IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF HAWAII

C.C. DAVIS, Individually and as Personal Representative of the Estate of DIAMOND DAVIS, Deceased; and KIM DAVIS,	**Civ. No. 07-00461 ACK-LEK**
Plaintiffs,	
vs.	
UNITED STATES OF AMERICA,	
Defendant.	

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION

On September 5, 2007, Plaintiffs, C.C. Davis ("Mr. Davis"), individually and in his capacity as the personal representative of the estate of his deceased daughter, Diamond Davis ("Diamond"), and Kim Davis ("Mrs. Davis"), Diamond's mother, filed a complaint against Defendant, the United States of America, pursuant to the Federal Tort Claims Act ("FTCA"), 28 U.S.C. §§ 1346, 2671 et seq.[1/] Plaintiffs assert claims of medical negligence and loss of consortium in connection with treatment that Diamond received on May 2, 2004 at Waianae Coast Comprehensive Health Center ("Waianae Coast"), which is operated by the United States pursuant to the Federally Supported Health

[1/] The complaint was also filed against Waianae Coast Comprehensive Health Center, Jeffrey Ching, M.D., and Dan Smith. On November 29, 2007, the parties stipulated to dismiss the claims against those Defendants with prejudice.

Centers Assistance Act of 1992, 42 U.S.C. §§ 233(g)–(n). Compl. ¶ 4; Answer ¶ 4 (admitting that Waianae Coast is a federally supported health center). Plaintiffs allege that Waianae Coast's employees, Jeffrey Ching, M.D. ("Dr. Ching"), and Physician's Assistant Dan Smith ("P.A. Smith"), breached the applicable standards of care in treating Diamond. They further claim that the United States is vicariously liable for the negligence of its employees under the doctrine of respondeat superior.

This Court has jurisdiction under the FTCA, and venue is proper since the events that gave rise to this action occurred within this district. See 28 U.S.C. §§ 1346(b), 1391(e)(2). An eight-day bench trial was commenced on April 28, 2009 and completed on May 8, 2009.[2/] Having heard and weighed all the

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[2/] After Plaintiffs rested their case on May 5, 2009, the United States made an oral motion for a "directed verdict." 5/5/09 a.m. Transcript of Proceedings at 9. A motion for a directed verdict, now called a motion for judgment as a matter of law, is made pursuant to Fed. R. Civ. P. 50, but that rule does not apply in bench trials. See Fed. R. Civ. P. 50(a)(1) (explaining that the rule applies "[i]f a party has been fully heard on an issue during a jury trial"); Ortloff v. United States, 335 F.3d 652, 660 (7th Cir. 2003) ("[A] directed verdict pursuant to Rule 50(a) is appropriate only in a jury trial."), overruled on other grounds as stated in Parrott v. United States, 536 F.3d 629, 635 (7th Cir. 2008); 9B Charles Alan Wright & Arthur R. Miller, Federal Practice and Procedure § 2523, at 229–31 (3d ed. 2008) ("The motions described in Federal Rule 50 are available only in cases tried to a jury that has the power to return a binding verdict. Thus, it does not apply to cases tried without a jury or to those tried to the court with an advisory jury." (footnote omitted)). As such, this Court construes the United States's motion for a directed verdict as one for judgment on partial findings under Fed. R. Civ. P. 52(c).
(continued...)

evidence and testimony adduced at the trial, having observed the demeanor of the witnesses and evaluated their credibility and candor, having heard the arguments of counsel and considered the memoranda submitted, and pursuant to Fed. R. Civ. P. 52(a)(1), this Court makes the following findings of fact and conclusions of law. Where appropriate, findings of fact shall operate as conclusions of law, and conclusions of law shall operate as findings of fact.

FINDINGS OF FACT

1. This Court will begin by outlining Diamond's medical history and the events that took place in May 2004 that gave rise to this litigation. The Court will then address the factual aspects of Plaintiffs' three principal theories of liability.

[2/](...continued)
That provision states in relevant part that:

> If a party has been fully heard on an issue during a nonjury trial and the court finds against the party on that issue, the court may enter judgment against the party on a claim or defense that, under the controlling law, can be maintained or defeated only with a favorable finding on that issue. The court may, however, decline to render any judgment until the close of the evidence.

Fed. R. Civ. P. 52(c). Consistent with the discretion afforded by this provision, this Court has declined to render judgment until the close of evidence. See id. In view of the decision herein, the United States's motion is moot.

I. Background

A. Diamond's Medical History

2. Born on January 13, 1997, Diamond spent the first three years of her life at the Kapiolani Medical Center, the first two of which were spent in the intensive care unit. Def. Exs. 300–03; 4/29/09 a.m. Transcript of Proceedings ("Tr.") at 3–4, 73 (Mr. Davis).[3/] She was born premature at the gestational age of twenty-six weeks. Def. Exs. 300–03; 4/29/09 a.m. Tr. at 3–4 (Mr. Davis). She weighed less than two pounds at birth and had a number of complications and conditions related to her prematurity. Pl. Ex. 13; 4/29/09 a.m. Tr. at 72 (Mr. Davis).

3. One such condition was hydrocephalus. There was bleeding in the ventricles, which are fluid-filled spaces in the brain. As the ventricles heal, they scar such that the normal flow of fluid does not occur and the fluid builds up in the brain. 4/30/09 p.m. Tr. at 3 (Dr. Okihiro). As a result of the hydrocephalus, Diamond required a surgical procedure to place a ventriculoperitoneal ("VP") shunt inside her skull to relieve the fluid pressure. Def. Ex. 303; 4/29/09 a.m. Tr. at 5 (Mr. Davis); 4/30/09 p.m. Tr. at 2 (Dr. Okihiro); 5/6/09 p.m. at 18 (Dr. Goodhue); 5/7/09 p.m. Tr. at 16–17 (Dr. Yim). The fluid was

[3/] The record citations herein are to the rough draft of the transcript of proceedings because the final transcript is not yet available.

diverted through a tube into her abdomen. 4/29/09 p.m. Tr. at 53 (Dr. Okihiro).

4. Diamond received her nutrition through a gastric tube and she breathed through a tracheotomy tube. Def. Ex. 303. For the first three years of her life, she required the assistance of a ventilator. Def. Ex. 303. Diamond received supplemental oxygen until March 2003. 4/29/09 p.m. Tr. at 64 (Dr. Okihiro). She suffered from bronchopulmonary dysplasia, a chronic lung disease that manifests in premature babies who require long periods of ventilation. Def. Ex. 303 at 1; 4/29/09 a.m. Tr. at 77 (Mr. Davis); 4/29/09 p.m. Tr. at 53 (Dr. Okihiro); 5/5/09 a.m. Tr. at 33 (Dr. Brill). As a result of the ventilation, the lungs are scarred and there is a loss of lung units that are essential for the exchange of oxygen and carbon dioxide. 5/5/09 a.m. Tr. at 34 (Dr. Brill).

5. Because of her chronic lung condition, Diamond was prone to upper respiratory infections, but her parents, her primary care physician, May Okihiro, M.D. ("Dr. Okihiro"), and the doctors of Waianae Coast's pediatrics group were successful in treating her condition. 4/29/09 p.m. Tr. at 91 (Dr. Okihiro); 4/30/09 a.m. Tr. at 85 (Dr. Okihiro). At times, Diamond's respiratory infections required hospitalization and she was transferred from Waianae Coast to Kapiolani Medical Center. 4/29/09 p.m. Tr. at 72–76, 86–89 (Dr. Okihiro).

6. By December 2003, Diamond had made progress and her doctors were considering the removal of her tracheotomy tube. 4/29/09 p.m. Tr. at 94 (Dr. Okihiro); Pl. Ex. 40.

B. Overview of the Events in May 2004

7. On May 2, 2004 at approximately 8:35 p.m., Mr. Davis brought Diamond to Waianae Coast's emergency department with history of vomiting, coughing, and decreased oral intake. 4/28/09 a.m. Tr. at 22, 31 (P.A. Smith); 4/29/09 a.m. Tr. at 24, 56, 85–86 (Mr. Davis); 5/6/09 a.m. Tr. at 3–6 (N. Bacerra); Pl. Ex. 47 at 2. Diamond received medical treatment from Dr. Ching, P.A. Smith, and Beate Bacerra, R.N. ("Nurse Bacerra"), all of whom were employees of Waianae Coast and provided medical care to Diamond within the course and scope of their employment. Compl. ¶ 26; Answer ¶¶ 4, 26, 11; 5/5/09 p.m. Tr. at 91–92 (N. Bacerra). Diamond was diagnosed with bronchiolitis (inflammation and infection of the tiny lung airways often caused by a virus), possible early pneumonitis (inflamation of the lungs), and mild dehydration. 4/28/09 a.m. Tr. at 37–38 (P.A. Smith); 4/28/09 p.m. Tr. at 34, 36 (Dr. Ching). For the dehydration, Diamond received intravenous fluids, and, for the possible pneumonitis, she received intravenously an antibiotic called rocephin. 4/28/09 a.m. Tr. at 39, 45 (P.A. Smith); 4/28/09 p.m. Tr. at 9–10 (P.A. Smith); Pl. Ex. 47 at 3. Diamond was discharged from Waianae Coast at 11:30 p.m. 4/28/09 a.m. Tr. at 46 (P.A. Smith).

8. Mr. Davis took Diamond home, fed her some fluid, and put her to bed. He fell asleep beside her at approximately 12:45 a.m. on May 3, 2004. 4/29/09 p.m. Tr. at 36 (Mr. Davis). He awoke two hours later at 2:45 a.m. to find that Diamond was not breathing. 4/29/09 p.m. Tr. at 37 (Mr. Davis). Her eyes were open and her face was purple and wet with water. 4/29/09 a.m. Tr. at 49–50 (Mr. Davis). At 3:07 a.m., Mr. Davis returned to the emergency department of Waianae Coast with Diamond. She was not breathing, had no heart beat, and was unresponsive on arrival. Pl. Exs. 50, 55; 5/6/09 a.m. Tr. at 35 (N. Bacerra). Advanced life support was initiated immediately. 5/6/09 a.m. Tr. at 35 (N. Bacerra). Diamond never regained a heartbeat despite twenty-one minutes of cardiopulmonary resuscitation, medications, intubation, and oxygenation. Pl. Ex. 50 at 1, 3, 5. She was pronounced dead at 3:28 a.m. Pl. Exs. 50, 55.

9. The next day, May 4, 2004, an autopsy of Diamond was performed by the First Deputy Medical Examiner of the City and County of Honolulu, William Goodhue, M.D. ("Dr. Goodhue"). 5/6/09 p.m. Tr. at 9 (Dr. Goodhue). He thereafter prepared a report of his findings. Pl. Ex. 51.

10. Before trial, the parties stipulated that, just prior to Diamond's death on May 3, 2004, her life expectancy was an additional twenty-three years, i.e., to age thirty. However, the parties further agreed that their stipulation as to life

expectancy would not preclude any testimony or evidence at trial regarding Diamond's medical and physical conditions that may have decreased her life expectancy or caused her death prior to age thirty.

II. Plaintiffs' Three Theories of Liability

11. With the foregoing in mind, this Court will now address Plaintiffs' three theories of liability. They assert that, in treating Diamond at Waianae Coast on May 2, 2004, the medical staff at the Waianae Coast emergency department, including, but not limited to, Dr. Ching, P.A. Smith, and Nurse Bacerra ("Staff at Waianae Coast"), breached the applicable standards of care by: (1) failing to recognize and appropriately treat her complex medical condition; (2) administering excessive intravenous fluids; and (3) failing to properly monitor and observe her for a reasonable time. Compl. ¶ 22. Plaintiffs maintain that, as a direct and proximate result of those breaches, Diamond died on May 3, 2004. Compl. ¶¶ 21–22. They further contend that, as a consequence of Diamond's death, Diamond's estate has suffered damages and Mr. and Mrs. Davis have sustained a loss of love, affection, society, and consortium of Diamond. Compl. ¶¶ 23–24. Each of Plaintiffs' three theories is addressed in turn below.

A. Recognition and Treatment of Diamond's Complex Medical Condition

12. Plaintiffs contend that, in treating Diamond on May 2, 2004, the Staff at Waianae Coast failed to properly recognize and treat Diamond's complex medical condition because: (1) P.A. Smith did not locate Diamond's chart at Waianae Coast; (2) Diamond's primary care physician, Dr. Okihiro, was not contacted; and (3) Diamond should have been immediately transferred to Kapiolani Medical Center where more advanced and sophisticated care could have been provided. 5/8/09 p.m. Tr. at 4–5 (Plaintiffs' closing argument).[4/]

13. When Diamond was brought to Waianae Coast at 8:35 p.m. on May 2, 2004, she was initially seen by Nurse Bacerra. 5/6/09 a.m. Tr. at 64 (N. Bacerra); 4/28/09 a.m. Tr. at 19 (P.A. Smith). Nurse Bacerra has been employed in the emergency department at Waianae Coast since 1990. 5/5/09 p.m. Tr. at 91–92 (N. Bacerra). In addition to working at Waianae Coast, she has worked as a labor and delivery nurse in other medical facilities since 1986. 5/5/09 p.m. Tr. at 93 (N. Bacerra). She presently holds nursing licenses in Hawai'i, California, and Germany. 5/5/09 p.m. Tr. at 94 (N. Bacerra).

[4/] While this claim is phrased broadly, this Court does not read it as embracing, and being duplicative of, Plaintiffs' other claims that Diamond received excessive intravenous fluids and that Diamond was not monitored and observed for a reasonable time. This Court will address those other claims separately below.

14. Mr. Davis reported to Nurse Bacerra that Diamond had thrown up twice that afternoon and that she was restless and congested. 5/6/09 a.m. Tr. at 6 (N. Bacerra). He was concerned that Diamond was dehydrated. 5/6/09 a.m. Tr. at 6 (N. Bacerra). Nurse Bacerra noted that Diamond weighed 18 kg and that she appeared awake and alert, but she had a stuffy nose. 5/6/09 a.m. Tr. at 6, 9 (N. Bacerra). Her eyes were open and she was responsive. 5/6/09 a.m. Tr. at 7 (N. Bacerra). Nurse Bacerra took Diamond's vital signs, which she perceived to be normal. 5/6/09 a.m. Tr. at 7 (N. Bacerra); 4/29/09 a.m. Tr. at 24 (Mr. Davis); Pl. Ex. 47 at 2. Nurse Bacerra further noted that Diamond was taking albuterol and pulmicort, both of which are medications for asthma and congestion. 5/6/09 a.m. Tr. at 10 (N. Bacerra). Mr. Davis explained that Diamond was born at twenty-five weeks and that she had a shunt, tracheotomy, and gastric tube. 5/6/09 a.m. Tr. at 12 (N. Bacerra); Pl. Ex. 47 at 2. Nurse Bacerra noted that Diamond had "PBD," but she meant "BPD," which she understood to be a chronic pulmonary disease. 5/6/09 a.m. Tr. at 11 (N. Bacerra); Pl. Ex. 47 at 2.

