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Pediatric Patients with Diabetes Transition to Adult Care

Sara Jennings
California State University, Northern California Consortium Doctor of Nursing Practice

CALIFORNIA STATE UNIVERSITY, FRESNO

THE DIVISION OF GRADUATE STUDIES

ABSTRACT

PEDIATRIC PATIENTS WITH DIABETES TRANSITION TO ADULT CARE

The purpose of this study was to identify the optimal age to target transition to adult care education for adolescent and young adults (AYA) with Type 1 and Type 2 Diabetes Mellitus (DM) as they transition from pediatric endocrinology providers to adult DM providers. A secondary purpose of this study was to identify if there was a relationship between attendance rate, age, gender, years diagnosed with DM, ethnicity, insurance type, Type of DM, and current county of residence with control of diabetes, measured by glycosylated hemoglobin (HgbA1c). A quantitative study through chart audits was conducted at Valley Children's Healthcare, VCH, pediatric endocrinology practice, in Madera, California. Patients with the diagnosis of Type 1 or Type 2 DM born been 1997-1999, aged eighteen to twenty-one years old seen for at least one provider visit in 2017, were audited. The data was analyzed for Chi-Square Test of Independence to identify if attendance rate to appointments between 2014-2017 has a relationship to patients year of birth and to determine if the average HgbA1c in 2017 has a relationship to patient demographics.

The research instrument was an excel work sheet used to analyze collected data. Data was collected by manual chart audits and analyzed with SPSS soft wear.

Current literature lacks conclusive data of when transition to adult care skills should be taught to AYAs with DM and how it impacts diabetic control in adolescents and young adults with DM. In addition, unique factors that have not been previously studied in the population seen at VCH are that eighty percent of patients have Medi-Cal California Children Services insurance indicating the majority of the population lives below the federal poverty level; the practice is a regional center for over twelve counties in California; and sixty-five percent of children in this region are from Hispanic origin.

Sara Jennings
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Keywords: Adolescents and young adults , Type 1 Diabetes Mellitus, Type 2 Diabetes Mellitus, transition to adult care, Medi-Cal California Children Services, and Hispanic.

PEDIATRIC PATIENTS WITH DIABETES TRANSITION TO ADULT CARE

by

Sara Jennings

A project

submitted in partial

fulfillment of the requirements for the degree of

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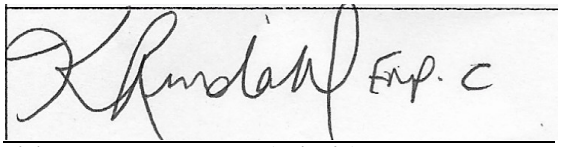
APPROVED

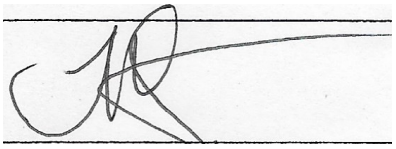
For the California State University, Northern Consortium
Doctor of Nursing Practice:

We, the undersigned, certify that the project of the following student meets the required standards of scholarship, format, and style of the university and the student's graduate degree program for the awarding of the Doctor of Nursing Practice degree.

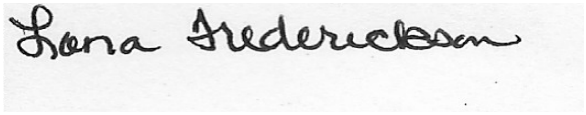
Sara Jennings
Project Author



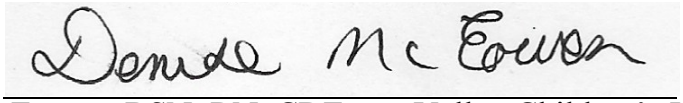
Kathleen Rindahl , DNP, FNP-C (Chair) Nursing



Therese Hinz, MSN, PNP Valley Children's Healthcare



Lana Frederickson, MSN, RN, CDE Valley Children's Healthcare



Denise McEowen, BSN, RN, CDE Valley Children's Healthcare

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CHAPTER 1: INTRODUCTION

The American Academy of Pediatrics gave a consensus opinion that pediatric healthcare providers should empower adolescents to transition to adult care through the development of formalized transitional programs (2011). For pediatric patients with diabetes, with either type 1 or type 2 Diabetes Mellitus (DM), transitioning to adult care can present considerable challenges to accessing care and effectively self-managing DM. In the United States, high rates of DM are resulting in close to a million diagnosed patients with DM younger than eighteen years old, who will be transitioning to adult care at a rate of tens of thousands per year (Peters, Laffel, & American Diabetes Association Transitions Working Group, 2011). Barriers to transitioning to adult care can result in short and long-term health complications for AYA patients with DM.

