Appendix A: Candidate Risk Factors Considered in Developing the Predictive Models

Risk Factor Categories	Variable	Definition	Caries Ind *P*-Value	High Risk Ind *P*-Value
Demographics & Misc	Racial group*	1 if Race is "Black"; 0 otherwise	0.0155	0.0025
	Gender	1 if Gender is "Male"; 0 otherwise	0.9365	0.7015
	One Contact	1 if only one contact person is listed in the EHR; 0 if more than one contact	0.526	0.0586
	Ethnicity*	1 if Ethnicity is "Hispanic"; 0 otherwise	0.0803	0.2314
	InterpAtAnyWCVInd	1 if an interpreter was used at WCV12, WCV15 or WCV18; 0 otherwise	0.0005	< 0.0001
	LangNotEng	1 if the subject's language is not English; 0 otherwise	0.0011	< 0.0001
	LangNotEngSpan	1 if the subject's language is not English nor Spanish; 0 otherwise	0.3855	0.0017
	DriveDistGE5mi	1 if the driving distance from the subject's address to the NCH Dental Clinic is 5 miles or more; 0 otherwise	0.1243	0.3278
	DriveDistGE10mi	1 if the driving distance from the subject's address to the NCH Dental Clinic is 10 miles or more; 0 otherwise	0.0616	0.2091

*Missing value indicator variables were created to identify those subjects for which the basic data needed to assess the risk factor was missing.

Risk Factor Categories	Variable	Definition	Caries Ind *P*-Value	High Risk Ind *P*-Value
Developmental Screening	DevDelayInd*	1 if a patient has any prior ICD9 codes indicating the problem of development delay; 0 otherwise	0.0542	0.0152
	ASQ_SE_EverAbnInd*	1 if the subject's ASQ-SE score was abnormally high (≥48) prior to 19 months of age; 0 otherwise	0.0911	0.9973
	ASQ_Total_AtRiskSuspDel	1 if the subject's ASQ-Total score was abnormally low enough to be scored as "At risk and/or suspected delay" or "Suspected delay" after 11 months of age and prior to 19 months of age; 0 otherwise	0.0474	0.2484
	ASQ_Total_SuspDel*	1 if the subject's ASQ-Total score was abnormally low enough to be scored as "Suspected delay" after 11 months of age and prior to 19 months of age; 0 otherwise	0.0432	0.3312

*Missing value indicator variables were created to identify those subjects for which the basic data needed to assess the risk factor was missing.

Risk Factor Categories	Variable	Definition	Caries Ind *P*-Value	High Risk Ind *P*-Value
Dietary Factors	BreastFeedStatus*	1 if any progress notes prior to 19 months contain phrases indicating the subject was breast fed; 0 otherwise	0.0325	< 0.0001
	HighSugarInd*	1 if progress notes prior to 19 months contain phrases indicating high sugar consumption; 0 otherwise	0.6492	0.1205
	NightFeedInd*	1 if progress notes prior to 19 months contain phrases indicating more than one feeding per night; 0 otherwise	0.5764	0.2245
	NutrDefiencyInd*	1 if a patient has any prior ICD9 codes indicating the problem of nutrition deficiency; 0 otherwise	0.3216	0.0656
	SippyCupInd*	1 if progress notes prior to 19 months contain phrases indicating sippy cup use; 0 otherwise	0.7849	0.3912

*Missing value indicator variables were created to identify those subjects for which the basic data needed to assess the risk factor was missing.

Risk Factor Categories	Variable	Definition	Caries Ind *P*-Value	High Risk Ind *P*-Value
Sleep Pattern	SleepProbInd	1 if progress notes prior to 19 months contain phrases indicating sleep problems; 0 otherwise	0.796	0.401
	NForSDInd	1 if NightFeedInd=1 or if progress notes prior to 19 months contain phrases indicating sleep disturbance problems; 0 otherwise	0.7067	0.5145

Risk Factor Categories	Variable	Definition	Caries Ind P-Value	High Risk Ind P-Value
Examination & History	ActiveAllergensInd	1 if one or more active allergens is listed in the EHR; 0 otherwise	0.9313	0.9242
	AnyHospInd	1 if the subject was hospitalized prior to 19 months of age; 0 otherwise	0.4338	0.2782
	DentalReferralInd	1 if the subject had a medical referral for dental care prior to 19 months of age; 0 otherwise	0.6928	0.0016
	ExpToSmokeInd	1 if the EHR indicates that the child is exposed to smoke prior to 19 months of age; 0 otherwise	0.4010	0.1777
	HeadCirc4AgeEverAbnor	1 if the head-circumference-for-age percentile is <= 2 or >= 98; 0 otherwise	0.3283	0.9975
	HeadCirc4AgeEverLarge	1 if the head-circumference-for-age percentile is >= 98; 0 otherwise	0.3562	0.9849
	HeadCirc4AgeEverSmall	1 if the head-circumference-for-age percentile is <= 2; 0 otherwise	0.1057	0.987
	LOSgt7Days	1 if the total LOS of all hospitalizations prior to 19 months of age is > 7 days; 0 otherwise	0.0271	0.9337
	MoreThan1HospInd	1 if the subject had more than one hospitalization prior to 19 months of age; 0 otherwise	0.0489	0.7649
	PrematureInd	1 if the gestational age of the subject is < 37 weeks; 0 otherwise	0.9141	0.1287
	Prescr5ERxInd	1 if the subject had 5 or more prescriptions prescribed at NCH prior to 19 months of age; 0 otherwise	0.2586	0.1711
	Prescr5GenInd	1 if the subject had 5 or more generic prescriptions prior to 19 months of age; 0 otherwise	0.4543	0.1454
	Prescr5OrdInd	1 if the subject had 5 or more prescription orders regardless of whether or not NCH prescribed it or not; 0 otherwise	0.6819	0.3577
	TeethProbInd	1 if progress notes prior to 19 months contain phrases indicating tooth problems; 0 otherwise	0.3107	< 0.0001
	VarnishEverInd	1 if the EHR indicates that tooth varnish was applied prior to 19 months of age; 0 otherwise	0.1881	0.2767
	Wght4LenEverAbnor	1 if the weight-for-length percentile is <= 2 or >= 98; 0 otherwise	0.4716	0.262
	Wght4LenEverLarge	1 if the weight-for-length percentile is >= 98; 0 otherwise	0.3553	0.3415
	Wght4LenEverSmall	1 if the weight-for-length percentile is <= 2; 0 otherwise	0.6332	0.0591