15. After Nurse Bacerra's initial assessment, P.A. Smith examined Diamond. 4/28/09 a.m. Tr. at 37–38 (P.A. Smith). He has worked at Waianae Coast since 1976. 4/28/09 a.m. Tr. at 17 (P.A. Smith). Roughly half of the patients that P.A. Smith has treated at Waianae Coast have been pediatric patients.

4/28/09 a.m. Tr. at 85–86 (P.A. Smith). He did not attend medical school, but was trained through his service in the United States Navy as a corpsman and the courses that he took in community college. 4/28/09 a.m. Tr. at 16–17, 85 (P.A. Smith). In 1983, P.A. Smith received his physician's assistant license. 4/28/09 a.m. Tr. at 18, 86 (P.A. Smith).

16. When he saw Diamond, P.A. Smith was in the middle of working a twenty-four-hour shift that ran from 8:00 a.m. Sunday to 8:00 a.m. Monday. 4/28/09 a.m. Tr. at 18 (P.A. Smith). He read the assessment that Nurse Bacerra had prepared, which reflected that Diamond had a number of medical conditions. 4/28/09 a.m. Tr. at 21 (P.A. Smith); Pl. Ex. 47 at 2. In light of those medical conditions, P.A. Smith would have preferred for Dr. Ching to see Diamond. 4/28/09 a.m. Tr. at 21, 80–81 (P.A. Smith). However, Dr. Ching was in a meeting, so P.A. Smith went to see her. 4/28/09 am. Tr. at 19, 21–22 (P.A. Smith).

17. P.A. Smith spoke with Mr. Davis and took Diamond's medical history. 4/28/09 a.m. Tr. at 22 (P.A. Smith). Mr. Davis stated that Diamond had been coughing and vomiting, that she had no fever or diarrhea, and that she had a VP shunt. 4/28/09 a.m. Tr. at 22, 31 (P.A. Smith); 4/29/09 a.m. Tr. at 24 (Mr. Davis). He further explained that Diamond had decreased oral intake; in other words, she had not been taking fluids. 4/28/09 a.m. Tr. at 22 (P.A. Smith). P.A. Smith was therefore concerned that

Diamond might be dehydrated. 4/28/09 a.m. Tr. at 22 (P.A. Smith). P.A. Smith was also informed that Diamond was on albuterol and pulmicort because she had previously been ill. 4/28/09 a.m. Tr. at 93 (P.A. Smith). This raised a concern of respiratory infection. 4/28/09 a.m. Tr. at 93 (P.A. Smith).

18. P.A. Smith performed an examination of Diamond. 4/28/09 a.m. Tr. at 22, 28 (P.A. Smith). He noted that she was alert, active, and arousable. 4/28/09 a.m. Tr. at 31, 93 (P.A. Smith); Pl. Ex. 47 at 1. Her temperature was 97.6 degrees Fahrenheit and her oxygen saturation was 98%. 4/28/09 a.m. Tr. at 31 (P.A. Smith); Pl. Ex. 47 at 1. P.A. Smith also performed an ear, nose, and throat examination, observing that Diamond had dry oral mucosa. 4/28/09 a.m. Tr. at 31 (P.A. Smith); Pl. Ex. 47 at 1. Her heart sounds were regular and her abdomen was soft and nontender. 4/28/09 a.m. Tr. at 31 (P.A. Smith); Pl. Ex. 47 at 1.

19. P.A. Smith listened to Diamond's lungs with a stethoscope and noted scattered course breath sounds. 4/28/09 a.m. Tr. at 32 (P.A. Smith); Pl. Ex. 47 at 1. She did not have wheezing or rales. 4/28/09 a.m. Tr. at 32 (P.A. Smith). There were no indications that she was in acute respiratory distress. 4/28/09 a.m. Tr. at 32 (P.A. Smith). While not in respiratory distress, Diamond's respiratory rate was a "little fast." 4/28/09 a.m. Tr. at 65 (P.A. Smith). A normal respiratory rate

is between 12 to 16 breaths per minute, while Diamond's rate was 22 breaths per minute. 4/28/09 a.m. Tr. at 65 (P.A. Smith).

20. P.A. Smith informed Mr. Davis that he would order blood cultures and x-rays. 4/29/09 a.m. Tr. at 24 (Mr. Davis). Upon leaving, he wrote an order for blood tests, a chest x-ray, and IV fluids. Pl. Ex. 47 at 3. P.A. Smith later visited Diamond and Mr. Davis, stating that Diamond looked dehydrated and that he would be giving Diamond some fluids and antibiotics. 4/29/09 a.m. Tr. at 25 (Mr. Davis).

21. P.A. Smith had not previously seen Diamond as a patient, but understood from Mr. Davis that Diamond's primary care physician was Dr. Okihiro, who worked at Waianae Coast. 4/28/09 a.m. Tr. at 23 (P.A. Smith). In order to obtain more medical history about Diamond, P.A. Smith attempted to contact Dr. Okihiro, but none of the doctors in Dr. Okihiro's pediatrics group took the call. 4/28/09 a.m. Tr. at 24–25 (P.A. Smith). Instead, a nurse who worked with the pediatrics group was responding to calls. 4/28/09 a.m. Tr. at 25 (P.A. Smith). At the time, Dr. Okihiro was out of state. 4/30/09 a.m. Tr. at 80, 86–87, 89–90 (Dr. Okihiro). In addition, because P.A. Smith knew that Diamond saw Dr. Okihiro, P.A. Smith assumed that Diamond had a medical chart at Waianae Coast. 4/28/09 a.m. Tr. at 28 (P.A. Smith). He sent a clerk to retrieve Diamond's chart, but the

clerk was unable to find the chart. 4/28/09 a.m. Tr. at 28 (P.A. Smith).

22. When Dr. Ching returned from his meeting, P.A. Smith spoke with him about Diamond. 4/28/09 a.m. Tr. at 33 (P.A. Smith); 4/28/09 p.m. Tr. at 28 (Dr. Ching). Dr. Ching is licensed to practice medicine in Hawai‘i and is board certified in internal medicine. 4/28/09 p.m. Tr. at 69–71 (Dr. Ching). Aside from his residency, Dr. Ching has spent his career working as an emergency room physician. 4/28/09 p.m. Tr. at 70 (Dr. Ching). He has been employed as an emergency room physician at Waianae Coast since 1995. 4/28/09 p.m. Tr. at 72 (Dr. Ching). Approximately one third of the patients that he has seen at Waianae Coast have been pediatric patients. 4/28/09 p.m. Tr. at 72–73 (Dr. Ching).

23. Dr. Ching was informed by P.A. Smith that Diamond had a complicated medical history, that she looked like she had an acute illness, that her vital signs were stable, and that he should see Diamond. 4/28/09 a.m. Tr. at 33 (P.A. Smith); 4/28/09 p.m. Tr. at 28 (Dr. Ching). P.A. Smith told Dr. Ching that he could not find Diamond’s chart and that he was not able to contact Dr. Okihiro. 4/28/09 a.m. Tr. at 25 (P.A. Smith).

24. Dr. Ching reviewed the results from the chest x-ray and blood tests with P.A. Smith. 4/28/09 a.m. Tr. at 34 (P.A. Smith); 4/28/09 p.m. Tr. at 29 (Dr. Ching). The x-ray was

hazy, but readable. 4/28/09 a.m. Tr. at 34–35 (P.A. Smith); Pl. Ex. 47 at 7; 4/28/09 p.m. Tr. at 9 (P.A. Smith); cf. 4/28/09 p.m. Tr. at 35 (Dr. Ching). It showed bilateral infiltrates, which indicated bronchiolitis and possibly early pneumonia. 4/28/09 a.m. Tr. at 34–35 (P.A. Smith); 4/28/09 p.m. Tr. at 9 (P.A. Smith); 4/28/09 p.m. Tr. at 35–36 (Dr. Ching). Dr. Ching explained at trial that any child with a cold who has bronchiolitis presumably has an early stage of pneumonia. 4/28/09 p.m. Tr. at 35–36 (Dr. Ching). He noted that there was no clear diagnosis of pneumonia, but that pneumonia was a consideration. 4/28/09 p.m. Tr. at 36 (Dr. Ching). The blood test results showed that Diamond's white blood cell count was 16 K/uL, which was elevated, as the normal count was 4 to 11 K/uL. 4/28/09 a.m. Tr. at 36 (P.A. Smith). An elevated white blood cell count indicated a possible infection. 4/28/09 a.m. Tr. at 37 (P.A. Smith); 4/28/09 p.m. Tr. at 36 (Dr. Ching).

25. P.A. Smith and Dr. Ching diagnosed Diamond as having bronchiolitis, possible pneumonitis, and mild dehydration. 4/28/09 a.m. Tr. at 37–38 (P.A. Smith); 4/28/09 p.m. Tr. at 34, 36 (Dr. Ching). Dr. Ching approved P.A. Smith's prior order of IV fluids. 4/28/09 p.m. Tr. at 37 (Dr. Ching). And, as a preventative measure against the possible pneumonia, P.A. Smith and Dr. Ching decided to give Diamond 900 mg of rocephin, an antibiotic. 4/28/09 a.m. Tr. at 39, 45 (P.A. Smith); 4/28/09

p.m. Tr. at 9–10 (P.A. Smith); Pl. Ex. 47 at 3. P.A. Smith therefore wrote an order for the rocephin, which Nurse Bacerra administered intravenously thereafter. 5/6/09 a.m. Tr. at 14 (N. Bacerra); Pl. Ex. 47 at 3; 4/28/09 a.m. Tr. at 37–38 (P.A. Smith).

26. Dr. Ching saw Diamond and spoke to Mr. Davis on two occasions. 4/29/09 a.m. Tr. at 25, 38 (Mr. Davis). During the first visit, Dr. Ching spoke to Mr. Davis about having blood tests, an x-ray, and IV fluid. 4/29/09 a.m. Tr. at 25 (Mr. Davis); 4/29/09 p.m. Tr. at 28–29 (Mr. Davis). The doctor also discussed his diagnosis of possible stomach flu, bronchiolitis, and early pneumonia. 4/29/09 p.m. Tr. at 28–29 (Mr. Davis). During the second visit, which occurred just prior to Diamond's discharge at 11:30 p.m., Dr. Ching spoke to Mr. Davis about a follow-up appointment with Dr. Okihiro and cautioned about any changes in Diamond's behavior that might indicate a blockage of her VP shunt requiring her to be brought to Kapiolani Medical Center for a CT scan and treatment.[5/] 4/28/09 p.m. Tr. at 84–84 (Dr. Ching); 4/29/09 p.m. Tr. at 29–30 (Mr. Davis). Mr. Davis

[5/] Plaintiffs have claimed that Diamond should have received a CT scan because, following her discharge on May 2, 2004, her VP shunt malfunctioned and caused her death. However, toward the end of trial and after their medical expert agreed that there was no evidence that Diamond's VP shunt malfunctioned, Plaintiffs withdrew their claim that Diamond should have received a CT scan. 5/1/09 a.m. Tr. at 50 (Dr. Ungar); 5/1/09 p.m. Tr. at 8–9 (Dr. Ungar); 5/7/09 p.m. Tr. at 14.

was instructed that he could give Pedialyte to Diamond through her gastric tube. Pl. Ex. 47 at 5, 7, 9; 4/29/09 a.m. Tr. at 39–40 (Mr. Davis); 4/28/09 a.m. Tr. at 72–74 (P.A. Smith); 4/28/09 p.m. Tr. at 59 (Dr. Ching).

27. During one of the visits, Dr. Ching performed a physical examination on Diamond. This finding is supported by Dr. Ching's testimony and a note that he dictated following Diamond's discharge. This finding is not supported by Mr. Davis's testimony.

a. Dr. Ching testified that he could not recall when he examined Diamond on May 2, 2004, but he was certain that he had, in fact, evaluated her. 4/28/09 p.m. Tr. at 28, 34, 50 (Dr. Ching). Dr. Ching admitted that he did not write any notes during the examination, but he did dictate a note that he performed a physical examination on Diamond. 4/28/09 p.m. Tr. at 52 (Dr. Ching). The note included a section entitled "PHYSICAL EXAMINATION" and included specific findings regarding, inter alia, Diamond's lungs, heart, and abdomen. Pl. Ex. 47 at 8. For example, Dr. Ching found that Diamond's heart had a "[r]egular rhythm without murmur." Pl. Ex. 47 at 8.

b. Mr. Davis testified that Dr. Ching never performed an examination of Diamond. 4/29/09 a.m. Tr. at 43 (Mr. Davis). Mr. Davis's testimony is outweighed by Dr. Ching's testimony and

dictated note. This Court finds Dr. Ching's presentation more credible.

28. This Court finds that, although P.A. Smith was unable to locate Diamond's chart or contact Dr. Okihiro, that shortcoming did not prevent the Staff at Waianae Coast from appropriately recognizing Diamond's complex medical condition. The staff were aware that Diamond had a VP shunt and a gastric tube. The staff further recognized that she had been taking medications, such as albuterol and pulmicort, and that she had a chronic lung condition.

29. The United States's medical expert, Judith Brill, M.D. ("Dr. Brill"), was found to be qualified as an expert in the areas of pediatrics, pediatric intensive care, emergency medicine, and anesthesia. 5/5/09 a.m. Tr. at 27 (Dr. Brill). She is a professor of pediatrics and anesthesiology at the UCLA Medical School. 5/5/09 a.m. Tr. at 12–13 (Dr. Brill). She is the chief of the division of critical care in the department of pediatrics as well as the director of the pediatric intensive care unit at the UCLA Ronald Reagan Medical Center. 5/5/09 a.m. Tr. at 13 (Dr. Brill). In her capacity as chief of critical care, Dr. Brill determines whether patients in the medical center's emergency department should be admitted to the intensive care unit. 5/5/09 a.m. Tr. at 19 (Dr. Brill). She also interacts with emergency medicine individuals at outside

hospitals with respect to patients who require transfer to UCLA and provides medical direction so that those patients are stabilized. 5/5/09 a.m. Tr. at 19 (Dr. Brill).

30. This Court credits Dr. Brill's testimony that the treatment provided to Diamond by the Staff at Waianae Coast was appropriate and within the standard of care. 5/5/09 a.m. Tr. at 60–61 (Dr. Brill). She explained that Diamond's possible respiratory infection was addressed. 5/5/09 a.m. Tr. at 60 (Dr. Brill). Dr. Brill further explained that the blood tests were appropriate and that obtaining a chest x-ray ensured that Diamond did not have a severe respiratory problem at the time. 5/5/09 a.m. Tr. at 61 (Dr. Brill).

31. This Court finds that the Staff at Waianae Coast had the capability to, and did, recognize and appropriately treat Diamond's complex medical condition on the night of May 2, 2004 within the standard of care in the medical community. Pl. Ex. 47; 5/5/09 p.m. Tr. at 8–9 (Dr. Brill). Under the circumstances, the Staff at Waianae Coast did not breach the applicable standards of care by deciding not to immediately transfer Diamond to Kapiolani Medical Center after she was initially assessed at Waianae Coast. This Court will later evaluate the more general question of whether Diamond should have been admitted to a hospital prior to discharge in its discussion of Plaintiffs'

contention that Diamond was not monitored and observed for a reasonable time.