Peters et al. (2011) found barriers to transitioning to adult care include lack of empirical evidence for the transition process and determining the readiness for transition, essential differences in how pediatric and adult health care is provided, developmental and social changes in young adulthood, gaps and changes in health insurance during this transitional age, unique learning style and requirements of this age group, and a lack of trained adult healthcare providers to assume care for this population as they transition to adulthood. These barriers to transitioning to adult care frequently result in poor health indicators for this population. Poorly controlled DM is associated with chronic microvascular and macrovascular

complications that may develop into renal and cardiovascular disease, and increased risk of acute complications from high and low blood sugars.

The lack of a formal transitional program, to aid patients to overcome barriers to care, for pediatric patients with DM transitioning to adult care, is directly related to poor health outcomes for this population. The purpose of formal transitional programs is to optimize the lifelong functioning and quality of life for AYAs by ensuring appropriate medical and developmental care is provided to each patient at every age (American Academy of Pediatrics, 2011**).** Barriers for pediatric patients with DM transitioning to adult care include lack of empirical evidence to determine readiness for transition (Peters et al., 2011). Research of AYAs with DM transitioning to adult care has revealed opportunities and gaps in research about when pediatric patients with DM should be transitioned to adult care.

The purpose of this Doctor of Nursing Practice (DNP) project and study was to identify if there is an optimal age to target transition to adult care education for AYAs with DM as that transition from pediatric endocrinology providers to adult DM providers. A secondary purpose of this study was to identify if there is a relationship between specific demographic categories and control of DM in AYAs seen at Valley Children's Healthcare's pediatric endocrinology practice (VCH).

Current literature lacks conclusive data of when transition to adult care skills should be taught to AYAs with DM and how this may impact diabetic

control in AYAs with DM. In addition, unique factors that have not been previously studied in the population seen at VCH are that eighty percent of patients have Medi-Cal California Children Services insurance indicating this population is below the federal poverty level, the practice is a regional center for over twelve counties in California, includes research on AYAs with Type 2 DM, and sixty-five percent of children in this region are Hispanic (Lucile Packard Foundation, 2018).

CHAPTER 2: LITERATURE REVIEW

Zoni et al. (2018) led a mixed method, descriptive and cross-sectional study, of young adult Type 1 DM patient's perception of nurse-led transition programs from pediatric to adult diabetes care. The sample consisted of twenty patients who agreed to participate out of the fifty-eight patients who participated in the pilot program. The sample consisted of patients with Type 1 DM who were aged sixteen to twenty-five years old. Race, ethnicity, and socioeconomic status were not reported. The sample consisted of thirteen females and seven males. The setting was at a pediatric endocrinology practice at the University Hospital of Lusanne, Switzerland. The research method included collecting glycated Hemoglobin levels (HgbA1c) and a questionnaire. The questionnaire included the assessment of Self-Care Inventory (SCI) and Caring Nurse-Patient Interactive Short Scale to assess the self-management and therapeutic relationship. The data was reported with descriptive statistics. Pearson product moment coefficients of correlation and calculations of frequency were used to identify relationships between self-care, age, and gender. Analysis was done with STATA13. Outcomes included that the sample was compliant with insulin injections, but had poor adherence with diet, and overall satisfaction score of four out of five score with nurse-led visits. Privacy was the most important issue with the sample. The researchers concluded that nurse-led visits for young adults with Type 1 DM was a valid and important partner to medical management in the transition to adult care.

The strength of this study is that the pilot program successfully used a nurse-led program with a nursing care model. A weakness of the study is there is no consensus within the field to evaluate transition outcomes.

