Final Report: Possible Shifting Communities at Risk for Sickle Cell Trait

A Retrospective cohort of infants with an initial positive test for hemoglobinopathy trait was identified using the Colorado Sickle Cell Treatment and Research Center data from June to July for the years 1984-1985, 1994-1995, 2000-2001 and 2004-2005. Initial positive hemoglobinopathy tests are reported to the Colorado Department of Public Health and Environment (CDPHE) for follow-up. Type of trait, date of birth, time of birth, hospital of birth, mother's first and last name, and child's first and last name is entered into a database. Excluded from this database are infants identified with hemglobinopathy disease, infants not born from June to July for the years 1984-1985, 1994-1995, 2000-2001 and 2004-2005, and infants not identified as having abnormal hemoglobin. 1,975 infants with an initial positive screen were identified; 1,520 with a second, confirmatory test and 455 with only a primary screen.

Some of these records were then matched to the CDPHE Vital Statistics Birth Certificate registry using mother's name, child's name, date of birth, time of birth, and hospital as identifiers (the 1984-1985 and 1994-1995 data were not matched to the birth certificate data due to lack of information).

To determine the race/ethnicity of the infant, the mother's self-identified race/ethnicity on the birth certificate was cross-referenced with mother's self-identified race/ethnicity on the sickle cell database if disparate then birth certificate data was used. In order to capture the father's race/ethnicity the surname of the child was used to identify if the child has a Spanish surname.

Table 1: All races, both confirmed and unconfirmed, all traits, all years

	1985	1995	2000	2005	Total
African American	107(33.13%)	213(46.41%)	207(37.70%)	224(35.73%)	758(38.01%)
Hispanic	30(9.29%)	70(15.25%)	154(28.05%)	207(32.09%)	461(23.33%)
White	32(9.91%)	95(20.70%)	142(25.87%)	128(19.84%)	397(20.09%)
Asian	4 (1.24%)	34(7.41%)	17(3.10%)	35(5.43%)	90(4.55%)
Other	15(4.64%)	21(4.58%)	29(5.28%)	34(5.27%)	99(5.01%)
Unknown*	135(41.80%)	26(5.66%)	0	17(2.64%)	178(2.64%)

*For year 1985 race information for children who did not receive a second screen was unavailable thus why large number of Unknown race.

Table 2: All years, all races, CONFIRMED all traits

	1985	1995	2000	2005	Total
African American	107(58.47%)	147(48.68%)	186(39.16%)	200(35.65%)	640(42.08%)
Hispanic	17(9.29%)	44(14.57%)	125(26.32%)	175(31.19%)	361(23.73%)
White	32(17.49%)	64(21.19%)	124(26.11%)	115(20.50%)	335(22.02%)
Asian	4 (2.19%)	28(9.27%)	15(3.16%)	32(5.70%)	79(5.19%)
Other	15(8.20%)	21(3.97%)	25 (5.26%)	27(4.81%)	79(5.19%)
Unknown	8(4.37%)	7(2.32%)	0	12(2.14%)	27(1.78%)

Table 3: Confirmed Sickle Cell Trait only, all years, all races

	1985	1995	2000	2005	Total
African American	75(68.18%)	109(58.92%)	127(48.47%)	154(49.36%)	465(53.51%)
Hispanic	10(9.09%)	26(14.05%)	73 (27.86%)	91(29.17%)	200(23.01%)
White	14(12.73%)	33(17.84%)	57(21.76%)	50(16.03%)	154(17.72%)
Asian	1 (0.91%)	4(2.16%)	0	1(0.32%)	6(0.69%)
Other	4(3.64%)	6(3.24%)	5(1.91%)	8(2.56%)	23(2.65%)
Unknown	6(5.43%)	7(3.78%)	0	8(2.56%)	21 (2.42%)

The increasing trend of Hispanics identified with sickle cell trait from 1985 to 2005 is significant at the p=0.01 level.

The increase in the Hispanic population is not just within this specific population but throughout the entire state of Colorado. According to CDPHE Colorado Health Information Dataset (COHID) there were 11,522 babies born to Hispanic mothers in 1995 as compared to 18,231 in 2000 (a 37% increase) and 21,738 in 2004 (a 16% increase from 2000). According to these numbers babies born of Hispanic mothers make up a larger proportion of the general birth cohorts from those years similar to this cohort of babies (21% in 1995, 28% in 2000, 32% in 2004). The increase of the number of babies identified with sickle cell trait and all hemoglobinopathy trait can be noted by the percent increase of the Hispanic population year to year and not necessarily by an increase rate of Hispanic babies born with sickle cell trait in the general population.

The realization that about 14% of the population is not confirmed brought about another concern including which populations are not coming in for the follow-up confirmatory test. Further investigations have shown that not only is the Hispanic population with 15.43% not coming in for a follow-up, confirmatory test but also the Caucasian population with 14% not coming in for a follow-up, confirmatory test. Perhaps the spread of education past the African American population would cause these percentages to come closer to that of the African American population (11% not confirmed).