B. Administration of Intravenous Fluids

32. Plaintiffs claim that the Staff at Waianae Coast breached the applicable standards of care in giving Diamond an excessive amount of intravenous fluids during her stay at Waianae Coast on May 2, 2004. They further contend that the excessive fluids caused her death. This Court will first evaluate the issue of liability and then consider the question of causation.

1. Liability

a. Intravenous fluids

33. Plaintiffs have suggested that Diamond should not have received fluids intravenously, but should have instead been given fluids through her gastric tube. 4/28/09 a.m. Tr. at 58–59; 5/1/09 a.m. Tr. at 14 (Dr. Ungar).

34. Plaintiffs point to the fact that, on January 13, 2002, when Diamond had a respiratory infection and had been admitted to Kapiolani Medical Center the day before, the treating doctor noted that Diamond had been started on medications specifically to "prevent fluid overload" and that she was mildly dehydrated, but that the staff would "hold off on an IV for now, but [would] instead space out her feeds, giving her PediaSure over two hours instead of boluses with additional Pedialyte for extra fluids." Pl. Ex. 28 at 2, 4.

35. The United States's expert witness, Gregory Yim, M.D. ("Dr. Yim"), was qualified as an expert in the areas of general pediatrics and pediatric neurology. 5/7/09 a.m. Tr. at 49 (Dr. Yim). He is board certified in both areas and has been licensed as a medical physician in the state since 1990. 5/7/09 a.m. Tr. at 38, 41. Presently, he practices at Kapiolani Medical Center and Windward Pediatrics. 5/7/09 a.m. Tr. 38–39.

36. Dr. Yim testified that, although Diamond was diagnosed with mild dehydration on January 13, 2002, as she was on May 2, 2004, Diamond's symptoms of dehydration were more severe on May 2, 2004 than they were on January 13, 2002. 5/8/09 a.m. Tr. at 29 (Dr. Yim). He observed that, in both instances, Diamond had a history of vomiting. 5/8/09 a.m. Tr. at 29 (Dr. Yim); Pl. Ex. 28 at 3. However, unlike on May 2, 2004, Diamond did not have a history of decreased oral intake and she did not have dry oral mucosa on January 13, 2002. 5/8/09 a.m. Tr. at 28, 30–31 (Dr. Yim); 4/28/09 a.m. Tr. at 31 (P.A. Smith); Pl. Ex. 47 at 1–2. Rather, on January 13, 2002, Diamond's mouth was described as pink and moist. 5/8/09 a.m. Tr. at 30 (Dr. Yim); Pl. Ex. 28 at 3.

37. In addition, on May 2, 2004, Diamond's sodium level was 142 mmol/L and her carbon dioxide level was 21 mmol/L. Dr. Yim testified that the sodium level was high and the carbon dioxide level was low, which, taken together, indicated that

Diamond was dehydrated. 5/7/09 a.m. Tr. at 85–86 (Dr. Yim). He acknowledged on crossexamination that the levels were within the normal ranges for females, with sodium having a range of 136–45 mmol/L and carbon dioxide having a range of 21–32 mmol/L. 5/7/09 p.m. Tr. at 55–57 (Dr. Yim). Still, he explained that Diamond's sodium level was low and her carbon dioxide level was high given the clinical setting on May 2, 2004, where Diamond had a history of decreased oral intake, vomiting, and dry oral mucosa. 5/7/09 p.m. Tr. at 55–56 (Dr. Yim). Dr. Yim contrasted Diamond's sodium and carbon dioxide levels on May 2, 2004 to those she had on January 13, 2002, where her sodium level was lower at 138 mmol/L and her carbon dioxide level was higher at 25 mmol/L. 5/8/09 a.m. Tr. at 31 (Dr. Yim). This indicates that Diamond was less dehydrated on January 13, 2002 than she was on May 2, 2004.

38. Furthermore, the decision to give fluids intravenously was, under the facts of this case, a judgment call. This finding is supported by Plaintiffs' medical expert, James Ungar, M.D. ("Dr. Ungar"), and Dr. Brill.

a. Dr. Ungar is an emergency room doctor who this Court found to be qualified in the area of emergency medicine. 4/30/09 p.m. Tr. at 101 (Dr. Ungar). He has worked as an emergency room physician since 1972 and is board certified in emergency medicine. 4/30/09 p.m. Tr. at 97 (Dr. Ungar). He initially testified that, in hydrating a mildly dehydrated child

such as Diamond, the standard would be to give the child an antiemetic, which would settle the child's stomach, and then give the child trial dosages of feedings through the child's gastric tube. 5/1/09 a.m. Tr. at 14 (Dr. Ungar). Yet Dr. Ungar later conceded that the decision to hydrate Diamond through IV fluid therapy was appropriate and that the decision to give the fluid through an IV, as opposed to her gastric tube, was a judgment call. 5/1/09 p.m. Tr. at 3–4 (Dr. Ungar).

b. Dr. Brill similarly testified that it is a judgment call as to whether dehydration therapy occurs orally or intravenously. 5/5/09 p.m. Tr. at 87 (Dr. Brill).

39. Finally, as Dr. Ching and P.A. Smith have explained, Diamond was presented on May 2, 2004 with a history of vomiting when she had been given fluids through her gastric tube at home. 4/28/09 a.m. Tr. at 67, 94 (P.A. Smith); 4/28/09 p.m. Tr. at 37 (Dr. Ching). If fluids had been administered through Diamond's gastric tube at Waianae Coast, they probably would have been difficult to absorb and might have resulted in more vomiting. 4/28/09 a.m. Tr. at 94 (P.A. Smith). Indeed, Nurse Bacerra testified that Diamond had dry heaves just before the IV was started and that she spit out clear stomach mucous. 5/7/09 a.m. Tr. at 8 (N. Bacerra). Dr. Ching further explained that, because an IV had already been placed to draw blood, there was no

additional difficulty or discomfort in giving fluids to Diamond intravenously. 4/28/09 p.m. Tr. at 37 (Dr. Ching).

40. Under the circumstances, this Court finds that the Staff at Waianae Coast did not breach the applicable standard of care in deciding to hydrate Diamond through an IV, as opposed to through her gastric tube.

b. Amount of fluids

41. The parties dispute the amount of IV fluid that Diamond received during her stay at Waianae Coast on May 2, 2004. Plaintiffs contend that Diamond received a total of at least 800 ml of fluid, whereas the United States maintains that she only received 500 ml.

42. P.A. Smith's order for Diamond's intravenous fluids initially read: "IV NS 500ml bolus, Then 500ml/hr TKO [after] bolus." Pl. Ex. 47 at 3; 4/28/09 a.m. Tr. at 41–42 (P.A. Smith); 5/6/09 a.m. Tr. at 74 (N. Bacerra). "NS" stands for normal saline. 4/28/09 a.m. Tr. at 41 (P.A. Smith). The term "bolus" indicates that the "IV" or intravenous fluid should be infused "as quickly as possible." 4/28/09 a.m. Tr. at 43 (P.A. Smith). And "TKO" stands for "to keep open," which indicates that the IV should not be taken out after the bolus in the event that medications have to be administered. 4/28/09 a.m. Tr. at 44 (P.A. Smith). With these abbreviations in mind, the order read: "IV [normal saline] bolus, Then 500ml/hr [to keep open after]

bolus." Pl. Ex. 47 at 3; 4/28/09 a.m. Tr. at 41–44 (P.A. Smith). After writing the order, P.A. Smith placed it in a rack for pick up by Nurse Bacerra. 4/28/09 a.m. Tr. at 49 (P.A. Smith); 5/6/09 a.m. Tr. at 15 (N. Bacerra). P.A. Smith later consulted with Dr. Ching about how much fluid to give Diamond, and Dr. Ching told him that the fluids should not exceed 1,000 ml. 4/28/09 a.m. Tr. at 48 (P.A. Smith).

43. At 9:05 p.m., Nurse Bacerra picked up the IV order. Pl. Ex. 47 at 3. She thereafter assembled a pediatric IV setup. 4/28/09 a.m. Tr. at 49 (P.A. Smith); 5/6/09 a.m. Tr. at 14, 22 (N. Bacerra); 5/7/09 a.m. Tr. at 2, 18 (N. Bacerra). The IV setup included an IV bag that contained 1,000 ml of normal saline fluid. 4/28/09 a.m. Tr. at 94 (P.A. Smith); 5/6/09 a.m. Tr. at 22 (N. Bacerra). IV tubing was connected to the IV bag and the tubing extended 4 to 6 inches below the IV bag. 4/28/09 a.m. Tr. at 94–95 (P.A. Smith); 5/6/09 a.m. Tr. at 23 (N. Bacerra). The IV tubing ran into a fluid volume chamber called a buretrol, which could hold up to 150 ml of fluid. 4/28/09 a.m. Tr. at 95 (P.A. Smith); 4/28/09 p.m. Tr. at 1 (P.A. Smith); 4/28/09 p.m. Tr. at 40 (Dr. Ching); 5/6/09 a.m. Tr. at 22 (N. Bacerra). There was a dial on the tubing above the buretrol that opened and closed the flow of fluids from the bag to the chamber. 4/28/09 a.m. Tr. at 95 (P.A. Smith); 5/6/09 a.m. Tr. at 23 (N. Bacerra). Below the buretrol was tubing that was to be connected

to the patient. 4/28/09 a.m. Tr. at 95 (P.A. Smith); 5/6/09 a.m. Tr. at 23 (N. Bacerra). This tubing below the buretrol had a dial that controlled the flow of fluid from the buretrol to the patient. 5/6/09 a.m. Tr. at 23 (N. Bacerra).[6/] After assembling the IV setup, Nurse Bacerra filled up the buretrol and flushed the tubing to make sure there was no air in the tubing. 5/6/09 a.m. Tr. at 22–23 (N. Bacerra).

44. At 9:25 p.m., Nurse Bacerra started the infusion of the bolus. 5/6/09 a.m. Tr. at 19, 25–26, 30 (N. Bacerra); 4/28/09 p.m. Tr. at 86 (Dr. Ching); Ex. 47 at 4.[7/] In infusing the fluid on a bolus basis, the lower dial on the IV tubing

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[6/] This Court credits Nurse Bacerra's account of the IV setup that she used. Mr. Davis testified that a different IV setup was used in administering the fluids. This Court will discuss Mr. Davis's account below.

[7/] Nurse Bacerra's nursing notes reflect when Diamond's IV was started. Pl. Ex. 47 at 4. The time appears to be "2125" or 9:25 p.m. Pl. Ex. 47 at 4. The "2" in "25" is unclear and could be read as either a "2" or a "1." Pl. Ex. 47 at 4. This Court notes that the "2" does not have a curve at the top like the other "2"s in Nurse Bacerra's notes, but it does have a tail at the bottom like the other "2"s. Pl. Ex. 47 at 4. In other words, the "2" does not end in a downward motion, but in a sideward motion. Pl. Ex. 47 at 4. It clearly looks like a "2" to the Court.

At her deposition, Nurse Bacerra appears to have read the "2" as a "1." 5/6/09 a.m. Tr. at 79–82 (N. Bacerra). However, at trial, she testified that, after her deposition, she examined her notes again, which reflected that Diamond was sent for an x-ray at 9:10 p.m. 5/6/09 a.m. Tr. at 82 (N. Bacerra). Nurse Bacerra explained that the IV could not have been started at 9:15 p.m. because the x-ray generally takes at least fifteen minutes. 5/6/09 a.m. Tr. at 82 (N. Bacerra); 5/7/09 a.m. Tr. at 12 (N. Bacerra). Accordingly, she testified that the IV was started at 9:25 p.m. 5/6/09 a.m. Tr. at 18–20 (N. Bacerra).

beneath the buretrol was all the way open. 5/6/09 a.m. Tr. at 74 (N. Bacerra); 4/28/09 p.m. Tr. at 39 (Dr. Ching).

45. At approximately 9:30 p.m., Nurse Bacerra recalculated the amount of the IV fluid. 5/6/09 a.m. Tr. at 21, 30 (N. Bacerra). She noted that IV fluid was usually given in the amount of 20 ml per kg of body weight. 5/6/09 a.m. Tr. at 18–19 (N. Bacerra). Because Diamond weighed 18 kg, Nurse Bacerra determined that Diamond should receive 360 ml. 5/6/09 a.m. Tr. at 18 (N. Bacerra). Nurse Bacerra approached P.A. Smith and told him that the 500 ml that he had ordered would be a little bit too much. 4/28/09 a.m. Tr. at 50 (P.A. Smith). She explained that Diamond weighed 18 kg and asked if P.A. Smith wanted her to give an initial bolus of 500 or 360 ml. 4/28/09 a.m. Tr. at 42, 50 (P.A. Smith); 5/6/09 a.m. Tr. at 18, 20 (N. Bacerra). P.A. Smith recalculated the amount and reduced the 500 ml to 400 ml in his order both respect to the initial bolus and the fluid administered thereafter. 4/28/09 a.m. Tr. at 50 (P.A. Smith); 5/6/09 a.m. Tr. at 18–19 (N. Bacerra); Ex. 47 at 3. Thus, as revised, the order read: "IV NS 400ml bolus, Then 400ml/hr TKO [after] bolus." Pl. Ex. 47 at 3. P.A. Smith did not reduce the order to 360 ml because he rounded that figure up to 400 ml. 5/6/09 a.m. Tr. at 20 (N. Bacerra); 4/28/09 a.m. Tr. at 56 (P.A. Smith). Nurse Bacerra accepted the order. 4/28/09 a.m. Tr. at 50 (P.A. Smith). She interpreted it as instructing

that, after giving the initial bolus, she was supposed to give another 400 ml over an hour and then continue to give fluid at the "TKO" rate, which runs 50 ml per hour. 5/6/09 a.m. Tr. at 51, 54, 72–73 (N. Bacerra). Nurse Bacerra testified that, although not written in the order, it is a standard procedure to reassess the patient after each bolus. 5/6/09 a.m. Tr. at 73–74 (N. Bacerra). She further testified that, after administering the initial bolus, she checked Diamond's vital signs at 10:30 p.m., and her nursing notes so reflect. 5/6/09 a.m. Tr. at 25 (N. Bacerra); Pl. Ex. 47 at 4.

46. In administering the 400 ml bolus, Nurse Bacerra was careful not to allow the buretrol to become empty, because, if that happens, air goes into the tubing below the buretrol that is connected to the patient. 5/6/09 a.m. Tr. at 91 (N. Bacerra). She waited until there was about 10 to 20 ml of fluid in the buretrol and then filled it up. 5/6/09 a.m. Tr. at 91 (N. Bacerra). She explained that, after three such fill-ups, about 380 or 390 ml had been infused. 5/6/09 a.m. Tr. at 88–89, 91 (N. Bacerra); 5/7/09 a.m. Tr. at 22 (N. Bacerra). She did not document when she returned to the room to fill up the buretrol, but was able to calculate the amount that had been infused by memory. 5/6/09 a.m. Tr. at 88–90 (N. Bacerra). She testified that standard nursing procedures do not require that she record

each time she fills up the buretrol. 5/6/09 p.m. Tr. at 82 (N. Bacerra); 5/7/09 a.m. Tr. at 20 (N. Bacerra).