Garvey et al. (2017) conducted a quantitative study to evaluate transition experiences in young adults with Type 1 DM before and after they transitioned from pediatric to adult care. The researchers sent an electronic survey to eighteen to twenty-nine year-olds through sixty Type 1 DM exchange clinic registry centers. The sample consisted of six-hundred and two participants, with three-hundred and three in the PEDS, prior to transition, and two-hundred and ninety-nine in the ADULT, after transition, groups. The average age was twenty-two years old in the PEDS group and nineteen years old in the ADULT group. Demographic data was requested from Type 1 DM registry centers, but not reported in this study. The electronic survey included transition experience survey, SCI, Problem Areas in Diabetes (PAID), and self-report of most recent HgbA1c. Descriptive analysis was done for transition reasons and experience. Self-reported HgbA1c, age of transition, and anticipated age of transition were analyzed with a t-test. Gender and reproductive health education were analyzed with a X2 test. Relationships between HgbA1c <7%, transition education, and readiness to transition were analyzed with a multivariable logistic regression with a stepwise procedure in both groups. SCI and PAID scores were analyzed with a multivariable linear regression model. The researchers found that the ADULT

group had less visits prior to transition and felt unready to transition and were the most likely to have a six month or more gap in care between pediatric and adult health care provider. A majority of the sample, 80%, were initially treated by a pediatric endocrinologist but only 43% of PEDS group and 33% of ADULT group were educated on reproductive health related to Type 1 DM. In addition, only 50% of PEDS and 66% of ADULT group had transition to adult care issues reviewed in a provider visit. The researchers identified visits focused on transition issues may decrease gaps in care at transition to adult care. A limitation of this study is while the researchers requested a HgbA1c level within the past six months from the registry clinic, many patients had not attended a visit within six months, therefore the researchers used self-reported HgbA1c for analysis. The strength of this study is the large sample including multiple centers of care.

Pierce et al. (2017) conducted a qualitative direct content analysis of telephone interviews with stakeholders to identify outcomes of young adults with Type 1 DM during Health Care Transition, HTC, to adult care. The sample of forty-six included parents, patients, pediatric and adult healthcare providers, and experts in HCT. The sample was selected from and interviewed via telephone with patients and providers in the Delaware Valley Health Systems in North and Central Florida. Demographics were not reported. The interviews used semi-structured and open-ended questions. The data was analyzed using a priori coding scheme for fit with the SMART expanded model. The researchers identified

HgbA1c, ability to navigate healthcare systems, integration of self-care into adult roles, autonomy with family involvement, and self-care accountability as themes of outcome goals. The researchers concluded that providers could use the SMART expanded model to help assess readiness to transition and measurable outcomes of success to transition. A weakness of this study is that participants had to be fluent in English to be included in the sample. A strength of this study is that it included parents, patients, and providers in the sample.

Pyatak et al. (2017) conducted a mixed methods analysis with three groups including last year of care, lost to follow up, and a control group to identify and treat Type 1 DM patients who were lost to follow-up during transition from pediatric to adult care. The sample included fifty-four pediatric patients in their last year of care, CC group, and twenty-four patients lost to follow up in transition to adult care, LC group. The CC group was on average nineteen years old, 49% female 51% male, 64% Hispanic, 10% white, and 10% black. The LC group was an average of twenty-one years old, 41% female, 59% male, 70% Hispanic, 25% white, and 5% black. This study was part of the Helmsley T1D study and was part of the Let's Empower and Prepare program at the University of Southern California. Data was collected via medical records and patients were prospectively followed for one year. Patients were given diabetes education, a case manager, and a structured transition program. The researchers used SAS for windows to conduct paired t-tests to compare clinical, psychosocial, and follow-up care utilization

between the CC and LC groups. The findings included that the LC group had an average of 11.6 months in gap in care at transition to adult care. The CC group had no gap. The LC group had higher HgbA1c, depressed symptoms, were more likely to be lost to follow up care, and had more Emergency Room visits for low blood sugars. Both groups had improved HgbA1c after enrollment in the transition program. A weakness of this study is that the control group was not reported in the results. A strength of this study is that the researchers demonstrated positive patient outcomes with the Let's Empower and Prepare program.

