100.0

Vaccination Status of Decedent and Family		
	Frequency	Percent
<u>Decedent</u>		
Fully Vaccinated	4	19.1
Partially Vaccinated	0	0.0
Not Eligible	2	9.5
Unvaccinated	15	71.4
<u>Family*</u>		
Fully Vaccinated	15	71.4
Expressed Interest	2	9.5
Refused	4	19.1

*"What is the family's current COVID-19 vaccination status"

Table 8.

Demographics		
	Frequency	Percent
<u>Sex</u>		
Female	9	42.9
Male	12	57.1
<u>Age</u>		
<18	2	9.5
18–39	1	4.8
40–59	6	28.6
60–69	2	9.5
≥70	10	47.6
<u>Ethnicity</u>		
Chamorro	8	38.1
Filipino	5	23.8
Black	1	4.8
Chuukese	5	23.8
Yapese	1	4.8
Pohnpeian	1	4.8
<u>Education</u>		
Elementary (grades 1–8)	5	23.8
Some High School (grades 9–12)	5	23.8
High School Grad (Grade 12/GED)	7	37.5
Some College or Technical School	3	14.3
Missing	1	4.8
<u>Household Income 2020</u>		
<\$10,000	4	19.1
\$10,000–<\$20,000	4	19.1
\$20,000–<\$35,000	4	19.1
\$35,000–<\$60,000	2	9.5
\$60,000–<\$75,000	2	9.5
≥\$75,000	2	9.5
No Response	3	14.3
<u>Household Income 2021</u>		
<\$10,000	4	19.1
\$10,000–<\$20,000	7	37.5
\$20,000–<\$35,000	2	9.5
\$35,000–<\$60,000	3	14.3
\$60,000–<\$75,000	2	9.5
≥\$75,000	0	0.0
No Response	3	14.3

Table 9.

Decedent's Health Insurance Status/Type		
	Frequency	Percent
<u>2020</u>		
Medicaid	5	23.8
Medicare	6	28.6
MIP	2	9.5
None	4	19.1
Private/Employer-based	2	9.5
Unknown	2	9.5
<u>2021</u>		
Medicaid	5	23.8
Medicare	6	28.6
MIP	0	0.0
None	5	23.8
Private/Employer-based	2	9.5
Unknown	3	14.3
<u>Lost Health Insurance*</u>		
No	15	71.4
Unknown	3	14.3
N/A	3	14.3

*Did the decedent lose health insurance as a result of the COVID-19 pandemic in Guam?

Table 10.

Family Experience		
	Frequency	Percent
Do you know anyone else who has died from COVID-19 or from COVID-19-related illness?	11	52.4
Have you or your immediate family been discriminated against as a result of the COVID-19 pandemic?	5	23.8

Table 11.

Symptoms		
	Frequency	Percent
<u>Fever (100.4) or history of fever</u>		
Yes	2	9.5
No	19	90.5
<u>Subjective fevers</u>		
Yes	1	4.8
No	20	95.2
<u>Chills</u>	1	4.8
Yes	20	95.2
No		
<u>Congestion and/or runny nose</u>		
Yes	0	0.0
No	21	100.0
<u>Muscle and/or body aches</u>		
Yes	4	19.1
No	17	81.0
<u>Sore throat</u>		
Yes	1	4.8
No	20	95.2
<u>Loss of taste and/or smell</u>		
Yes	2	9.5
No	19	90.5
<u>Headache</u>		
Yes	2	9.5
No	18	85.7
Unknown	1	4.8
<u>Fatigue</u>		
Yes	6	28.6
No	14	66.7
Unknown	1	4.8
<u>Cough</u>		
Yes	2	9.5
No	19	90.5
<u>Shortness of breath</u>		
Yes	5	23.8
No	16	76.2
<u>Nausea or vomiting</u>		
Yes	1	4.8
No	18	85.7
Unknown	2	9.5
<u>Abdominal pain</u>		
Yes	1	4.8
No	19	90.5
Unknown	1	4.8
<u>Diarrhea</u>		
Yes	2	9.5
No	1	4.8
Unknown	18	
<u>Other symptoms</u>		
Yes	1	4.8
No	19	90.5
Unknown	1	4.8

Table 12.