47. By 10:30 p.m., Nurse Bacerra had administered 400 ml of normal saline fluid. 5/6/09 a.m. Tr. at 25 (N. Bacerra). Diamond continued to receive fluids until she was discharged at 11:30 p.m. 4/28/09 a.m. Tr. at 71, 73 (P.A. Smith). The question is whether, during the one-hour period between 10:30 p.m. and 11:30 p.m., Diamond received 100 ml or 400 ml of fluid.

48. This Court finds that Diamond received 100 ml during that time and that she therefore received a total of 500 ml of fluid at Waianae Coast on May 2, 2004. This finding is supported by the testimony of Nurse Bacerra, P.A. Smith, and Dr. Ching. This finding is not supported by the notes that P.A. Smith and Dr. Ching dictated after treating Diamond on May 2, 2004. This finding is also not supported by Mr. Davis's testimony.

a. After Diamond was discharged on May 2, 2004, P.A. Smith and Dr. Ching believed that she had received 800 ml of fluid. P.A. Smith thought that Diamond had received the initial bolus of 400 ml of fluid and then 400 ml per hour for one hour pursuant to his order. 4/28/09 a.m. Tr. at 71 (P.A. Smith). Dr. Ching believed that Diamond had received 800 ml of fluid based on his review of the medical records and what he had been told by P.A. Smith. 4/28/09 p.m. Tr. at 61–62 (Dr. Ching). Dr. Ching

relied on the order written by P.A. Smith which required a 400 ml initial bolus and then 400 ml per hour, which Dr. Ching assumed had been administered for one additional hour. 4/28/09 p.m. Tr. at 62 (Dr. Ching).

b. P.A. Smith wrote in his notes that Diamond had received a total of 800 ml of normal saline. 4/28/09 a.m. Tr. at 76–77 (P.A. Smith); Pl. Ex. 47 at 5. In addition, he dictated a note for Dr. Ching stating that a total of 800 ml of normal saline had been infused. 4/28/09 a.m. Tr. at 76 (P.A. Smith); Pl. Ex. 47 at 6.

c. Following Diamond's death on May 3, 2004, the staff members who were involved with her treatment on May 2, 2004 evaluated and reviewed the treatment that had been provided. 4/28/09 a.m. Tr. at 78 (P.A. Smith); 4/28/09 p.m. Tr. at 45 (Dr. Ching). After that evaluation, P.A. Smith and Dr. Ching still believed that Diamond had received 800 ml of IV fluid. 4/28/09 a.m. Tr. at 78 (P.A. Smith); 4/28/09 p.m. Tr. at 45–46 (Dr. Ching).

d. P.A. Smith believed that Diamond had received 800 ml of normal saline until the morning of his deposition on April 4, 2008. 4/28/09 a.m. Tr. at 77, 79 (P.A. Smith). That morning, he spoke with Nurse Bacerra and asked her how much fluid she had given to Diamond. 4/28/09 a.m. Tr. at 79 (P.A. Smith); 5/6/09 a.m. Tr. at 49–50 (N. Bacerra). Nurse Bacerra responded that she

had given Diamond a total of 500 ml of fluid. 4/28/09 a.m. Tr. at 79 (P.A. Smith); 5/6/09 a.m. Tr. at 50 (N. Bacerra). She explained that she gave the initial 400 ml bolus and then added rocephin into 100 ml of fluid, for a total of 500 ml. 4/28/09 a.m. Tr. at 91 (P.A. Smith); 5/6/09 a.m. Tr. at 50 (N. Bacerra). P.A. Smith believed Nurse Bacerra's assessment of the amount of IV fluid because she was with Diamond more than he was and she was the one who administered the fluid. 4/28/09 a.m. Tr. at 87, 91 (P.A. Smith). He also found Nurse Bacerra's assessment credible based on his prior working relationship with her. 4/28/09 a.m. Tr. at 92 (P.A. Smith). P.A. Smith testified that he did not take any part in the administration of the IV fluids because that was not part of his role as a physician's assistant. 4/28/09 a.m. Tr. at 87 (P.A. Smith). Rather, his role was to perform an assessment and write orders. 4/28/09 a.m. Tr. at 88 (P.A. Smith).

e. During his deposition on April 10, 2008, Dr. Ching believed that Diamond had received 800 ml. 4/28/09 p.m. Tr. at 45 (Dr. Ching). But, at that point, he had not yet asked Nurse Bacerra if she had given 800 ml of fluid. 4/28/09 p.m. Tr. at 62 (Dr. Ching). After his deposition, Nurse Bacerra informed him that Diamond had received less than 800 ml. 4/28/09 p.m. Tr. at 46 (Dr. Ching). At trial, he believed that Diamond had, in fact, received less than 800 ml because Nurse Bacerra was the

person who had administered the fluid. 4/28/09 p.m. Tr. at 46–47 (Dr. Ching).

f. In her testimony, Nurse Bacerra agreed that, under P.A. Smith's revised order for IV fluids, she was supposed to give an additional 400 ml per hour after the initial 400 ml bolus. 5/6/09 a.m. Tr. at 91 (N. Bacerra). She acknowledged that she did not infuse the 400 ml in the hour that followed the bolus. 5/6/09 a.m. Tr. at 92 (N. Bacerra). She testified that she instead only gave 100 ml of fluid. 5/6/09 a.m. Tr. at 92 (N. Bacerra). Thus, from 10:30 p.m. to 11:30 p.m., Nurse Bacerra decided to give Diamond just 100 ml of additional fluid instead of the 400 ml that had been ordered by P.A. Smith. 5/6/09 a.m. Tr. at 92.

g. Nurse Bacerra explained the discrepancy. She testified that, after administering the 400 ml bolus, she took Diamond's vital signs and received an order from P.A. Smith to administer rocephin. 5/6/09 a.m. Tr. at 25–26, 29–30, 92 (N. Bacerra); Pl. Ex. 47 at 4. The rocephin came in a powder, so Nurse Bacerra diluted it with 3 to 5 ml of sterile water, mixed it up, drew it up in a syringe, and then added it to the buretrol through a port that was located on top of the buretrol. 5/6/09 a.m. Tr. at 26–27 (N. Bacerra). Rocephin is supposed to be diluted in 50 to 100 ml of fluid. 5/6/09 a.m. Tr. at 31, 92–93 (N. Bacerra). At the time, there were 20 to 30 ml left in the

buretrol, so, after adding the rocephin, Nurse Bacerra added 100 ml to the buretrol. 5/6/09 a.m. Tr. at 93 (N. Bacerra). Only 100 ml of fluid was added because, according to Nurse Bacerra, rocephin is not supposed to be added to a 400 ml bolus. 5/6/09 a.m. Tr. at 93 (N. Bacerra). In adding the rocephin, Nurse Bacerra turned down the dial below the buretrol so that the fluid infused at a lower rate. 5/6/09 a.m. Tr. at 92 (N. Bacerra); 5/6/09 p.m. Tr. at 76 (N. Bacerra). According to Nurse Bacerra, rocephin should not be infused any faster than 15 to 30 minutes. 5/6/09 p.m. Tr. at 76 (N. Bacerra).

h. Dr. Brill confirmed in her testimony that rocephin should be given in 100 ml of fluid and that it should not be administered in an IV that is being infused at a rate of 400 ml per hour. 5/5/09 p.m. Tr. at 30–31 (Dr. Brill).

i. After the rocephin was infused, Nurse Bacerra reassessed Diamond's condition. 5/6/09 a.m. Tr. at 50, 93 (N. Bacerra). In the reassessment, Nurse Bacerra noted that Diamond's vital signs were stable and that she had not thrown up since she had received IV fluids. 5/6/09 a.m. Tr. at 50 (N. Bacerra). Nurse Bacerra then approached P.A. Smith and told him that Diamond had received the initial bolus, that Diamond's vital signs were stable, that the rocephin had been administered, and that Mr. Davis was eager to go home. 5/6/09 a.m. Tr. at 50, 93 (N. Bacerra); 5/6/09 p.m. Tr. at 85 (N. Bacerra). Nurse Bacerra

testified that, during her conversation with P.A. Smith, she specifically informed him that she had only given Diamond 500 ml of fluid. 5/6/09 p.m. Tr. at 87 (N. Bacerra). Nurse Bacerra asked if it would be okay to discharge Diamond or whether P.A. Smith wanted her to receive more fluids. 5/6/09 p.m. Tr. at 85 (N. Bacerra). P.A. Smith advised Nurse Bacerra that Diamond could go home. 5/6/09 a.m. Tr. at 50, 93 (N. Bacerra). Nurse Bacerra observed that, upon discharge, approximately 500 ml of fluid was left in the saline bag. 5/6/09 p.m. Tr. at 88 (N. Bacerra).

j. It is unclear whether Nurse Bacerra told P.A. Smith that she had only given Diamond 500 ml of fluid. Although she testified that she made a statement to that effect, the testimony by P.A. Smith and Dr. Ching and the dictated note by P.A. Smith indicate that she did not. Under Waianae Coast's policies, Nurse Bacerra should have told P.A. Smith that she only gave 500 ml of fluid because the policies direct that a nurse must follow a physician's assistant's orders and inform a physician's assistant or a doctor if she believes that an order should be modified. 4/28/09 a.m. Tr. at 50–51 (P.A. Smith); 4/28/09 p.m. Tr. at 94–95 (Dr. Ching). While it is unclear whether Nurse Bacerra informed P.A. Smith that she only gave Diamond 500 ml of fluid, this Court credits Nurse Bacerra's testimony that she did, in fact, only give 500 ml of fluid,

because, as Dr. Ching and P.A. Smith explained, Nurse Bacerra was the person who administered the fluid. Moreover, her recollection of May 2, 2004 was much clearer than P.A. Smith's and Dr. Ching's.

k. Mr. Davis testified to a very different version of events. He testified that the IV setup did not include a buretrol. 4/29/09 a.m. Tr. at 29 (Mr. Davis). He also stated that, after the IV setup had been assembled, he asked Nurse Bacerra if there was an IV pump, which is a mechanical device that facilitates the administration of IV fluids. 4/29/09 a.m. Tr. at 26, 28 (Mr. Davis). The nurse returned with a pump, hooked it up to the IV bag, and pushed a couple of buttons. 4/29/09 a.m. Tr. at 26 (Mr. Davis). The pump beeped a couple of times and then Nurse Bacerra unhooked the pump and took it out of the room, which suggested that the pump was not working. 4/29/09 a.m. Tr. at 26 (Mr. Davis). She returned with a long bag. 4/29/09 a.m. Tr. at 26 (Mr. Davis). She placed the saline bag in the long bag, which had a small ball connected to it through tubing, squeezed the ball a couple of times, and placed the ball in Mr. Davis's hand. 4/29/09 a.m. Tr. at 26 (Mr. Davis). After Nurse Bacerra left, a man entered the room to check on the bag. 4/29/09 a.m. Tr. at 28 (Mr. Davis). Mr. Davis asked what the bag was, to which the man responded that it was a "bamboo bag." 4/29/09 a.m. Tr. at 28 (Mr. Davis). The man explained that the

bag put pressure on the IV bag, causing more fluid to come out. 4/29/09 a.m. Tr. at 28 (Mr. Davis). Mr. Davis testified that he squeezed the ball over the course of the next two hours until Diamond was discharged. 4/29/09 a.m. Tr. at 28–29, 37, 42 (Mr. Davis). He testified that he was in the room with Diamond the entire time. 4/29/09 a.m. Tr. at 30 (Mr. Davis). The Court finds Nurse Bacerra's testimony of the events of May 2, 2004 much more credible than Mr. Davis's.

l. The 1,000 ml bag of saline had markers on it indicating the amount of fluid remaining. 4/29/09 a.m. Tr. at 37 (Mr. Davis). Mr. Davis initially testified that, upon discharge, the saline bag had 100 to 150 ml remaining. 4/29/09 p.m. Tr. at 26 (Mr. Davis). He later testified that the fluid "was all gone" and that Diamond had received "all of it." 4/29/09 p.m. Tr. at 27, 37 (Mr. Davis). And, in discussing the administration of the rocephin, Mr. Davis first testified that the antibiotic was administered through a syringe directly into the IV port that was located on Diamond's hand. 4/29/09 a.m. Tr. at 30–31 (Mr. Davis). He thereafter testified that the antibiotics were administered through a small capsule in the IV tubing that was connected to Diamond's arm. 4/29/09 a.m. Tr. at 34 (Mr. Davis).

m. Terrell Demonia was working as an emergency room technician at Waianae Coast on May 2, 2004. 5/1/09 p.m. Tr. at 43 (Mr. Demonia). He testified that, at Waianae Coast,

pressure bags (or pressure infusers) were stored on top of the IV setup. 5/1/09 p.m. Tr. at 51 (Mr. Demonia). He explained that the pressure bag operates like a blood pressure cuff. 5/1/09 p.m. Tr. at 50 (Mr. Demonia). The saline bag is placed inside the pressure bag. 5/1/09 p.m. Tr. at 50 (Mr. Demonia). The pressure bag has a little tube that that connects it to a football-shaped pump. 5/1/09 p.m. Tr. at 50 (Mr. Demonia). When pumped, the bag applies pressure to the saline bag and causes a rapid flow of fluid into the patient. 5/1/09 p.m. Tr. at 50 (Mr. Demonia).

n. Mr. Demonia testified that he visited Diamond's room on May 2, 2004 and recalled seeing a pressure bag on the IV setup, but he could not remember whether it was hooked up to the saline bag. He testified that Mr. Davis pointed to the pressure bag and inquired about its purpose. 5/1/09 p.m. Tr. at 52 (Mr. Demonia). Mr. Demonia informed him that, if a patient needs to be infused quickly, the saline bag is placed inside the pressure bag and the ball is squeezed. 5/1/09 p.m. Tr. at 54 (Mr. Demonia). He did not instruct Mr. Davis to use the device. 5/1/09 p.m. Tr. at 54 (Mr. Demonia).

o. Nurse Bacerra could not recall at trial whether Mr. Demonia was working at Waianae Coast on May 2, 2004. 5/7/09 a.m. Tr. at 6 (N. Bacerra). However, she did recall that no pressure bag was placed around the saline bag on May 2, 2004.