Agarwal et al. (2017) evaluated a model of adult endocrinologist led transition care for young adults with Type 1 DM through a quantitative study. The University of Pennsylvania studied a cohort of seventy-two young adults with Type 1 DM aged eighteen to twenty-five years old who were transitioned between Children's Hospital of Philadelphia and University of Pennsylvania. The sample was 50% female, 50% male, 62% Caucasian, 25% African American, 2% Hispanic, with 50% using public insurance. The sample was given a pre and post program assessment with a six month mean daily blood glucose frequency and HgbA1c compared pre and post program. Data was collected from medical records. The cohort participated in a transition clinic led by Registered Nurses, Nurse Practitioners, Diabetic Educators, Social Workers, and Endocrinologists who provide care to adults. Multiple linear regression and paired t-tests were used

to analyze the data with STATA 14.0 for Windows. The researchers found that on average HgbA1c decreased by 0.7% and BG testing increased by one time per day post program. In addition, 88% of patients attended two or more visits in the six months they participated in the transition program. A weakness of this study is that a large part of the cohort was lost to follow-up. One-hundred and twenty-two patients were referred to the program, seventy-two attended an appointment and joined the cohort. The researchers identified that the patients lost to follow-up may have moved or experienced a gap in care. A strength of this study is that it was the first to measure frequency of Blood Glucose testing as an outcome measure.

Kiziler, Yidiz, and Fidanci (2018) wanted to validate the Turkish version of Transition Readiness Assessment Questionnaire for AYAs with DM transitioning to adult care using a methodological study. The participants were given the Turkish Transition Readiness Assessment Questionnaire and a self-care scale through in-person interviews at two different pediatric endocrinology practices in Turkey. The questions included self-assessment of taking medications, attending appointments, talking to providers, and activities of daily living. The sample consisted of one-hundred and nine patients with Type 1 DM aged fourteen to twenty-two years old. The participants were Turkish and had to have DM for at least one year to be included in the study. The sample was 53.2% male, average age was fifteen years old, mean age at diagnosis of Type 1 DM was ten years old,

and average duration of having Type 1 DM was 4.8 years. The data was analyzed for frequency using descriptive statics, Pearson's correlation, and analyzed with SPSS software. The researchers found that 56% of patients did not consistently record blood glucose, 52% took their medications without being instructed to by family members, 82.6% denied differences in their activities of daily living compared to peers, and 26% contacted their providers without family involvement. The researchers concluded that the reliability of the questionnaire was valid with a p value of <0.05. A weakness of the study is that it has not been repeated by other researchers to validate the results. A strength of this study is the large sample size and the validation of the Readiness Assessment Questionnaire in Turkish culture and language.

Kime (2013) evaluated the effectiveness of adolescents' transition to adult care using process mapping methodology. Kime (2013) used data from the "Join Us on our Journey" study from the National Health Service in the United Kingdom collected over three years from nine regions and three-hundred participants. Specific demographics about the population were not included in the article. The researchers collected data in group sessions and data was analyzed for themes. Themes included a focus on transferring responsibility to adult providers and not the overall wellbeing on the patient, lack of consistency in the transition process, a lack of communication from providers to families and adult providers about the transition, and patients felt the transition process should take at least two

years. A strength of the study in the large sample of three-hundred participants, while a weakness is a lack of specific demographics about the population.

Gaps in the Literature

This literature review identified gaps and strengths in the care of pediatric patients transitioning to adult care. Zoni et al. (2018) identified more research is needed to identify best practices for transitional care programs, but nurse-led programs are a valid tool to support transition. Garvey et al. (2017) recognized there is a need for development and evaluation of standardized transitional education tools and that pediatric endocrinology visits focused on transitional issues may decrease gaps in care at transition to adult care. Pierce et al. (2017) focused on the need to develop measurable outcome tools to enable benchmarking between practices. Pierce et al. (2017) suggest that HgbA1c, healthcare navigation skills, integration of self-care into adult roles, balancing parent involvement with autonomy, and accountability in self-care should be the focus of outcomes. Kiziler, Yidiz, and Fidanci (2018) found the Readiness Assessment Questionnaire to be valid in Turkish culture and language but need the study to be repeated to confirm validity. Kime (2013) found that current practices fail to be holistic or patient centered, and patients would recommend the transition process take at least two years.