Comorbidities		
	Frequency	Percent
<u>Diabetes (doctor diagnosed)</u>		
Yes	7	33.3
No	10	47.6
Unknown	4	19.1
<u>Hypertension</u>		
Yes	11	52.4
No	9	42.9
Unknown	1	4.8
<u>Cardiovascular disease</u>		
Yes	4	19.1
No	16	76.2
Unknown	1	4.8
<u>Chronic kidney disease</u>		
Yes	3	14.3
No	17	81.0
Unknown	1	4.8
<u>Chronic liver disease</u>		
Yes	1	4.8
No	20	95.2
Unknown	0	0.0
<u>Cancer</u>		
Yes	3	14.3
No	17	81.0
Unknown	1	4.8
<u>Chronic lung disease</u>		
Yes	1	4.8
No	19	90.5
Unknown	1	4.8
<u>Any immune deficiency</u>		
Yes	2	9.5
No	18	85.7
Unknown	1	4.8
<u>Other chronic disease/medical conditions/disability</u>		
Yes	2	9.5
No	19	90.5

Table 13.

Risk Factors		
	Frequency	Percent
<u>Smoking</u>		
Current	4	19.1
Former	6	28.6
No	11	52.4
<u>Alcohol</u>		
Current	2	9.5
Former	3	14.3
No	16	76.2
<u>Betel Nut</u>		
Current	2	9.5
Former	1	4.8
No	18	85.7
<u>Illegal Substances</u>		
Yes	1	4.8
No	20	95.2

Appendix 3. DPHSS COVID-19 Death Investigation Questionnaire

INTERVIEW INFORMATION				
Interviewee Name _____	Relationship to Decedent _____	Interview Method <input type="checkbox"/> Phone <input type="checkbox"/> Other <input type="checkbox"/> In-Person Specify: _____		
Interviewer Name _____	Interviewer Title _____	Interviewer Contact Information _____		
CASE INFORMATION				
Case Name _____		State Case ID / CDC nCoV ID _____		
Case Date of Birth (mm/dd/yyyy) _____	Case Sex _____	Case Race / Ethnicity _____	Height (ft/in) _____	Weight (lbs) _____
Marital Status <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Separated <input type="checkbox"/> Single and not living with partner <input type="checkbox"/> Single and living with partner		Languages <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Chamorro <input type="checkbox"/> Carolinian <input type="checkbox"/> Chuukese <input type="checkbox"/> English <input type="checkbox"/> Kosraean </div> <div> <input type="checkbox"/> Marshallese <input type="checkbox"/> Palauan <input type="checkbox"/> Pohnpeian <input type="checkbox"/> Yapese <input type="checkbox"/> Other: Specify _____ </div> </div>		
Isolation – Home Assessment				
1. How many bedrooms <u>and</u> bathrooms are in the home? _____		No. of Bedrooms _____		Number of Bathrooms _____
		Y	N	NA
2. If there are other members, is there an ability to stay in a separate room and use a separate bathroom from anyone who tests positive?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there anyone who can drop off food and other necessities to the home without entering?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Had the individual been residing in Guam since March 2020?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Household members (Please list all members who live in the same house as the decedent HH Sheet)				
Education and Employment Information (Decedent or Head of Household if Baby/Infant)				
6. What was the highest degree of education completed? <input type="checkbox"/> Never attended school <input type="checkbox"/> Grades 1 to 8 (Elementary to Middle School) <input type="checkbox"/> Grades 9 to 11 (Some High School) <input type="checkbox"/> Grade 12 or GED (High School Graduate) <input type="checkbox"/> College or technical school (1-3 years) <input type="checkbox"/> College for 4 or more years (college graduate)				
7. Occupation / Industry in 2020 : _____				
8. Occupation / Industry in 2021 : _____				
9. How has your primary employment been affected by the COVID-19 pandemic in 2020 ?				
10. How has your primary employment been affected by the COVID-19 pandemic in 2021 ?				