5/6/09 a.m. Tr. at 47 (N. Bacerra); 5/6/09 p.m. Tr. at 80 (N. Bacerra). She testified that she would never hand a pressure bag bulb to a parent and instruct the parent to squeeze the bulb. 5/6/09 a.m. Tr. at 47 (N. Bacerra). Nurse Bacerra further testified that, if a buretrol were not used, then the pressure bag would likely have caused the fluid to go into Diamond with such force that it would have ruptured Diamond's vein, because a child such as Diamond has small and fragile veins. 5/6/09 a.m. Tr. at 49 (N. Bacerra). In addition, Nurse Bacerra testified that a buretrol had been used and that, if a pressure bag had been placed around the saline bag, a pressure relief valve on the buretrol would pop once the buretrol was filled with fluid. 5/6/09 a.m. Tr. at 22, 48–49 (N. Bacerra). Finally, Nurse Bacerra testified that either she or a medical technician had, on occasion, stayed and watched Diamond when Mr. Davis had asked to step outside of Diamond's room. 5/6/09 a.m. Tr. at 28 (N. Bacerra). In one such instance, Mr. Davis left to pick up some food. 5/6/09 a.m. Tr. at 28 (N. Bacerra).

p. This Court credits Nurse Bacerra's testimony that she used a buretrol in assembling the IV setup and that a pressure bag was not employed. This Court does not credit Mr. Davis's testimony that he used a pressure bag to pump 850 to 900 ml or "all" of the saline fluid into Diamond. This Court finds that Diamond received a total of 500 ml of fluid on May 2, 2004.

c. Whether the fluids were excessive

49. Having found that Diamond received 500 ml of fluid, the question narrows to whether that amount of fluid was excessive and its administration constituted a breach of the standard of care.

50. A standard formula for hydration therapy is to give, as a starting point, a bolus of 20 ml of fluid per kg of body weight. 5/5/09 a.m. Tr. at 52 (Dr. Brill); 5/7/09 a.m. Tr. at 83, 87, 89 (Dr. Yim); 4/28/09 p.m. Tr. at 39, 63 (Dr. Ching); 5/1/09 a.m. Tr. at 12–13 (Dr. Ungar). After this amount is given, the patient is to be reassessed to determine if additional fluid is required. 5/5/09 a.m. Tr. at 52 (Dr. Brill); 4/28/09 p.m. Tr. at 10 (P.A. Smith); 4/28/09 p.m. Tr. at 87 (Dr. Ching); 5/1/09 a.m. Tr. at 71–72, 74 (Dr. Ungar). This is the formula that Nurse Bacerra and P.A. Smith employed in determining the amount of fluids that Diamond should receive. 5/6/09 a.m. Tr. at 18–19, 21, 30 (N. Bacerra); 4/28/09 a.m. Tr. at 42, 50 (P.A. Smith).

51. Diamond was diagnosed as having mild dehydration. 4/28/09 a.m. Tr. at 52, 64 (P.A. Smith). Plaintiffs' expert, Dr. Ungar, testified that the formula only applies to cases of severe dehydration, whereas the United States's experts, Drs. Brill and Yim, stated that the formula also applies to cases of mild

dehydration. 5/1/09 a.m. Tr. at 12–13, 66–67 (Dr. Ungar); 5/5/09 a.m. Tr. at 52 (Dr. Brill); 5/7/09 a.m. Tr. at 87 (Dr. Yim).

52. In his report, Dr. Ungar stated that the formula represented the "maximum" amount of fluid that a patient with severe dehydration can receive. 5/1/09 a.m. Tr. at 71–72 (Dr. Ungar). However, when he was asked about this point in his deposition, he claimed that he never used the word "maximum." 5/1/09 a.m. Tr. at 71–72 (Dr. Ungar). He further qualified that the 20 ml per kg bolus is simply the "initial" infusion, which is followed by a reassessment. 5/1/09 a.m. Tr. at 71–72, 74 (Dr. Ungar). He made no mention of a reassessment in his report.

53. In light of the significant qualification that Dr. Ungar has made and the fact that he denied that he used the word "maximum" in his report, this Court declines to credit his opinion that the 20 ml per kg formula only applies in cases of severe dehydration. 5/1/09 a.m. Tr. at 12–13, 66–67 (Dr. Ungar). Instead, this Court credits the opinions of Drs. Brill and Yim that the formula also applies in cases of mild dehydration. 5/5/09 a.m. Tr. at 52 (Dr. Brill); 5/7/09 a.m. Tr. at 87 (Dr. Yim). Accordingly, this Court finds that, in cases of mild dehydration, the appropriate starting point is to give 20 ml of fluid per kg of body weight. After the bolus is administered, the patient should be reassessed to determine if additional fluids are required.

54. In this case, on May 2, 2004, Diamond was mildly dehydrated and weighed 18 kg. 4/28/09 a.m. Tr. at 52, 64 (P.A. Smith); Pl. Ex. 47 at 2. Therefore, under the formula, the appropriate initial bolus was 360 ml. P.A. Smith decided to round that number up to 400 ml. 5/6/09 a.m. Tr. at 20 (N. Bacerra); 4/28/09 a.m. Tr. at 56 (P.A. Smith). This Court finds that the decision to give an additional 40 ml of fluid in the initial bolus was not a breach of the standard of care. This finding is supported by the testimony of Nurse Bacerra and Dr. Brill. This finding is not supported by Dr. Ungar's testimony, though he did testify that, in the hour following the administration of the initial bolus, Diamond should have received 40 to 50 ml of maintenance fluid. 5/1/09 a.m. Tr. at 75–76 (Dr. Ungar). Thus, according to Dr. Ungar, by 11:30 p.m., Diamond should have received an initial bolus of 360 ml plus maintenance fluid of 50 ml, or a total of 410 ml.

a. Nurse Bacerra testified that an additional 40 ml of fluid made no difference especially because she was reassessing Diamond during the administration of the 400 ml bolus. 5/6/09 a.m. Tr. at 20–21 (N. Bacerra). After the IV was started, Nurse Bacerra returned every ten to fifteen minutes to see that the IV was running properly, to refill the 150 ml buretrol if it had been running low, and to check on Diamond's condition, particularly her respiration. 5/6/09 a.m. Tr. at 21

(N. Bacerra); 5/7/09 a.m. Tr. at 19 (N. Bacerra). Thus, from 9:25 p.m. to 10:30 p.m., Nurse Bacerra reassessed Diamond's condition at least four times. See 5/6/09 a.m. Tr. at 21 (N. Bacerra).

b. Dr. Brill testified that the additional 40 ml of fluid was an insignificant amount because it was less than 3 tablespoons. 5/5/09 a.m. Tr. at 53–54 (Dr. Brill). She explained that the amount might be significant for a child who weighed 720 grams, but not for a child such as Diamond who weighed 18 kg. 5/5/09 a.m. Tr. at 53–54 (Dr. Brill).

c. Dr. Ungar appears to have taken the position that any bolus of fluid that exceeded 360 ml would have been a breach of the standard of care. He did not specifically address whether 400 ml would have been excessive. This Court finds that Dr. Ungar's opinion is outweighed by the testimony of Nurse Bacerra and Dr. Brill, both of whom spoke to the specific question of whether 400 ml was an excessive initial bolus of fluid.

55. Following the administration of the initial 400 ml bolus, Nurse Bacerra administered 100 ml of fluid in giving Diamond the rocephin that P.A. Smith had ordered. There is no dispute that the rocephin was appropriately prescribed. This Court finds that it was within the standard of care to give the rocephin in 100 ml of fluid. This finding is supported by the testimony of Nurse Bacerra and Dr. Brill. This finding is not

supported by Dr. Ungar's testimony, though, to reiterate, he conceded that Diamond should have received 40 to 50 ml of maintenance fluid in the hour following the initial bolus.

a. As previously stated, Nurse Bacerra testified that she gave the rocephin in 100 ml of fluid because the antibiotic is supposed to be diluted in 50 to 100 ml of fluid.

b. Dr. Brill testified that rocephin is given in 100 ml of fluid and that the antibiotic was an important part of Diamond's treatment because there was concern that she had a respiratory infection coming on. 5/5/09 p.m. Tr. at 30–31 (Dr. Brill).

c. Dr. Ungar testified that it would have been excessive to give Diamond 500 ml of fluid because that amount exceeded 360 ml. 5/1/09 a.m. Tr. at 70 (Dr. Ungar). However, Dr. Ungar did not speak to the specific question of whether it was appropriate to give the Rocephin in 100 ml of fluid. Insofar as Dr. Ungar's testimony can be construed as asserting that it was inappropriate to give the rocephin in 100 ml of fluid, this Court finds that his testimony is outweighed by the testimony of Nurse Bacerra and Dr. Brill. In addition, this Court notes that Dr. Ungar testified that, after an initial bolus is given for dehydration, the patient should then, at minimum, receive "maintenance" fluid. 5/1/09 a.m. Tr. at 75–76 (Dr. Ungar). He testified that, in Diamond's case, in the hour following the

administration of the bolus, Diamond should have received 40 to 50 ml of maintenance fluid. 5/1/09 a.m. Tr. at 75–76 (Dr. Ungar). Dr. Ungar's testimony regarding maintenance fluid undermines his opinion that 360 ml was the maximum amount of fluid that Diamond should have received at Waianae Coast.

56. In summary, this Court finds that the Staff at Waianae Coast administered a proper amount of intravenous fluids to Diamond on May 2, 2004 within the standard of care in the medical community. 5/5/09 a.m. Tr. at 42, 60 (Dr. Brill); 5/5/09 p.m. Tr. at 1, 48 (Dr. Brill); 5/7/09 p.m. Tr. at 36 (Dr. Yim).[8/]

2. Whether the fluids caused Diamond's death

57. Although this Court has found that the Staff at Waianae Coast did not breach the applicable standards of care by giving Diamond excessive fluids, it will nevertheless assume for the sake of argument that the fluids were excessive and address the question of whether the fluids caused her death. Plaintiffs claim that the fluids overloaded Diamond's intravascular compartments and thereby caused pulmonary edema, which ultimately caused her heart to stop beating. The United States counters that Diamond did not die of fluid overload. It maintains that the cause of death was aspiration, natural causes, or a seizure.

[8/] This Court notes that Drs. Brill and Yim testified that, even if Diamond had received 800 ml of fluid at Waianae Coast, such fluid would not have been excessive. 5/5/09 p.m. Tr. at 50 (Dr. Brill); 5/7/09 a.m. Tr. at 81 (Dr. Yim).

a. Fluid overload and pulmonary edema

58. An overload of fluids can cause pulmonary edema. 4/28/09 p.m. Tr. at 16 (P.A. Smith); 4/28/09 p.m. Tr. at 77 (Dr. Ching); 5/5/09 p.m. Tr. at 62 (Dr. Brill). The condition of fluid overload occurs when a patient receives more fluid than the patient can handle, such that there is an expansion of the amount of fluid within the blood vessels. The fluid leaks out into organs and the organs become filled with edema. 5/5/09 a.m. Tr. at 43 (Dr. Brill).

59. Pulmonary edema occurs when the fluids leak from the blood vessels into lung tissue. 5/1/09 a.m. Tr. at 35, 37 (Dr. Ungar); 5/5/09 a.m. Tr. at 43 (Dr. Brill). This results in a decrease in lung mechanics. 5/1/09 a.m. Tr. at 37 (Dr. Ungar). The fluid then leaks into the alveoli, which are breathing sacs in the lungs that should only be filled with air. 5/1/09 a.m. Tr. at 37 (Dr. Ungar); 4/28/09 p.m. Tr. at 79 (Dr. Ching) (defining alveoli). The process can ultimately result in a person's demise. 5/1/09 a.m. Tr. at 35 (Dr. Ungar).

60. The questions are whether, assuming that the fluids that Diamond received at Waianae Coast on May 2, 2004 were excessive (notwithstanding that the Court has found that the fluids administered were not excessive), those fluids caused fluid overload and pulmonary edema and whether pulmonary edema caused her death. In deciding those questions, this Court will

evaluate the symptoms of pulmonary edema, one of the findings made during the resuscitation efforts on May 3, 2004, and Dr. Goodhue's autopsy report.

i. Symptoms of fluid overload and pulmonary edema

61. The symptoms of fluid overload and pulmonary edema include: (1) peripheral edema (leg and hand swelling); (2) rapid respiration; (3) air hunger; (4) oxygen saturation in the low 90s or 80s; (5) rapid heart rate; (6) frothing at the mouth; (7) an inability to lie flat and a desire to sit up and lean forward; (8) a cyanotic condition, which is a slight blue coloring of the skin that results from diminished oxygen. 4/28/09 p.m. Tr. at 10–11, 13 (P.A. Smith); 5/6/09 a.m. Tr. at 33 (N. Bacerra); 4/28/09 p.m. Tr. at 75–76 (Dr. Ching); 5/5/09 p.m. Tr. at 5 (Dr. Brill); 5/7/09 p.m. Tr. at 11–12 (Dr. Yim); 5/1/09 a.m. Tr. at 54–56 (Dr. Ungar).

62. A person suffering from fluid overload or pulmonary edema would exhibit signs within minutes to an hour after receiving the fluids. This finding is supported by the testimony of Dr. Yim, Dr. Ching, Dr. Brill, and P.A. Smith. This finding is not supported by Dr. Ungar's testimony.

a. Dr. Yim testified that, if excessive IV fluids caused pulmonary edema, the symptoms would appear within minutes. 5/7/09 p.m. Tr. at 11 (Dr. Yim). Similarly, Dr. Ching testified that a child who received excessive IV fluids would exhibit

symptoms of pulmonary edema "almost immediately." 4/28/09 p.m. Tr. at 77 (Dr. Ching).

b. Dr. Brill testified that a child who received excessive fluids would show symptoms within minutes to an hour after the fluids had been given. 5/5/09 p.m. Tr. at 3 (Dr. Brill). Likewise, P.A. Smith testified that he would expect to see some symptoms of fluid overload within an hour of the fluid administration. 4/28/09 p.m. Tr. at 11 (P.A. Smith).

c. Dr. Ungar testified that, if a child received excessive fluids, his "best guess" would be that signs of fluid overload would develop within an hour or two after the infusion. 5/1/09 a.m. Tr. at 80, 82 (Dr. Ungar). He noted that the more excessive the fluids, the earlier the symptoms would arise. 5/1/09 a.m. Tr. at 83 (Dr. Ungar).

63. During the time that Diamond was at Waianae Coast on May 2, 2004, she did not exhibit any signs of fluid overload or pulmonary edema. This finding is supported by the testimony of Dr. Ching, P.A. Smith, Nurse Bacerra, and Mr. Davis.

a. Dr. Ching testified that, if Diamond had been suffering from pulmonary edema when she was at Waianae Coast on May 2, 2004, he would have been able to recognize the symptoms. 4/28/09 p.m. Tr. at 75 (Dr. Ching). Dr. Ching did not see any signs of excessive fluids or pulmonary edema when he saw Diamond. 4/28/09 p.m. Tr. at 76–77, 80 (Dr. Ching).

b. Nurse Bacerra testified that, on May 2, 2004, Diamond did not show any signs of fluid overload or pulmonary edema. 5/6/09 a.m. Tr. at 33–34 (N. Bacerra). If she had such signs, Nurse Bacerra would have informed Dr. Ching. 5/6/09 a.m. Tr. at 55–56 (N. Bacerra). The first sign of fluid overload would be lower oxygenation. 5/6/09 a.m. Tr. at 33 (N. Bacerra). Diamond's oxygenation remained constant at 98%. 5/6/09 a.m. Tr. at 33 (N. Bacerra); Pl. Ex. 47 at 4. Nurse Bacerra explained that normal oxygenation is anything above 96%. 5/6/09 a.m. Tr. at 34 (N. Bacerra). In addition, Diamond rested flat on the bed the whole time she was receiving the IV. 5/6/09 a.m. Tr. at 33 (N. Bacerra). At the time of discharge, Diamond showed no sign of fluid overload. 5/6/09 a.m. Tr. at 32, 52 (N. Bacerra).

c. P.A. Smith testified that he did not see any symptoms of fluid overload or pulmonary edema at the time Diamond was discharged on May 2, 2005. 4/28/09 p.m. Tr. at 11, 13 (P.A. Smith). At that point, P.A. Smith walked into Diamond's room and saw her resting flat on the bed and the nurse attending to her. 4/28/09 p.m. Tr. at 12 (P.A. Smith). She did not appear to have any respiratory difficulty and her vital signs, oxygen saturation, and respiratory rate were fine. 4/28/09 p.m. Tr. at 12 (P.A. Smith). Diamond's respiratory rate was at 22 breaths per minute, which he believed to be a "little bit high," but it was the same as when she came in. 4/28/09 p.m. Tr. at 12 (P.A.

