

TABLE 2: Etoposide infusion reaction patient data

Institution / patient	Year of ADR	Age (months)	BSA (m2)	Sex	Ethnicity	Cancer Dx	Other Dx	Allergies	Additional chemotherapeutic agents	Etoposide dose number at time of ADR	Etoposide dose (mg/ m2)	Infusion time (min)	Etoposide rate (mg/ m2/hr)	Symptoms	Severity	ADR Treatment	Rechallenge d	Able to tolerate future doses	Intervention for future doses
RH1	2012	78	1.1	Female	Black	PNET	None	Chlorhexidine, promethazine	Doxorubicin, cyclophosphamide, mesna, vincristine	1	180	60	180	Anaphylaxis, shortness of breath, flushing, throat tightness	Severe	Diphenhydramine	No	-	Etoposide Phosphate
RH2	2017	147	1.25	Male	White / Non-Hispanic	Germinoma	ADHD	None	Carboplatin	1	150	120	78	Chest tightness	Moderate	Diphenhydramine	Yes	Yes	Pretreat with APAP, diphenhydramine
RH3	2020	178	1.51	Female	White / Non-Hispanic	Hodgkin Lymphoma	None	penicillin (PCN)	doxorubicin, vincristine, prednisone, cyclophosphamide	1	125	120	60	Flushing, nausea, lip swelling	Severe	Diphenhydramine, lorazepam, ondansetron	Yes	Yes	Pretreat with APAP& Diphenhydramine
CMH1	2012	142	1.4	Female	White / Non-Hispanic	Ewing's Sarcoma	Acne, Seasonal allergies, exercise induced asthma	Dexrazoxane, PCN	vincristine, doxorubicin, cyclophosphamide, ifosfamide	22	100	180	33	Flushing, redness	Moderate	Diphenhydramine	Yes	Yes	Diphenhydramine
CMH2	2018	12.7	0.42	Male	White / Non-Hispanic	Neuroblastoma	DVT, poor nutrition	None	Carboplatin, Cisplatin, Cyclophosphamide, Doxorubicin	1	140	60	140	Facial swelling, flushing, redness, cough	Moderate	Hydrocortisone, diphenhydramine, IV fluids	No	-	Etoposide phosphate
CMH3	2018	232.2	2.2	Male	White / Non-Hispanic	Rhabdoid tumor of kidney	None	NKDA	Cyclophosphamide, Carboplatin, Dactinomycin	1	100	60	100	Cough, numbness of face, redness, shortness of breath	Moderate	Hydrocortisone, diphenhydramine, oxygen	No	-	Etoposide phosphate
CMH4	2018	190.6	1.6	Male	White / Non-Hispanic	Testicular germ cell tumor	None	NKDA	Bleomycin, Cisplatin	6	100	60	100	Throat tightness, shortness of breath	Moderate	Diphenhydramine	Yes	Yes, but second reaction	Pretreat with diphenhydramine, 2 hr infusion. Second reaction and changed to etoposide phosphate
CMH5	2018	140.4	1.53	Male	White / Non-Hispanic	AML	None	Cytarabine, dextromethorphan, voriconazole	Asparaginase, cytarabine, daunorubicin, gemtuzumab ozogamicin, mitoxantrone	13	150	60	150	Headache, nausea, coughing, shortness of breath, flushing	Moderate	Diphenhydramine	Yes	Yes	Pretreat with diphenhydramine and 2 hr infusion.