11. Based on everyone who lives in the household, what is the total annual income from all sources in **2020**?

- ☐ <\$10,000
- ☐ \$10,000 to less than \$20,000
- ☐ \$20,000 to less than \$35,000
- ☐ \$35,000 to less than \$60,000
- ☐ \$60,000 to less than \$75,000
- ☐ \$75,000 or more
- ☐ No response

12. Based on everyone who lives in the household, what is the total annual income from all sources in **2021**?

- ☐ <\$10,000
- ☐ \$10,000 to less than \$20,000
- ☐ \$20,000 to less than \$35,000
- ☐ \$35,000 to less than \$60,000
- ☐ \$60,000 to less than \$75,000
- ☐ \$75,000 or more
- ☐ No response

Health Insurance and Health Status Information

13. Health Insurance Status / Type in **2020**: _____

14. Health Insurance Status / Type in **2021**: _____

15. Did you lose your health insurance as a result of the COVID-19 pandemic in Guam? Why?

16. Has anyone in the family been tested for COVID-19?

- ☐ Yes ☐ No ☐ Unknown If yes, how many times: _____

17. Is anyone in the family aware that testing for COVID-19 is free?

- ☐ Yes ☐ No ☐ Unknown

18. Has anyone in the family tested positive for COVID-19?

- ☐ Yes ☐ No ☐ Unknown If yes, when: _____

19. Does anyone in the family have any chronic health conditions?

- ☐ Yes ☐ No ☐ Unknown If yes, specify (diabetes, hypertension, etc): _____

20. Does the patient/family household have one person who is their personal doctor or health care provider?

- ☐ Yes ☐ No ☐ Unknown

21. Was there a time in the past 12 months when someone needed medical attention but could not receive it?

- ☐ Yes ☐ No ☐ Unknown

If patient did not receive medical attention, explain (transportation, cost, etc).

22. How long has it been since you have last been seen by a physician or health care provider? _____

CHALLENGES FACED DURING THE PANDEMIC

23. Were there any challenges you encountered during the COVID-19 pandemic?

24. Were there any other challenges you encountered involving the death of the individual? (e.g. hospital care, funeral arrangements, testing issues)			
Financial Coping Information			
	Y	N	NA
25. Has anyone in the family experience financial hardships?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Did anyone in the family need financial assistance in order to pay for rent, bills, or food?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Did anyone in the family receive financial assistance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Did anyone in the family receive government assistance (e.g., PUA, WIC) ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wellness Information			
	Y	N	NA
29. Have you or your immediate family been incarcerated at any time since March 2020 ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Have you or your immediate family been victims of a crime since March 2020 ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Have you or your immediate family experienced domestic violence (or any type of abuse) since March 2020 ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Have you experienced any mental health issues (e.g. depression) as a result of the COVID-19 pandemic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Do you personally know anyone who has died from COVID-19 or from COVID-19 related illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Have you or your immediate family been discriminated against as a result of the COVID-19 pandemic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Before the COVID-19 pandemic, did you or anyone in your immediate family experience homelessness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. During the COVID-19 pandemic, did you or anyone in your immediate family experience homelessness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OPEN ENDED QUESTIONS			
37. Before the COVID-19 pandemic, where did you and your family usually receive your health information? (e.g. social media, news, radio, CDC)			
38. During the COVID-19 pandemic, where did you and your family usually receive your health information? (e.g. social media, news, radio, CDC)			
39. FOR MIGRANT FAMILIES: How long have you lived in Guam?			
40. FOR MIGRANT FAMILIES: What were the main reasons you moved to Guam?			
41. FOR MIGRANT FAMILIES: What has been the hardest part about moving to Guam?			

Decedents Symptoms (14-days prior to death)

42. Please describe the decedents (eating, drinking, bowel movement, etc) 7 days prior to death.

43. Date of first symptom onset (mm/dd/yyyy) _____ ☐ Asymptomatic ☐ Unknown

	Y	N	NA	NOTES
44. Fever ($\geq 100.4^{\circ}F$) or history of fever	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
45. Subjective Fevers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
46. Chills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
47. Congestion and/or runny nose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
48. Muscle and/or body aches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
49. Sore Throat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
50. Loss off smell and/or taste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
51. Headache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
52. Fatigue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
53. Cough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
54. Shortness of breath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
55. Nausea or vomiting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
56. Abdominal Pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
57. Diarrhea (≈ 3 loose stool within a 24hr period)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
58. Other Symptoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Specify:</i>