Agarwal et al. (2017) and Pierce et al. (2017) both used the SMART model as their conceptual framework. Zoni et al. (2018) and Garvey et al (2017) both

used SCI to assess their sample. Pierce et al. (2017) and Kiziler et al. (2018) found that self-care is a vital outcome of transition clinics. Agarwal et al. (2017) identified that adult endocrinologist may be able to lead successful transition programs. More research including randomized to program versus control groups is needed to validate their findings. Pyatak et al. (2017) identified that formal transition programs can decrease Emergency Room visits and HgbA1c in this population. Pyatak et al. (2017) also identified that there is a need for more tools and interventions for psychosocial needs of young adults with Type 1 DM. Pediatric patients transitioning to adult care benefit from formalized programs, but there is a lack of formalized and standardized tools to measure readiness and outcomes. The literature review demonstrates a gap in research and empirical evidence related to when the transitional process should start, how to assess readiness to transition, how long the transition process should take, and how to measure if a transition has been successful.

CHAPTER 3: METHODOLOGY

Current literature lacks conclusive data of when transition to adult care skill should be taught to AYAs with DM and how this impact's diabetic control in AYAs with DM. The purpose of this study was to identify the optimal age to target transition to adult care education for AYAs with Type 1 and Type 2 DM as they transition from pediatric endocrinology providers to adult DM providers. A secondary purpose of this study was to identify if there was a relationship between demographics including attendance rate, age, gender, ethnicity, insurance type, Type 1, Type 2 DM, and current county of residence with control of DM, measured by HgbA1c for this population.

Sample, Setting, and Data Collection

The sample size was two-hundred and twenty six patients seen at VCH in 2017. Inclusion criteria was being seen at VCH, born between 1997-1999 (age eighteen to twenty-one years old in 2017), with at least one provider (defined as with a visit with a Medical Doctor or Nurse Practitioner) visit in 2017, diagnosed with DM prior to 2017, and billed under the ICD 10- billing codes: E10.65, E10.9, E11.65, E11.9 (Type 1 or Type 2 DM). All other patients seen at the practice were excluded from the study. No special groups were included in this study.

A retrospective manual chart audit was done at VCH. Due to this, no recruitment was done. The procedure for this study was a manual chart audit of historical records. Special procedures included the principal investigator manually

auditing patient's charts in Athena, the electronic medical record system at VCH. Information collected included age, gender, ethnicity, insurance type, type of DM, current county of residence, visit attendance between 2014-2017, and lab results for HgbA1c for each subject of the study. Front office staff entered demographic information, scheduled patient visits, while medical assistants entered lab results, which were all verified by the provider in the practice during the visit in the Athena medical record system that was audited. Providers in the practice were either a Nurse Practitioner or Medical Doctor. Data was entered in the researchers data collection tool, an excel worksheet (See Appendix A-DNP Data Instrument). Data was coded and entered into the DNP data tool as it was collected (See Appendix B-DNP Coding Key) VCH Heath Insurance Portability and Accountability Act (HIPAA) and Protected Heath Information (PHI) policy and procedures were followed at all times to protect patient privacy and maintain minimal risk during the study (see Appendix C-VCH HC-0020 and HC-0021). Each audit for each subject was done once and took about five minutes to complete. The chart audit was done on a VCH password protected computer assigned to the principal researcher.

Data Analysis and Hypotheses

Contingency tables were generated from the DNP Data Instrument, Microsoft Excel worksheet (see Appendix D-DNP Data with Contingency Tables) and analyzed for descriptive statistics by SPSS software. The first hypothesis was

analyzed with Chi-Square Test of Independence. Null Hypothesis: The attendance rate to appointments between 2014-2017 did not have a relationship to patient's year of birth. Alternative Hypothesis: The attendance rate to appointments between 2014-2017 had a relationship with patient's year of birth.

The second hypothesis was also analyzed with Chi-Square Test of Independence using SPSS software. Null Hypothesis: The average HgbA1c in 2017 did not have a relationship with patient demographics including: type of DM, age in 2017, years diagnosed with DM in 2017, attendance rate to provider visits in 2017, gender, ethnicity, insurance coverage, and county of residence. Alternative Hypothesis: The average HgbA1c in 2017 did have a relationship with patient demographics including: type of DM, age in 2017, years diagnosed with DM in 2017, attendance rate to provider visits in 2017, gender, ethnicity, insurance coverage, and county of residence.