Smith). P.A. Smith would have expected her respiratory rate at discharge to be higher than when she had first arrived if she had been developing fluid overload. 4/28/09 p.m. Tr. at 12 (P.A. Smith). Diamond was not frothing at the mouth. 4/28/09 p.m. Tr. at 13 (P.A. Smith).

d. Mr. Davis testified that, at the time of discharge, Diamond was laying down and appeared weak. 4/29/09 a.m. Tr. at 47 (Mr. Davis). He picked her up and she lay across his arms. 4/29/09 a.m. Tr. at 47 (Mr. Davis). Mr. Davis's testimony indicates that Diamond was not suffering from fluid overload at the time of discharge.

64. After Diamond was discharged at 11:30 p.m., Mr. Davis took Diamond home, gave her some fluid, and put her down to sleep. 4/29/09 a.m. Tr. at 48–49 (Mr. Davis); 4/29/09 p.m. Tr. at 36 (Mr. Davis). Thereafter, he sat next to her for forty-five minutes, read scriptures, and prayed. 4/29/09 p.m. Tr. at 36 (Mr. Davis). At approximately 12:45 a.m. on May 3, 2004, more than two hours after the 400 ml bolus had been completed at 10:30 p.m., Mr. Davis lay down and slept. 4/29/09 p.m. Tr. at 36 (Mr. Davis). Mr. Davis did not testify that Diamond exhibited any signs of distress before he fell asleep.

65. This Court finds that, if the 400 ml of fluids that Diamond had received by 10:30 p.m. had caused fluid overload or pulmonary edema, Diamond would have exhibited symptoms before

her discharge at 11:30 p.m. And, if the additional 100 ml of fluids that Diamond received by 11:30 p.m. had caused fluid overload or pulmonary edema, Diamond would have exhibited signs by 12:45 p.m., when Mr. Davis lay down to sleep next to her. This finding undermines Plaintiffs' claim that fluid overload and pulmonary edema caused Diamond's death.

ii. The pinkish mucous

66. Pulmonary edema fluid is frothy (or foamy) and light tan (straw) or pink in color. 5/7/09 p.m. Tr. at 11–12 (Dr. Yim); 5/6/09 p.m. Tr. at 55 (Dr. Goodhue); 5/5/09 p.m. Tr. at 4 (Dr. Brill). When the Staff at Waianae Coast attempted to resuscitate Diamond on May 3, 2004, Nurse Bacerra observed that, as a result of CPR, "pinkish mucous" was coming out of Diamond's nose, mouth, and tracheotomy. 5/6/09 a.m. Tr. at 7, 41 (N. Bacerra); Pl. Ex. 50 at 5. Nurse Bacerra suctioned the mucous out. Pl. Ex. 50 at 5. The question is whether the pinkish mucous was pulmonary edema fluid.

67. Nurse Bacerra testified that, when Diamond returned on May 3, 2004, Diamond was not foaming at the mouth. 5/6/09 a.m. Tr. at 56 (N. Bacerra). She further testified that the pinkish mucous that she suctioned was not foamy. 5/6/09 a.m. Tr. at 57. She explained that the pinkish fluid had a fruity smell and that she believed that it was Pedialyte. 5/6/09 a.m. Tr. at 41, 44, 56–57 (N. Bacerra). Pedialyte is a clear liquid

substance that has a fruity smell that comes in orange and fruit punch flavors. 5/6/09 a.m. Tr. at 57 (N. Bacerra); 5/5/09 a.m. Tr. at 49 (Dr. Brill). Nurse Bacerra believed that Mr. Davis had given Diamond Pedialyte after Diamond had been discharged on May 2, 2004. 5/6/09 a.m. Tr. at 44 (N. Bacerra).

68. Prior to the discharge on May 2, 2004, Mr. Davis had asked Dr. Ching whether he could give Diamond some Pedialyte that he had at home. 4/29/09 a.m. Tr. at 39 (Mr. Davis). Dr. Ching responded that he could give her Pedialyte through her gastric tube. 4/28/09 p.m. Tr. at 59 (Dr. Ching). At trial, Mr. Davis denied that he gave Diamond Pedialyte when he took her home following discharge. 4/29/09 a.m. Tr. at 48 (Mr. Davis). He testified that he instead gave her approximately four ounces of PediaSure, a milky fluid designed to provide fiber and nutrition. 4/29/09 a.m. Tr. at 48 (Mr. Davis); 4/29/09 p.m. Tr. at 9 (Mr. Davis). Mr. Davis testified that he did not give Diamond Pedialyte because he knew that she had received a significant amount of fluid and he wanted to put some solid food in her stomach. 4/29/09 a.m. Tr. at 53 (Mr. Davis). Mr. Davis's testimony is corroborated by Dr. Goodhue's autopsy finding that Diamond had 2 ml of white, curd-like substance in her stomach. 5/6/09 p.m. Tr. at 50 (Dr. Goodhue); Pl. Ex. 51 at 7.

69. However, Mr. Davis's testimony is undermined by a report that was prepared by an investigator for the medical

examiner's office. Pl. Ex. 55. The report indicates that Mr. Davis told the investigator in an interview that, upon arriving home from Waianae Coast, Diamond "was given Pedialyte for dehydration via her G-tube." Pl. Ex. 55 at 5. In view of the report, as well as the fact that Mr. Davis inquired about Pedialyte prior to discharge and Nurse Bacerra's testimony that the pinkish mucous was fruity-smelling, this Court finds that Mr. Davis gave Diamond Pedialyte after Diamond was discharged on May 2, 2004 and possibly PediaSure as well.

70. Dr. Ungar testified that Nurse Bacerra's description of the pink, fruity-smelling fluid was consistent with a finding of pulmonary edema fluid. 5/1/09 a.m. Tr. at 42 (Dr. Ungar). Thus, by this testimony, the pinkish, fruity-smelling mucous that Nurse Bacerra suctioned from Diamond during the resuscitation efforts could conceivably be pulmonary edema fluid from Diamond's lungs, as opposed to Pedialyte from her stomach. However, Dr. Goodhue and Dr. Yim testified that pulmonary edema fluid does not have a smell. 5/6/09 p.m. Tr. at 57 (Dr. Goodhue); 5/8/09 a.m. Tr. at 49 (Dr. Yim). And Dr. Brill testified that pulmonary edema is not fruity smelling, but instead smells like blood. 5/5/09 a.m. Tr. at 49 (Dr. Brill). This Court finds that pulmonary edema fluid is not fruity-smelling. This Court also credits Nurse Bacerra's testimony that the pinkish mucous was not foamy.

71. Because the pinkish mucous was fruity-smelling and was not foamy, this Court finds that the mucous was not pulmonary edema fluid. In all likelihood, it was Pedialyte.

iii. Dr. Goodhue's Autopsy Report

72. On May 4, 2004, Dr. Goodhue performed an autopsy of Diamond. He prepared a report dated June 9, 2004. Pl. Ex. 51 at 3. At that point, he did not have significant information concerning Diamond's medical history or clinical treatment before her death. Instead, he had the investigator's report that his office had prepared. 5/6/09 p.m. Tr. at 26–27 (Dr. Goodhue); Pl. Ex. 55. The report did not discuss whether Diamond had been infused with any fluid on the night of May 2, 2004. 5/6/09 p.m. Tr. at 28 (Dr. Goodhue); Pl. Ex. 55.

73. In performing the autopsy, Dr. Goodhue observed with his naked eyes "moderate" amounts of blood and frothy fluid in Diamond's lungs. 5/6/09 p.m. Tr. at 37 (Dr. Goodhue); Pl. Ex. 51 at 6.

a. Dr. Ungar testified that the finding of moderate amounts of blood and frothy fluid was consistent with a description of pulmonary edema. 5/1/09 a.m. Tr. at 41 (Dr. Ungar).

b. Dr. Goodhue testified at trial. He served in the United States Army as a general pathologist for twenty-six years and, since 2001, he has worked as the First Deputy Medical

Examiner of the City and County of Honolulu. 5/6/09 p.m. Tr. at 4 (Dr. Goodhue). In the last eight years, he has performed approximately 1,500 forensic autopsies. 5/6/09 p.m. Tr. at 5–6 (Dr. Goodhue). About 100 of those autopsies involved children. 5/6/09 p.m. Tr. at 5 (Dr. Goodhue). Dr. Goodhue was qualified as an expert in the areas of clinical pathology, anatomical pathology, pediatric pathology, and forensic pathology. 5/6/09 p.m. at 2–8 (Dr. Goodhue).

c. Dr. Goodhue acknowledged that the blood and frothy fluid could have been pulmonary edema fluid, but explained that the autopsy's microscopic findings provided a better standard in determining whether pulmonary edema was the cause of death. 5/6/09 p.m. Tr. at 37–38 (Dr. Goodhue).

74. The microscopic findings showed pulmonary edema in the lungs, acute congestion of the heart, acute congestion of the liver, acute congestion of the kidneys, acute congestion of the adrenals, acute congestion of the thymus, and acute congestion of the spinal cord. Pl. Ex. 51 at 7–8. For purposes of these autopsy findings, the word "acute" indicates that a condition occurred suddenly or recently and was not "chronic" or longstanding. 5/6/09 p.m. Tr. at 14 (Dr. Goodhue); 5/1/09 a.m. Tr. at 58 (Dr. Ungar); 5/5/09 a.m. Tr. at 63 (Dr. Brill). This Court finds that the microscopic findings of pulmonary edema and acute congestion do not show that pulmonary edema was the cause

of death. This finding is supported by the testimony of Dr. Goodhue, Dr. Ching, Dr. Brill, and Dr. Yim. This finding is not supported by Dr. Ungar's testimony.

a. Dr. Goodhue testified that the finding of pulmonary edema was based on microscopic slides of each of Diamond's five lung lobes and that, looking at the slides, the air spaces in Diamond's lungs were generally clear and filled with air. 5/6/09 p.m. Tr. at 10 (Dr. Goodhue). He estimated that, based on the slides, a little less than 20% of the lungs had pulmonary edema fluid. 5/6/09 p.m. Tr. at 10 (Dr. Goodhue). He characterized the pulmonary edema as being "patchy" or "minimal." 5/6/09 p.m. Tr. at 10–11 (Dr. Goodhue). Dr. Goodhue testified that, if a person were to die from pulmonary edema, the majority of the person's lungs' airspaces would be filled with fluid. 5/6/09 p.m. Tr. at 58 (Dr. Goodhue). Dr. Goodhue testified that the amount of pulmonary edema that he observed in the slides did not support a finding that pulmonary edema was a cause of death. 5/6/09 p.m. Tr. at 10–11 (Dr. Goodhue).

b. Dr. Goodhue testified that the patchy or minimal pulmonary edema in Diamond's lungs was attributable to either her heart stopping or the resuscitation efforts by the emergency department of Waianae Coast on the morning of May 3, 2004. 5/6/09 p.m. at 10–12 (Dr. Goodhue). Dr. Goodhue explained that, when a person dies, the heart stops beating. As a result, the

circulation of blood is ineffective and the blood backs up in the blood vessels. The organs and tissues are deprived of oxygen and that results in damage to the cells and tissues. Among the cells damaged are the endothelial cells, which line the blood vessels. Spaces open up between the endothelial cells and small amounts of fluid leak out. The fluid is most likely to leak out in areas where the blood vessels are the least well supported, such as the lungs. Dr. Goodhue testified that, by virtue of this process, a minimal or small amount of pulmonary edema is seen in virtually every autopsy regardless of the cause of death. 5/6/09 p.m. at 12 (Dr. Goodhue).

c. Dr. Goodhue further testified that the findings of acute congestion in the organs were attributable to Diamond's heart stopping or her heart beating ineffectively as she approached death. 5/6/09 p.m. Tr. at 13–14 (Dr. Goodhue). He explained that the findings of acute congestion did not support a finding that Diamond was suffering from fluid overload at the time of her death or that she died of pulmonary edema. 5/6/09 p.m. Tr. at 14–15 (Dr. Goodhue).

d. Dr. Goodhue testified that, if a person were to sustain and die from fluid overload, there would be fluid dripping from the soft tissues and fluid in the body cavities. He explained that there were no such findings in Diamond's case. 5/6/09 p.m. Tr. at 15 (Dr. Goodhue).

e. Dr. Ching testified that the resuscitative efforts on May 3, 2004 could have caused a small amount of pulmonary edema. 4/28/09 p.m. Tr. at 80 (Dr. Ching).

f. Dr. Brill testified that the congestion of the heart, liver, adrenals, and thymus was due to the resuscitative efforts on May 3, 2004, particularly the CPR. 5/5/09 a.m. Tr. at 46–47 (Dr. Brill). She asserted that, if pulmonary edema had been the cause of death, the heart would have been described as having edema and as being swollen from fluid, as opposed to simply being congested. 5/5/09 a.m. Tr. at 48 (Dr. Brill). The same could be said of the liver, adrenals, and thymus. 5/5/09 a.m. Tr. at 48–49 (Dr. Brill).

g. Dr. Yim testified that the acute congestion was backed-up blood that was caused by the cardiovascular resuscitation attempts. 5/7/09 p.m. Tr. at 26–27 (Dr. Yim). He agreed with Dr. Goodhue that the congestion could also have been caused by the heart stopping. 5/7/09 p.m. Tr. at 27 (Dr. Yim). He also agreed that the patchy pulmonary edema that Dr. Goodhue observed could have resulted from Diamond's heart stopping. 5/7/09 p.m. Tr. at 31 (Dr. Yim).

h. Dr. Ungar testified that the findings of pulmonary edema and acute congestion showed that pulmonary edema was the cause of death. 5/1/09 a.m. Tr. at 47–48 (Dr. Ungar). He asserted that the finding of acute congestion showed that Diamond

suffered from fluid overload diffusely throughout her body. 5/1/09 a.m. Tr. at 41 (Dr. Ungar).

i. However, Dr. Ungar conceded that the advanced life support and CPR that Diamond underwent on May 3, 2004 could, to a certain degree, cause the organs of the body to become congested. 5/1/09 a.m. Tr. at 48 (Dr. Ungar). In addition, he conceded that, if Dr. Goodhue found that less than 20% of the cells in Diamond's lungs showed pulmonary edema, that finding would imply that the degree of pulmonary edema was not overwhelming. 5/1/09 a.m. Tr. at 94 (Dr. Ungar). He also stated that he would not disagree with Dr. Goodhue if Dr. Goodhue had stated that the finding of pulmonary edema was insignificant because the pulmonary edema fluid was in less than 20% of the cells. 5/1/09 a.m. Tr. at 94 (Dr. Ungar).