CMH6	2018	186.9	1.9	Male	White / Non-Hispanic	Hodgkin Lymphoma	None	NKDA	Doxorubicin, bleomycin, vincristine, prednisone, cyclophosphamide	7	125	60	125	Flushing, nausea, pressure	Moderate	Extended infusion time to 3 hours, cetirizine, prednisone, diphenhydramine	Yes	Yes	3 hour infusion, cetirizine, prednisone
CMH7	2018	65.2	0.77	Male	White / Non-Hispanic	Ewing's Sarcoma	None	Diphenhydramine	Vincristine, doxorubicin, cyclophosphamide, ifosfamide,	1	100	60	100	Abdominal pain, flushing	Moderate	Hydrocortisone, famotidine	No	-	Etoposide Phosphate
CMH8	2018	110	1.33	Female	White / Non-Hispanic	Relapsed embryonal rhabdomyosarcoma	None	NKDA	Cyclophosphamide, doxorubicin, ifosfamide, topotecan, vincristine	1	101	60	101	Throat irritation, difficulty breathing	Moderate	Diphenhydramine, ranitidine	Yes	Yes	2 hour infusion, diphenhydramine
CMH9	2018	32.9	0.61	Male	White / Non-Hispanic	Neuroblastoma	None	NKDA, peanuts	Carboplatin, cisplatin, cyclophosphamide, doxorubicin	1	120	60	120	Difficulty breathing, cyanosis, nausea, cough, lip swelling	Severe	Albuterol, diphenhydramine, epinephrine, hydrocortisone, IV fluids	No	-	Etoposide Phosphate
CMH10	2018	22.6	0.51	Male	White / Non-Hispanic	Desmoplastic medulloblastoma	Curry Jones syndrome, craniosynostosis post craniectomy, great toe duplication, thyroid dysfunction	NKDA	Cyclophosphamide, cisplatin, filgrastim, carboplatin, thiotepa, methotrexate, leucovorin, vincristine	4	53	60	53	Rash, flushing, gagging	Moderate	Diphenhydramine	Yes	Yes, but second reaction	2 hr infusion, diphenhydramine, famotidine; Second reaction, changed to etoposide phosphate
CMH11	2018	90.4	0.92	Male	White / Non-Hispanic	Relapsed osteosarcoma	None	NKDA	Cisplatin, doxorubicin, ifosfamide, methotrexate, peginterferon Alfa-2b	6	100	60	100	Flushing, facial paresthesia, labored breathing	Moderate	Diphenhydramine, famotidine	Yes	Yes, but second reaction	2 hr infusion, diphenhydramine, famotidine, Second reaction, changed to etoposide

CMH12	2018	61	0.69	Male	White / Non-Hispanic	AML	None	NKDA, infusion reaction to platelets	Asparaginase, cytarabine, daunorubicin, gemtuzumab ozogamicin, mitoxantrone	1	100	60	100	Anaphylaxis, coughing, hypotension, chest pain, periorbital swelling, flushing	Severe	Diphenhydramine, famotidine, epinephrine, hydrocortisone, IV fluids	No	-	phosphate Etoposide phosphate
CMH13	2019	76.5	0.74	Female	Other	Germ cell tumor	Bilateral inguinal hernia, eczema	NKDA	Carboplatin, ifosfamide	4	88	60	88	Flushing, facial swelling, throat irritation, cough	Moderate	Infusion stopped	No	-	Etoposide phosphate
CMH14	2019	14.8	0.44	Male	White / Non-Hispanic	Atypical teratoid rhabdoid tumor	Eczema, oral aversion, emesis, GERD	Augmentin, multiple food allergies	Carboplatin, cisplatin, cyclophosphamide	1	52	60	52	Wheezing, redness, swelling	Severe	Diphenhydramine, epinephrine, hydrocortisone, IV fluids, racemic epinephrine	No	-	Etoposide phosphate
CMH15	2019	104.5	1.23	Female	Multiracial	CNS germ cell tumor	Stickler syndrome, asthma, constipation	Cefepime	Carboplatin, ifosfamide	12	90	60	90	Coughing, nausea, flushing	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH16	2019	13.9	0.43	Female	Hispanic	Atypical teratoid rhabdoid tumor	Benign neoplasm of skin	NKDA	Carboplatin, cisplatin, cyclophosphamide	1	51	60	51	Coughing, flushing, emesis	Moderate	Diphenhydramine	Yes	Yes	2 hr infusion, diphenhydramine