Minimizing Risks

VCH HIPPA and PHI guidelines were followed to prevent legal and social risk for subjects. All data was stored in a locked area and with a password protected computer, which the researcher had exclusive access to. In addition, the DNP Data Instrument, a Microsoft Excel worksheet, used to collect patient data with identifying patient information had all identifying information removed prior to being analyzed by the California State University, Fresno Statistics lab. Specifically, an initial data sheet required a medical record identification number

and date of birth to prevent duplication in data entry. Once data was verified and the audit complete, the data sheet was saved without the identifying information and the de-identified data was analyzed for the purpose of this study. Data was also coded to protect patient privacy and facility data analysis, please see attached coding key for details (see Appendix B-DNP Coding Key).

No paper documentation was used to complete this study. All computer data with identifying patient data was housed in a VCH password protected computer, which the researcher had exclusive access to. The computer was stored in a locked area when not in use.

Limitations

This project was faced with limitations. The greatest limitation was time allowed to complete the DNP project. The study was conducted over three months to meet DNP program guidelines. The study was limited to patients aged eighteen to twenty-one years old due to patients under the age of eighteen being a protected population. The upper limit of age twenty-one was due to California Children's Services insurance ending at age twenty-one and patients no longer being seen at VCH. Issues with measurements were controlled by verifying HgbA1c analysis machine was validated per VCH protocols.

Compensation, Consent, and Approval

No compensation was provided to subjects due the study being retrospective. Written consent forms did not apply to the study due to no more

than minimal risk to subjects and being a retrospective audit of documentation. In addition, an aspect of this study was capturing the number of patients lost to follow-up, as they got older. Due to feasibility and minimal risk a waiver of informed consent was granted by VCH institutional Review Board (IRB) (see Appendix E-VCH Waiver). This study was approved by VCH IRB and California State University, Fresno School of Nursing IRB (see Appendix F-Fresno State and VCH IRB Approval).

CHAPTER 4: RESULTS

The sample consisted of 226 subjects. The sample demographics included 69% diagnosed with Type 1 DM and 31% diagnosed with Type 2 DM. Subjects born in 1997 were 23%, 1998 31%, and 1999 45% of the sample. The majority had DM for five years of less, 50%, while 32% had DM for six to ten years, and 19% had DM for eleven years or more. Males made up 57% and females 43% of the sample. Ethnicity of the sample included 2% Asian, 4% Black, 60% Hispanic, 30%White, and 4% other. The majority of the sample used Medi-Cal CCS as their insurance, 79%, while 18% had private insurance, 2% had both private and Medi-Cal CCS insurance, and 1% were cash pay or no insurance. The largest portion of the sample lived in Fresno county, 35%, followed by Tulare with 20%, Kern with 15%, Stanislaus with 10%, Merced with 10%, Madera with 5%, Kings with 4%, and less then 1% living in Sacramento, San Joaquin, and San Luis Obispo (see Table 1. Sample Demographic Characteristics).