Risk Factor Categories	Variable	Definition	Caries Ind *P*-Value	High Risk Ind *P*-Value
Financial & Poverty Information	EverMedicaidInd	1 if insurance type was "Medicaid" at any of WCV12, WCV15 or WCV18; 0 otherwise	0.5071	0.0490
	InsCommSelfTri_WCC12*	1 if insurance type was "Commercial", "Self-Pay" or "Tricare" at WCV12; 0 otherwise	0.2171	0.2399
	InsCommSelfTri_WCC15*	1 if insurance type was "Commercial", "Self-Pay" or "Tricare" at WCV15; 0 otherwise	0.0115	0.0386
	InsCommSelfTri_WCC18*	1 if insurance type was "Commercial", "Self-Pay" or "Tricare" at WCV18; 0 otherwise	0.5213	0.2606
	HHSegLowMed	1 if the subject's geocoded household address is assigned a Low or Medium economic status by the Alteryx software; 0 otherwise	0.5361	0.0497
	HHSegLow	1 if the subject's geocoded household address is assigned a Low economic status by the Alteryx software; 0 otherwise	0.0452	0.0455

*Missing value indicator variables were created to identify those subjects for which the basic data needed to assess the risk factor was missing.

Risk Factor Categories	Variable	Definition	Caries Ind *P*-Value	High Risk Ind *P*-Value
Lab Reports	LeadDetected*	1 if lead was detected (> 2 mg/dL) in the subject's blood prior to 19 months of age; 0 otherwise	0.0058	0.0142
	LeadGE5	1 if the subject's blood lead level was > 5 mg/dL prior to 19 months of age; 0 otherwise	0.0067	0.2768
	LowHematInd	1 if the subject's hematocrit level was abnormally low prior to 19 months of age; 0 otherwise	0.8799	0.5149
	LowHemoglInd	1 if the subject's hemoglobin level was < 11 g/dL prior to 19 months of age; 0 otherwise	0.2649	0.0666
	LowHemoOrHema*	1 if the subject's hemoglobin level or hematocrit level was abnormally low prior to 19 months of age; 0 otherwise	0.8298	0.7146

*Missing value indicator variables were created to identify those subjects for which the basic data needed to assess the risk factor was missing.

Risk Factor Categories	Variable	Definition	Caries Ind P-Value	High Risk Ind P-Value
Parent/Caregiver Compliance Measures	NoShowPercGT20Ind*	1 if the subject failed to show for more than 20% of all medical appointments; 0 otherwise	0.3116	0.0372
	NoShowPercGT15Ind	1 if the subject failed to show for more than 15% of all medical appointments; 0 otherwise	0.7073	0.1854
	NoShowPercGT10Ind	1 if the subject failed to show for more than 10% of all medical appointments; 0 otherwise	0.7651	0.6598
	numWCVs12to18EQ3	1 if the subject had all three of WCV12, WCV15 and WCV18; 0 otherwise	0.0820	0.8299
	numWCVs12to18GE2	1 if the subject had two or more of WCV12, WCV15 and WCV18; 0 otherwise		
	numWCVsBef9MoGE1	1 if the number of well child visits before 9 months of age was >= 1; 0 otherwise	0.5420	0.2415
	numWCVsBef9MoGE2	1 if the number of well child visits before 9 months of age was >= 2; 0 otherwise		
	numWCVsBef9MoGE3	1 if the number of well child visits before 9 months of age was >= 3; 0 otherwise		
	WCC12GT2wks	1 if the subject's age at WCV12 was 2 or more weeks away from nominal; 0 otherwise	0.1675	0.3712
	WCC12GT4wks	1 if the subject's age at WCV12 was 4 or more weeks away from nominal; 0 otherwise		
	WCC15GT2wks	1 if the subject's age at WCV15 was 2 or more weeks away from nominal; 0 otherwise	0.1408	0.215
	WCC15GT4wks	1 if the subject's age at WCV15 was 4 or more weeks away from nominal; 0 otherwise		
	WCC18GT2wks	1 if the subject's age at WCV18 was 2 or more weeks away from nominal; 0 otherwise	0.9601	0.4713
	WCC18GT4wks	1 if the subject's age at WCV18 was 4 or more weeks away from nominal; 0 otherwise		
	NumDTaPbef19moLT4	1 if the subject had fewer than 4 DTaP immunizations prior to 19 months of age; 0 otherwise	0.5197	0.2853

*Missing value indicator variables were created to identify those subjects for which the basic data needed to assess the risk factor was missing.