75. Dr. Goodhue acknowledged that approximately one year prior to the trial, he sent an e-mail to the United States's counsel. 5/6/09 p.m. Tr. at 44 (Dr. Goodhue). In that e-mail, he told counsel: "Yes the decedent did have pulmonary edema. Pulmonary edema can result from congestive heart failure due to volume overload." 5/6/09 p.m. Tr. at 45 (Dr. Goodhue). He further stated that: "It cannot be excluded that [congestive heart failure]/volume overload if present could have contributed to congestion and pulmonary edema. How much so? I don't know." 5/6/09 p.m. Tr. at 46–47 (Dr. Goodhue). Dr. Goodhue emphasized

the word “could” in bold letters. 5/6/09 p.m. Tr. at 47 (Dr. Goodhue).

76. The e-mail indicates that fluid overload, “if present,” could have been a possible cause of Diamond’s pulmonary edema and acute congestion. However, the question remains as to whether fluid overload was “present,” in other words, whether the fluids that Diamond received, even assuming that they were excessive under the applicable standard of care, caused the conditions of fluid overload and pulmonary edema. As previously stated, Dr. Goodhue has testified that his autopsy findings do not support the conclusion that there was fluid overload. 5/6/09 p.m. Tr. at 14–15 (Dr. Goodhue).

77. In addition, this Court has found that Diamond did not exhibit any symptoms of fluid overload or pulmonary edema before she was discharged from Waianae Coast at 11:30 p.m. on May 2, 2004 or before her father fell asleep an hour and fifteen minutes later at 12:45 a.m. on May 3, 2004. This suggests that the minimal pulmonary edema and acute congestion that were observed in Diamond’s lungs in the autopsy were not the result of fluid overload, but were instead caused by the resuscitative efforts that took place at approximately 3:00 a.m. on May 3, 2004 or by her heart stopping or beating ineffectively.

78. Furthermore, the e-mail does not address the critical question of whether pulmonary edema was the cause of

Diamond's death. This Court credits Dr. Goodhue's testimony that, if a person were to die from pulmonary edema, the majority of the airspaces in the person's lungs would be filled with fluid. 5/6/09 p.m. Tr. at 58 (Dr. Goodhue). Dr. Goodhue's review of the lung slides indicates that less than 20% of Diamond's lungs was filled with fluid, which establishes that Diamond did not die as a result of pulmonary edema.

79. After reviewing the foregoing evidence and testimony, this Court finds that, even assuming arguendo that the fluids that Diamond received on May 2, 2004 at Waianae Coast were excessive, Plaintiffs have failed to show with reasonable medical probability that those fluids gave rise to the condition of fluid overload and pulmonary edema. The minimal pulmonary edema and acute congestion observed in the autopsy were likely caused by the resuscitative efforts or by Diamond's heart stopping or beating ineffectively. The Court further finds that the minimal pulmonary edema observed in the autopsy did not cause Diamond's death. This Court will now address the other potential causes of Diamond's death.

b. Aspiration

80. The United States has suggested that Diamond died as a result of aspiration. Based on her experience and review of Diamond's medical records, Dr. Brill testified that Diamond was a

risk for aspirating or vomiting, which could block her airways and cause her death. 5/5/09 a.m. at 38–40 (Dr. Brill).

81. However, Dr. Goodhue testified that he saw no evidence of aspiration during the autopsy. 5/6/09 p.m. Tr. at 49 (Dr. Goodhue). He explained that, if Diamond had aspirated, he would have seen stomach contents in her lungs. 5/6/09 p.m. Tr. at 50 (Dr. Goodhue). He stated that there were no extraneous or foreign material in Diamond's lungs visible to the naked eye or microscopically. 5/6/09 p.m. Tr. at 50 (Dr. Goodhue). As such, he opined that aspiration was not the cause of Diamond's death. 5/6/09 p.m. Tr. at 50 (Dr. Goodhue). This Court credits Dr. Goodhue's testimony and therefore finds that aspiration was not the cause of death.

c. Natural causes and seizure

82. The remaining question is whether Diamond died as a result of natural causes, a seizure, or both. In the autopsy, Dr. Goodhue found that Diamond was born at a gestational age of 24 to 26 weeks. 5/6/09 p.m. Tr. at 16 (Dr. Goodhue). She had perinatal (which indicates that a condition occurred very shortly after birth) bronchopulmonary dysplasia disease of her lungs resulting from being placed on a ventilator. 5/6/09 p.m. Tr. at 16 (Dr. Goodhue). Dr. Goodhue found that Diamond had severe diffuse chronic interstitial pneumonitis, which is a severe

diffuse scarring of all portions of the lungs between the air sacs. 5/6/09 p.m. Tr. at 17 (Dr. Goodhue).

83. Dr. Goodhue also found that Diamond had polymicrogyria, which is a developmental malformation of the brain. 5/6/09 p.m. Tr. at 17 (Dr. Goodhue). When a person has polymicrogyria, the usual ridges and valleys in the brain are very closely packed together in small ridges. 5/6/09 p.m. Tr. at 17 (Dr. Goodhue). Dr. Goodhue also found that Diamond had hydrocephalus, which required a shunt to drain the cerebral fluid from her brain into her belly. 5/6/09 p.m. Tr. at 18 (Dr. Goodhue). Dr. Goodhue explained that Diamond had brain scarring associated with her hydrocephalus. 5/6/09 p.m. Tr. at 31–32 (Dr. Goodhue).

84. Dr. Goodhue concluded in his report that Diamond died of "natural" causes. Dr. Goodhue found that Diamond's cause of death was "Chronic Intersistial pneumonitis due to or as a consequence of perinatal broncho pulmonary dysplasia." Pl. Ex. at 2 (emphasis omitted); 5/6/09 p.m. at 16–22 (Dr. Goodhue). He further stated that:

> Given the advanced and widespread scarring of her lungs, it is likely that even a relatively minor physiological stress could have resulted in metabolic imbalances causing her death. Additionally, the brain scarring associated with her hydrocephalus and polymicrogyria, both also prematurity associated, rendered her susceptible to seizure activity which in itself could have caused her demise at any time.

Pl. Ex. 51 at 2.

85. Dr. Goodhue explained that there may have been a precipitating natural event that occurred causing Diamond's death. 5/6/09 p.m. Tr. at 20 (Dr. Goodhue). He explained that as a result of Diamond's severe lung disease and the malformations and scarring of her brain, even a cold, vomiting, or a seizure could have caused her death by cardiac arrhythmia. 5/6/09 p.m. Tr. at 20 (Dr. Goodhue). Thus, while it is true that Diamond had lived with the conditions of chronic interstitial pneumonitis and bronchopulmonary dysplasia for nearly her entire life, those conditions, coupled with her brain conditions, could have caused her death at any time. 5/6/09 p.m. Tr. at 22 (Dr. Goodhue). Dr. Goodhue stated that he was amazed not that Diamond died when she did, but that she lived as long as she did. 5/6/09 p.m. Tr. at 22 (Dr. Goodhue). Dr. Brill similarly testified that, in view of Diamond's constellation of disabilities, including her chronic lung disease and her neurologic disabilities, she was at a high risk of a sudden, unexpected death. 5/5/09 p.m. Tr. at 10 (Dr. Brill).

86. The Court agrees with Dr. Goodhue's opinion as to the cause of death and therefore finds that the cause of death was chronic intersistial pneumonitis due to or as a consequence of perinatal bronchopulmonary dysplasia. The Court further

agrees with Dr. Goodhue's opinion that Diamond was susceptible to seizure activity, which could have caused her death at any time.

a. It is true that Diamond had no history of seizures. Pl. Ex. 13 at 5; 4/29/09 a.m. at 13 (Mr. Davis); 4/30/09 a.m. at 84 (Dr. Okihiro). In addition, Dr. Goodhue testified that the autopsy results revealed no findings supporting a seizure as the cause of death. 5/6/09 p.m. Tr. at 20, 33–35 (Dr. Goodhue). Still, he testified that the only way to tell whether Diamond had a seizure would be if certain findings were present, such as if someone had witnessed the seizure, a history of seizures, or a bitten tongue. 5/6/09 p.m. Tr. at 20, 34 (Dr. Goodhue). Dr. Yim agreed with Dr. Goodhue that it is difficult to tell postmortem whether Diamond had a seizure because a seizure does not leave any marks on the brain to indicate that it took place. 5/7/09 p.m. Tr. at 39 (Dr. Yim).

b. It is also true that Diamond was never placed on any anti-seizure medications by her pediatric neurologist or neurosurgeon. 4/29/09 a.m. Tr. at 13 (Mr. Davis); 4/30/09 a.m. at 84 (Dr. Okihiro). However, Dr. Yim testified that seizure medication is not prescribed even for a child who is in a high risk category for seizures until the child has had at least two to three seizures because of the high risk of side effects. 5/8/09 a.m. Tr. at 6–7 (Dr. Yim). The medication may cause the

patient's skin to burn off, and that side effect is potentially fatal. 5/8/09 a.m. Tr. at 9–10 (Dr. Yim).

c. Dr. Yim testified that, prior to having the VP shunt installed for her hydrocephalus, Diamond required needle "aspirations" through her brain and into her ventricles to remove cerebral spinal fluid because she was too small to have the shunt installed. 5/7/09 a.m. Tr. at 54, 57 (Dr. Yim). This process punctures the brain and causes scarring around the ventricles. 5/7/09 a.m. Tr. at 54 (Dr. Yim). Based on his review of the medical records, Dr. Yim explained that this fluid removal process happened more than ten times in Diamond's case. 5/7/09 a.m. Tr. at 54 (Dr. Yim). Dr. Yim testified that the resulting scar tissue can cause seizures. 5/7/09 a.m. Tr. at 58 (Dr. Yim).

d. Dr. Yim further testified that Diamond's polymicrogyria put her at a high risk for seizures. 5/7/09 a.m. Tr. at 58 (Dr. Yim). He explained that, in a study he had read that followed nine individuals with polymicrogyria from the age of twenty months to fifteen years, all nine individuals had seizures. 5/7/09 a.m. Tr. at 59 (Dr. Yim). The mean age of the first seizure was nine. 5/7/09 a.m. Tr. at 59 (Dr. Yim). Dr. Yim conceded that none of the children in the study died of the seizure. 5/8/09 a.m. Tr. at 17 (Dr. Yim).

e. Still, Dr. Goodhue testified that Diamond was "extraordinarily susceptible" to a seizure in light of her brain

malformation. 5/6/09 p.m. Tr. at 20 (Dr. Goodhue). He and Dr. Yim both testified that Diamond's first seizure could well have been her last. 5/6/09 p.m. Tr. at 30 (Dr. Goodhue); 5/8/09 a.m. Tr. at 7 (Dr. Yim). Dr. Yim stated that, based on the scarring of Diamond's brain and the polymicrogyria, she probably had a seizure and that the seizure caused her death. 5/7/09 p.m. Tr. at 38 (Dr. Yim). He opined that the seizure likely led to a cascade of events, including respiratory problems, respiratory arrest,[9/] and cardiac arrest. 5/7/09 p.m. Tr. at 38 (Yim).

f. Dr. Ungar testified that it is not medically probable that Diamond died of a seizure. 5/1/09 a.m. Tr. at 50 (Dr. Ungar). However, he did not explain his opinion further and, as such, this Court gives his opinion little weight.

87. In summary, this Court finds that the Staff at Waianae Coast did not breach the applicable standards of care in giving Diamond fluids and that, even if they did, Plaintiffs have not shown with reasonable medical probability that such breaches caused Diamond's death.

[9/] This Court notes Mr. Davis's testimony that, when he discovered that Diamond was unresponsive at 2:45 a.m. on May 3, 2004, her face was purple. 4/29/09 a.m. Tr. at 49 (Mr. Davis). This description would appear to be consistent with respiratory arrest.

C. Observation For a Reasonable Time

88. Plaintiffs claim that, in treating Diamond on May 2, 2004, the Staff at Waianae Coast breached the applicable standards of care in failing to monitor and observe her for a reasonable time. Plaintiffs rely on testimony by P.A. Smith and Dr. Ungar.

1. P.A. Smith

89. P.A. Smith testified that he was not ready for Diamond to be discharged at 11:30 p.m. and that he did not feel it was appropriate because her departure was "rather sudden." 4/28/09 a.m. Tr. at 75–76 (P.A. Smith). He wanted her to stay longer and be observed. 4/28/09 a.m. Tr. at 75 (P.A. Smith). Simply put, he did not feel comfortable with the situation. 4/28/09 a.m. Tr. at 76 (P.A. Smith).

90. P.A. Smith advised Dr. Ching that he believed that it was inappropriate for Diamond to leave at 11:30 p.m. 4/28/09 a.m. Tr. at 14 (P.A. Smith). However, Dr. Ching ultimately made the decision to discharge Diamond. 4/28/09 a.m. Tr. at 74 (P.A. Smith); 4/28/09 p.m. Tr. at 14 (P.A. Smith); 4/28/09 p.m. Tr. at 51 (Dr. Ching). P.A. Smith acknowledged that he did not have any decisionmaking role as to whether Diamond was going to be discharged. 4/28/09 a.m. Tr. at 74 (P.A. Smith). He also noted that he was probably more conservative about care for Diamond than Dr. Ching was because P.A. Smith is the primary care giver

for his wife, who has a number of significant disabilities. 4/28/09 p.m. Tr. at 15–16 (P.A. Smith).

91. This Court finds that P.A. Smith's belief that it was inappropriate to discharge Diamond does not establish Dr. Ching breached the standard of care in deciding to discharge Diamond.

2. Dr. Ungar

92. Dr. Ungar testified that it was below the standard of care for Diamond to be discharged from Waianae Coast at 11:30 p.m. on May 2, 2004. 5/1/09 a.m. Tr. at 52 (Dr. Ungar). He testified that Diamond should have been admitted to a hospital because: (1) she had poor pulmonary and physiological reserves; (2) she had received excessive amounts of fluids; and (3) she had been diagnosed with bronchiolitis and possible pneumonia. 5/1/09 a.m. Tr. at 52 (Dr. Ungar).

93. This Court has found that Diamond did not receive excessive fluids. Dr. Ungar did not provide an opinion as to whether Diamond should have been admitted even if she had not received an excessive amount of fluids.

94. This Court finds that it was not below the standard of care for Diamond to be discharged at 11:30 p.m. on May 2, 2004. By the same token, it was not a breach of the standard of care not to have Diamond admitted to a hospital.