CMH17	2019	76.2	0.88	Female	White / Non-Hispanic	Ewing's Sarcoma	Febrile seizure	NKDA	Vincristine, doxorubicin, cyclophosphamide, ifosfamide	1	100	60	100	Coughing, difficulty breathing	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH18	2019	40.6	0.58	Female	Hispanic	Yolk sac tumor	Sacroccocygeal teratoma, congenital heart disease	NKDA	Bleomycin, carboplatin, cisplatin	6	97	60	97	Coughing, itching, flushing, lip swelling	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH19	2019	156.5	1.4	Male	White / Non-Hispanic	Pineoblastoma	None	NKDA	Carboplatin, cisplatin, cyclophosphamide, Doxorubicin	1	100	60	100	Shortness of breath, cyanosis, respiratory depression	Severe	Diphenhydramine, oxygen	No	-	Etoposide phosphate
CMH20	2020	185.1	1.25	Female	White / Non-Hispanic	Hodgkin Lymphoma	Migraine headache	Amoxicillin	Doxorubicin, bleomycin, vincristine, prednisone, cyclophosphamide	1	125	60	125	Abdominal pain, throat discomfort	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH21	2020	73.9	0.78	Female	White / Non-Hispanic	Choroid plexus carcinoma	Familial exudative vitreoretinopathy	Amoxicillin	Vincristine, doxorubicin, cyclophosphamide, ifosfamide	4	100	60	100	Urticaria	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH22	2020	201.4	1.74	Female	White / Non-Hispanic	Nodular Sclerosing Hodgkin Lymphoma	None	NKDA	Doxorubicin, bleomycin, vincristine, prednisone, cyclophosphamide	1	125	60	125	Difficulty breathing, nausea, flushing	Severe	Diphenhydramine, oxygen	No	-	Etoposide phosphate
CMH23	2020	197.4	1.73	Female	White / Non-Hispanic	Ewing's Sarcoma	Anxiety	Fluoxetine	Vincristine, doxorubicin, cyclophosphamide, ifosfamide	14	100	120	50	Flushing, dyspnea, tachycardia	Moderate	Diphenhydramine	Yes	Yes	3 hours infusion
CMH24	2020	40.7	0.58	Male	White / Non-Hispanic	Neuroepithelial Tumor	None	NKDA	Cyclophosphamide, cisplatin, filgrastim, carboplatin, thiotepa, methotrexate, leucovorin, vincristine	1	57	60	57	Itching, edema, cough, rash	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH25	2020	25.8	0.56	Female	White / Non-Hispanic	AML	None	Azithromycin	Asparaginase, cytarabine, daunorubicin, gemtuzumab ozogamicin, mitoxantrone	11	107	60	107	Nausea, cough, flushing	Moderate	Diphenhydramine, famotidine, hydrocortisone	Yes	Yes	2 hr infusion, diphenhydramine
CMH26	2020	19.1	0.46	Female	White / Non-Hispanic	Ewing's family tumor	None	NKDA, milk protein	Vincristine, doxorubicin, cyclophosphamide, and ifosfamide	1	70	60	70	Cyanosis, coughing, agitation	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH27	2020	214.6	2.2	Male	White / Non-Hispanic	Hodgkin Lymphoma	Exercise-induced asthma	Lorazepam	Doxorubicin, bleomycin, vincristine, etoposide, prednisone, and cyclophosphamide	5	125	60	125	Anaphylaxis, facial swelling, chest tightness, shortness of breath	Severe	Diphenhydramine, hydrocortisone, epinephrine, albuterol, famotidine, IV fluids	No	-	Etoposide phosphate
CMH28	2020	25.1	0.57	Male	White / Non-Hispanic	Bilateral retinoblastoma	None	NKDA	Liposomal vincristine, carboplatin	5	116	60	116	Flushing, hypotension	Moderate	Diphenhydramine	No	-	Etoposide phosphate
CMH29	2020	128.4	1.37	Male	Hispanic	Ewing's Sarcoma	asthma	NKDA, shrimp	Vincristine,	8	100	60	100	Flushing, rash	Moderate	Diphenhydramine	Yes	Yes	2 hr infusion,

									doxorubicin, cyclophosphamide, ifosfamide										diphenhydramine
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Abbreviations: APAP, acetaminophen; AML, acute myeloid leukemia; ADHD, attention deficit hyperactivity disorder; CNS, central nervous system; DVT, deep vein thrombosis; GERD, gastroesophageal reflux disease; NKDA, No known drug allergies; PNET, primitive neuroectodermal tumor.