Table 1

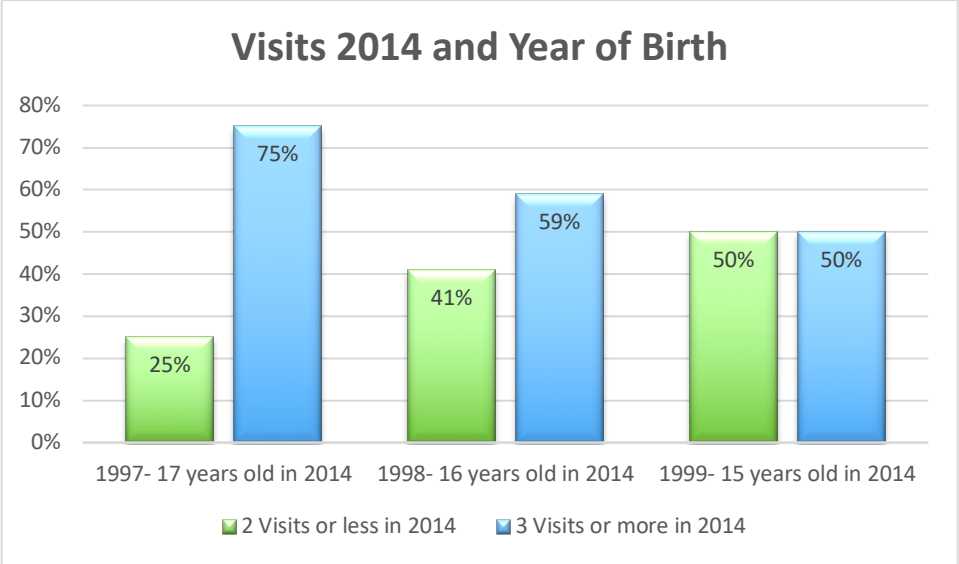
Sample Demographic Characteristics

Total Number		226	
		Number	**Percentage**
Type of DM	Type 1 DM	156	69%
	Type 2 DM	70	31%
Birth Year	1997 (20 years old in 2017)	53	23%
	1998 (19 years old in 2017)	71	31%
	1999 (18 years old in 2017)	102	45%
Years with diagnosis of DM	5 years or less	113	50%
	6-10 years	72	32%
	11 years or more	41	19%
Gender	Female	97	43%
	Male	129	57%
Ethnicity	Asian	5	2%
	Black	10	4%
	Hispanic	135	60%
	White	67	30%
	Other	9	4%
Insurance	Medi-Cal CCS	178	79%
	Private	40	18%
	Medi-Cal CCS and Private	5	2%
	Cash Pay or No Insurance	3	1%
County of Residence	Fresno	78	35%
	Kern	35	15%
	Kings	8	4%
	Madera	12	5%
	Merced	22	10%
	Sacramento	1	>1%
	San Joaquin	1	>1%
	San Luis Obispo	1	>1%
	Stanislaus	23	10%
	Tulare	45	20%

Visits and Birth Year

Four contingency tables were created to test the first hypothesis. Null Hypothesis: The attendance rate to appointments between 2014-2017 did not have a relationship to patient's year of birth. Alternative Hypothesis: The attendance rate to appointments between 2014-2017 had a relationship with patient's year of birth. These contingency tables, comparing rate of attendance in 2014, 2015, 2016, and 2017, to birth year were then analyzed with SPSS software for Chi-Square Test of Independence (see Appendices D-DNP Data with Contingency Tables, G-SPSS Results, and H-DNP Oral defense ppt).

Comparing visits in 2014 to birth year demonstrated a significant relationship between year of birth and attendance rate x^2 (1, N =226) = 9.348, $p <$ 0.05, Cramer's V = 0.203. For patients born in 1997 (age seventeen years old in 2014), 24.5% attended two or less visits in a year, while 75.5% attended three or more visits in a year. For patients born in 1998 (age sixteen years old in 2014), 40.8% attended two or less visits in a year, while 59.2% attended three or more visits in a year. For patients born in 1999 (age fifteen years old in 2014), 50% attended two or less visits in a year, while 50% attended three or more visits in a year. Patients who were seventeen years old in 2014 attended the most visits, while patients who were fourteen years old in 2014 attended the least. For 2014 visits the Null Hypothesis was rejected and the Alternative Hypothesis was accepted (see Figure 1. Visits 2014).



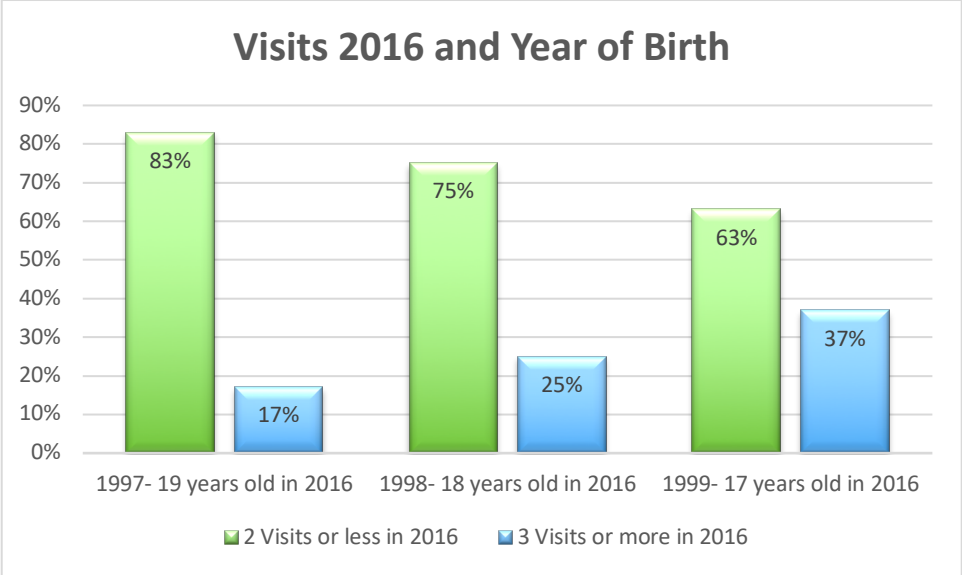
x^2 (1, N =226) = 9.348, $p < 0.05$, Cramer's V = 0.203