Patient Medical History / Pre-existing Conditions

	Y	N	NA	NOTES
59. Currently Pregnant (if yes, specify expected due date)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Due Date:</i> _____
60. Has a doctor ever diagnosed the decedent with diabetes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, was the decedent insulin dependent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
61. Hypertension/High blood pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
62. Cardiovascular disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
63. Chronic kidney disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If yes, was the decedent on dialysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
64. Chronic liver disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
65. Cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
66. Chronic lung disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
67. Any immune deficiencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
68. Current smoker (tobacco, vape, and/or marijuana)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
69. Former smoker (tobacco, vape, and/or marijuana)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
70. Current alcohol consumer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
71. Former alcohol consumer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
72. Current betel nut chewer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
73. Former betel nut chewer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
74. Current use of illegal substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
75. Former use of illegal substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
76. Other chronic disease/medical conditions/disabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Specify:</i>
77. Had the decedent received monoclonal antibody treatment for COVID-19 prior to death?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
78. Has the individual been vaccinated against COVID-19?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Pfizer-BioNTech <input type="checkbox"/> Moderna <input type="checkbox"/> Johnson and Johnson Janssen				
Date of Dose 1: _____ Date of Dose 2: _____ Date of Dose 3: _____				
If patient did not receive COVID-19 vaccine, explain (probe for barriers, misconceptions, etc).				

Exposure Settings

79. Where was the individual living when they started to feel sick or when they received their COVID-19 test?

- | | |
|--|--|
| <input type="checkbox"/> House/Single family home | <input type="checkbox"/> Nursing home |
| <input type="checkbox"/> Apartment | <input type="checkbox"/> Group home |
| <input type="checkbox"/> Acute care inpatient facility | <input type="checkbox"/> Rehabilitation facility |
| <input type="checkbox"/> Mobile home | <input type="checkbox"/> Other, specify: _____ |

80. Has the individual traveled outside of Guam in the 14-days prior to testing positive?

- ☐ Yes ☐ No ☐ Unknown If yes, specify location: _____ Date of travel: _____

81. Did the individual attended any gatherings in the 14-days prior to testing positive?

- ☐ Yes ☐ No ☐ Unknown If yes, specify location: _____ Date of gathering: _____

82. Did anyone in the family tested positive for COVID-19?

- ☐ Yes ☐ No ☐ Unknown If yes, when: _____

83. Did the individual have close contact with a confirmed COVID-19 case in the 14-days prior to testing positive?

- ☐ Yes ☐ No ☐ Unknown If yes, specify location: _____ Date of contact: _____

84. Did the individual have any visitors in the 14-days prior to testing positive?

- ☐ Yes ☐ No ☐ Unknown If yes, specify location: _____ Date of contact: _____

Exposure Settings Notes

ADDITIONAL QUESTIONS FOR INFANT DEATH

85. Please describe the baby/infant's birth (full-term, premature, birth weight, gestational diabetes, etc).

86. Please describe the baby/infant's health (eating, drinking, bowel movement, etc) 7 days prior to death.

87. Where did the baby/infant sleep and in what position did the baby/infant usually sleep in?

88. Baby/infants place of birth. (e.g., home birth, hospital)

	Y	N	NA
89. Did the baby/infant attend a nursery/daycare?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If no, who was the caretaker? _____			
What was the caretakers COVID-19 vaccination status? (circle one: FV / PV / UV)			
90. Did the baby/infant receive routine immunizations or well-baby checkup?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If no, explain.			

	Y	N	NA
91. Was the baby provided with a pacifier or bottle during sleep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
92. Were there any siblings or cousins who died from SIDS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
93. Do the parents' smoke?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, do the parents smoke in the house?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did either of the parent's smoke during pregnancy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
94. Do the parents consume alcoholic beverages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, how frequently? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did either of the parents use alcoholic beverages during pregnancy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
95. Have the parents ever used illegal substances in the past 6 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
96. Do the parents consume illegal substances?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did either of the parents use illegal substances during pregnancy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
97. Have the parents been incarcerated in the past 6 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
98. Did the mother seek prenatal care?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If no, explain.			
99. Did the mother breastfeed the baby/infant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CASE INFORMATION (Continued)**Isolation – Home Assessment**

Household members (Please list all members who live in the same house as the decedent HH Sheet)

Name	Sex	Age	Relationship	Vaccination Status	Medical Conditions or Disabilities
a.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
b.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
c.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
d.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
e.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
f.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
g.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
h.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
i.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
j.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
k.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
l.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
m.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
n.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	
o.				<input type="checkbox"/> FV <input type="checkbox"/> PV <input type="checkbox"/> UV	