This finding is supported by the testimony of Nurse Bacerra, P.A. Smith, Dr. Brill, and Dr. Yim.

a. At 8:35 p.m., when Diamond was first seen, her pulse rate was 84 beats per minute, her temperature was 97.6 degrees Fahrenheit, and her respiratory rate was 22 breaths per minute. Pl. Ex. 47 at 2; 5/6/09 a.m. Tr. at 7 (N. Bacerra). Nurse Bacerra perceived these vital signs to be normal. 5/6/09 a.m. Tr. at 7 (N. Bacerra). Diamond's oxygen saturation was 98%, which, according to Nurse Bacerra, was very good. 5/6/09 a.m. Tr. at 8 (N. Bacerra).

b. At 10:30 p.m., Nurse Bacerra reassessed Diamond. Diamond was napping off and on and the IV was infusing well. 5/6/09 a.m. Tr. at 25, 27–28 (N. Bacerra); Pl. Ex. 47 at 4. Diamond had a pulse of 82 beats per minute and her oxygenation was at 98%. 5/6/09 a.m. Tr. at 23 (N. Bacerra). According to Nurse Bacerra, those readings were normal. 5/6/09 a.m. Tr. at 25 (N. Bacerra).

c. At 11:30 p.m., Nurse Bacerra reassessed Diamond's vital signs. She noted that Diamond was not vomiting, her vital signs were stable, and the IV was discontinued. Diamond was then discharged home. 5/6/09 a.m. Tr. at 29 (N. Bacerra); Pl. Ex. 47 at 4. Diamond's vital signs at discharge were a pulse rate of 92 beats per minute, respiration of 22 breaths per minute, and oxygenation at 98%. 5/6/09 a.m. Tr. at 29 (N. Bacerra); Pl.

Ex. 47 at 4. Diamond had no respiratory difficulty. 5/6/09 a.m. Tr. at 29 (N. Bacerra).

d. Nurse Bacerra testified that, after the decision was made to discharge Diamond, Diamond had a wet diaper. 5/6/09 a.m. Tr. at 32, 60 (N. Bacerra); 5/6/09 p.m. Tr. at 72, 84 (N. Bacerra); 5/7/09 a.m. Tr. at 26 (N. Bacerra). She explained that Waianae Coast did not carry diapers for larger children, so Mr. Davis had to go to his car to get a diaper while Nurse Bacerra watched Diamond. 5/6/09 a.m. Tr. at 32 (N. Bacerra); 5/6/09 p.m. Tr. at 84 (N. Bacerra). This Court credits Nurse Bacerra's testimony. It does not credit Mr. Davis's testimony that Diamond did not have a wet diaper at Waianae Coast. 4/29/09 a.m. Tr. at 37–38 (Mr. Davis). The wet diaper suggests that the fluid that Diamond had received had reached her kidneys, that she was diuresing, and that her kidneys were producing urine, which indicates that Diamond was properly hydrated. 5/6/09 a.m. Tr. at 32 (N. Bacerra); 5/5/09 a.m. Tr. at 42 (Dr. Brill); 5/5/09 p.m. Tr. at 1 (Dr. Brill).

e. P.A. Smith testified that Diamond was stable at the time of discharge. 4/28/09 p.m. Tr. at 13 (P.A. Smith). He believed that she looked better than when she came in. 4/28/09 p.m. Tr. at 13 (P.A. Smith).

f. Dr. Brill testified that Diamond was monitored appropriately and for an appropriate length of time in the

context of her presentation, the diagnoses made, the treatment provided, and the way in which she improved over the course of the treatment. 5/5/09 p.m. Tr. at 9 (Dr. Brill). Dr. Brill further testified that Diamond's vital signs were good. 5/5/09 p.m. Tr. at 9 (Dr. Brill). Finally, Dr. Brill opined that, at the time of discharge, Diamond had improved and showed no signs of instability or dehydration. 5/5/09 p.m. Tr. at 9 (Dr. Brill).

g. Dr. Yim testified that Diamond was monitored appropriately and for a reasonable period of time. 5/7/09 p.m. Tr. at 10–11, 37–38 (Dr. Yim). He emphasized that Diamond's vital signs were normal at the time of discharge and were very similar to the vital signs at the time she came in. 5/7/09 p.m. Tr. at 10–11, 37–38 (Dr. Yim). He further testified that, in his medical practice as a pediatric neurologist, he has admitted patients to Kapiolani Medical Center. 5/7/09 p.m. Tr. at 38 (Dr. Yim). He explained that, on May 2, 2009, Diamond did not meet the admission criteria because she was stable, had already received intravenous fluids, had no hemodynamic problems, and had no ongoing acute problems that required monitoring in a hospital. 5/7/09 p.m. Tr. at 38 (Dr. Yim).

95. This Court finds that, in treating Diamond on May 2, 2004, the Staff at Waianae Coast did not breach the applicable standards of care by failing to monitor and observe her for a reasonable time.

96. To summarize, this Court has found that Plaintiffs have failed to prove their claims of medical negligence by a preponderance of the evidence. Consequently, this Court does not consider the question of damages or the United States's claim that there was negligence on the part of Diamond's parents.

CONCLUSIONS OF LAW

1. Having evaluated the factual aspects of Plaintiffs' claims, this Court will now address the legal issues of the FTCA, vicarious liability, medical negligence, and loss of filial consortium.

I. The FTCA and Vicarious Liability

2. "Under the FTCA, the United States is liable for certain torts 'in the same manner and to the same extent as a private individual under like circumstances,' 28 U.S.C. § 2674, 'in accordance with the law of the place where the [alleged] act or omission occurred,' 28 U.S.C. § 1346(b)." McMillan v. United States, 112 F.3d 1040, 1043 (9th Cir. 1997) (brackets in original). Thus, for purposes of this lawsuit, the FTCA subjects the United States to suit insofar as a private individual, in this case a private hospital, would be subject to suit under Hawai'i law. See id.

3. Hawai'i law dictates that, "[u]nder the theory of respondeat superior, an employer may be liable for the negligent acts of its employees that occur within the scope of their

employment." Wong-Leong v. Hawaiian Indep. Refinery, 76 Hawai'i 433, 438, 879 P.2d 538, 543 (1994). As such, the United States, through its operation of Waianae Coast, is potentially subject to liability for the allegedly negligent acts of its employees, including but not limited to Dr. Ching, P.A. Smith, and Nurse Bacerra, who were acting within the scope of their employment in treating Diamond on May 2, 2004. At this juncture, this Court will consider Plaintiffs' medical negligence claim.

II. Medical Negligence

4. In order to prevail on a medical malpractice claim, a plaintiff must prove the following elements by a preponderance of the evidence:

> "(1) A duty, or obligation, recognized by the law, requiring the defendant to conform to a certain standard of conduct, for the protection of others against unreasonable risks;
>
> (2) A failure on the defendant's part to conform to the standard required: a breach of the duty;
>
> (3) A reasonably close causal connection between the conduct and the resulting injury[;] and
>
> (4) Actual loss or damage resulting to the interests of another."

Takayama v. Kaiser Found. Hosp., 82 Hawai'i 486, 489–99, 923 P.2d 903, 915–16 (1996) (quoting Knodle v. Waikiki Gateway Hotel, Inc., 69 Haw. 376, 385, 742 P.2d 377, 383 (1987)) (brackets in original); see also Bernard v. Char, 79 Hawai'i 371, 377, 903

P.2d 676, 682 (1995) ("[T]he plaintiff in a medical malpractice case based on negligent treatment has the burden of establishing a duty owed by the defendant to the plaintiff, a breach of that duty, and a causal relationship between the breach and the injury suffered.").

5. As to liability, "the established standard of care for all professionals is to use the same degree of skill, knowledge, and experience as an ordinarily careful professional would exercise under similar circumstances." Kaho'ohanohano v. Dep't of Human Servs., 117 Hawai'i 262, 296, 178 P.3d 538, 572 (2008). "[T]he standard of care for a claim based on allegedly negligent medical treatment must be established by reference to prevailing standards of conduct in the applicable medical community." Carr v. Strode, 79 Hawai'i 475, 485 n.6, 904 P.2d 489, 499 n.6 (1995).

6. The standard of care, as well as any breach thereof, must generally be established through expert medical testimony. See Kaho'ohanohano, 117 Hawai'i at 296, 178 P.3d at 572 ("[I]n medical malpractice actions, expert opinion is generally required to determine the 'degree of skill, knowledge, and experience required of the physician, and the breach of the medical standard of care.'" (quoting Exotics Hawaii-Kona, Inc. v. E.I. Du Pont de Nemours & Co., 116 Hawai'i 277, 300, 172 P.3d 1021, 1044 (2007))); Carr, 79 Hawai'i at 485 n.6, 904 P.2d at 499

n.6 (explaining that, in medical malpractice actions, the standard of care "must be . . . proved by expert medical testimony"); Craft v. Peebles, 78 Hawai'i 287, 298, 893 P.2d 138, 149 (1995) ("[I]n medical malpractice actions, the question of negligence must be decided by reference to relevant medical standards of care for which the plaintiff carries the burden of proving through expert medical testimony."). "[I]t is generally not sufficient for a plaintiff's expert witness (i.e., one qualified in medicine, or dentistry, as the case may be) to testify as to what he or she would have done in treating a particular patient." Bernard, 79 Hawai'i at 377, 903 P.2d at 682. "The expert must go further and state that the defendant's treatment deviated from any of the methods of treatment approved by the standards of the profession." Id.

7. Still, the general requirement of expert testimony is not without exception. "The 'common knowledge' exception, which is similar to the doctrine of res ipsa loquitur, provides that certain medical situations present routine or non-complex matters wherein a lay person is capable of supplanting the applicable standard of care from his or her 'common knowledge' or ordinary experience." Craft, 78 Hawai'i at 298, 893 P.2d at 149. For example,

> "When an operation leaves a sponge in the patient's interior, or removes or injures an inappropriate part of his anatomy, or when a tooth is dropped down his windpipe or he

> suffers a serious burn from a hot water bottle, or when instruments are not sterilized, the thing speaks for itself without the aid of any expert's advice."

Id. (quoting Medina v. Figuered, 3 Haw. App. 186, 188, 647 P.2d 292, 294 (1982)) (some internal quotation marks omitted).

8. With respect to causation, "[i]n a medical malpractice action, a plaintiff must show with reasonable medical probability a causal nexus between the physician's treatment or lack thereof and the plaintiff's injury." Craft, 78 Hawai'i at 305, 893 P.2d at 156 (citing McBride v. United States, 462 F.2d 72, 75 (9th Cir. 1972)). "In so doing, the plaintiff may solicit opinions from medical experts, but such medical opinions 'must be grounded upon reasonable medical probability as opposed to a mere possibility because possibilities are endless in the field of medicine.'" Miyamoto v. Lum, 104 Hawai'i 1, 15–16, 84 P.3d 509, 523–24 (2004) (quoting Craft, 78 Hawai'i at 305, 893 P.2d at 156); cf. Bernard, 79 Hawai'i at 377, 903 P.2d at 682 ("'[I]n the medical negligence case, lay jurors are ill prepared to evaluate complicated technical data for the purpose of determining whether professional conduct conformed to a reasonable standard of care and whether there is a causal relationship between the violation of a duty and an injury to the patient.'" (quoting 4 Fred Lane, Lane Medical Litigation Guide § 40.14, at 54 (1993))).

9. "Generally, 'a defendant is liable in damages to a plaintiff for all injuries [legally] caused by [the defendant's]

negligence.'" Montalvo v. Lapez, 77 Hawai'i 282, 294, 884 P.2d 345, 357 (1994) (quoting Gibo v. City & County of Honolulu, 51 Haw. 299, 302, 459 P.2d 198, 200 (1969)) (brackets in original). Still, "'a tortfeasor is liable not only for damages resulting from direct and unique injuries inflicted on the victim, but also for damages resulting from the aggravation of the victim's pre-existing disease, condition, or predisposition to injury.'" Id. (quoting 2 Jerome H. Nates et al., Damages in Tort Actions § 15.01, at 15-4 (1994)). "Such 'predisposition to injury' or other special sensitivity is often involved in the context of the so-called 'thin skull' or 'eggshell skull' plaintiff." Id.

10. In the case at bar, while it is plain that Diamond had a clear predisposition to injury, this Court has found that Plaintiffs have not carried their burden of proving by a preponderance of the evidence that the Staff at Waianae Coast breached the applicable standards of care in treating Diamond on May 2, 2004. This Court has also found that, even assuming arguendo that the staff had breached the applicable standards of care by giving Diamond excessive IV fluids, Plaintiffs have not proven with reasonable medical probability that the breach caused Diamond's death. Accordingly, Plaintiffs cannot recover under their claim of medical negligence against the United States.

III. Loss of Filial Consortium

11. What remains is Mr. and Mrs. Davis's claim of loss of filial consortium. "Loss of filial consortium is a recognized cause of action in Hawaii under [the state's] wrongful death statute, Hawaii Revised Statutes (HRS) § 663-3." Masaki v. Gen. Motors Corp., 71 Haw. 1, 19, 780 P.2d 566, 576 (1989). Loss of filial consortium is a derivative claim, which means that a claim by a parent for loss of consortium is derivative of the damages by the child. See Omori v. Jowa Haw. Co., 91 Hawai'i 146, 146, 981 P.2d 703, 703 (1999) (characterizing loss of filial consortium as a derivative action); cf. Brown v. KFC Nat'l Mgmt. Co., 82 Hawai'i 226, 241, 921 P.2d 146, 161 (1996) ("'[L]oss of consortium is a derivative action[;] i.e., [an] action by [a] spouse for loss of consortium is derivative of the action for damages by the injured spouse.'" (quoting Towse v. State, 64 Haw. 624, 637, 647 P.2d 696, 705 (1982)) (brackets in original)).

12. "'[A] plaintiff in a [derivative-injury tort] action can only recover if the tortious harm the [injured party] suffered would have entitled the injured party to maintain an action against the defendant.'" Omori, 91 Hawai'i at 146, 981 P.2d at 703 (quoting Winters v. Silver Fox Bar, 71 Haw. 524, 536, 797 P.2d 51, 56 (1990)) (some brackets added and some in original); Brown, 82 Hawai'i at 241, 921 P.2d at 161 (observing that a derivative claim is "barred when the victim's initial

claim of injury cannot be maintained"); see also Winters, 71 Haw. at 536, 797 P.2d at 57 (holding that, because deceased minors' estates are precluded from suing a commercial liquor supplier under HRS § 281-78, survivors of the minors are likewise barred from pursuing a wrongful death action under HRS § 663-3).

13. In this case, Mr. and Mrs. Davis's loss of filial consortium claim derives from Diamond's estate's medical negligence claim. Because Diamond's estate cannot recover under the medical negligence claim, it necessarily follows that Mr. and Mrs. Davis's loss of filial consortium claim must fail.

DECISION

The Court extends its condolences to the Davis family over the loss of their beloved daughter, Diamond. However, in light of the foregoing findings of fact and conclusions of law, this Court (1) finds that Plaintiffs have failed to prove their claims by a preponderance of the evidence and (2) finds that the United States is entitled to judgment on all counts. Having made those findings, this Court concludes that the United States's motion for judgment on partial findings is moot.

IT IS SO ORDERED.

Dated: Honolulu, Hawai‘i, May 26, 2009.

Alan C. Kay
Sr. United States District Judge

Davis v. United States of America, Civ. No. 07-00461 ACK-LEK: Findings of Fact, Conclusions of Law, and Decision