Figure 1. Visits 2014

Comparing visits in 2015 to birth year did not demonstrate a significant relationship between year of birth and attendance rate x^2 (1, N =226) = 2.932, $p >$ 0.05, Cramer's V = 0.114. For 2015 visits the Null Hypothesis was accepted and the Alternative Hypothesis was rejected.

Comparing visits in 2016 to birth year demonstrated a significant relationship between year of birth and attendance rate x^2 (1, N =226) = 7.584, $p <$ 0.05, Cramer's V = 0.183. For patients born in 1997 (age nineteen years old in 2016), 83% attended two or less visits in a year, while 17% attended three or more visits in a year. For patients born in 1998 (age eighteen years old in 2016), 74.6% attended two or less visits in a year, while 25.4% attended three or more visits in a year. For patients born in 1999 (age seventeen years old in 2016), 62.7% attended two or less visits in a year, while 37.3% attended three or more

visits in a year. Patients who were seventeen years old in 2016 attended the most visits, while patients who were nineteen years old in 2016 attended the least. For 2016 visits the Null Hypothesis was rejected and the Alternative Hypothesis was accepted (see Figure 2. Visits 2016).



x^2 (1, N =226) = 7.584, $p < 0.05$, Cramer's V = 0.183

Figure 2. Visits 2016

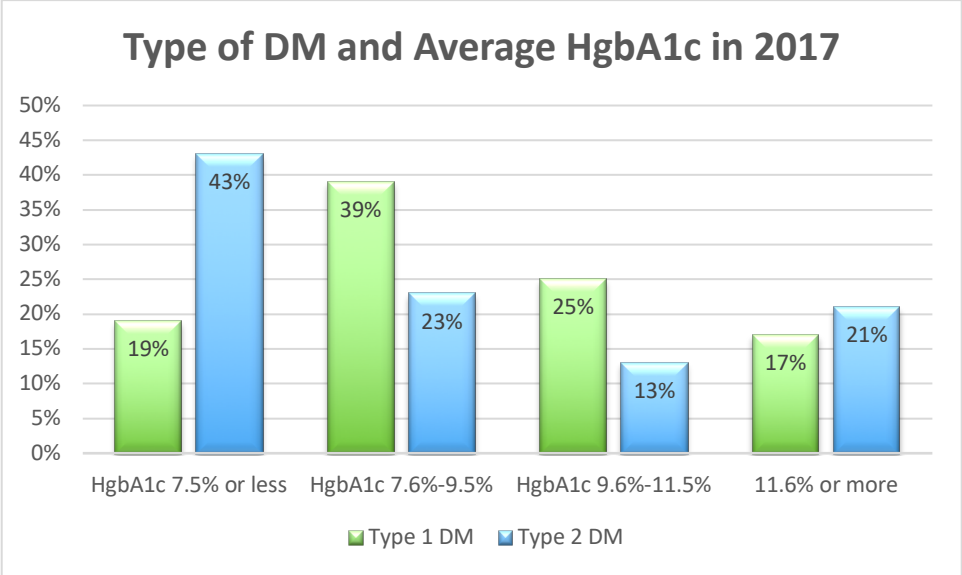
Comparing visits in 2017 to birth year did not demonstrate a significant relationship between year of birth and attendance rate x^2 (1, N =226) = 3.178, $p >$ 0.05, Cramer's V = 0.119. For 2017 visits the Null Hypothesis was accepted and the Alternative Hypothesis was rejected.

HgbA1c and Demographics

Eight contingency tables were created to test the second hypothesis with Chi-Square Test of Independence using SPSS software (see Appendices D-DNP Data with Contingency Tables and G-SPSS Results). Null Hypothesis: The

average HgbA1c in 2017 did not have a relationship with patient demographics including: type of DM, age in 2017, years diagnosed with DM in 2017, attendance rate to provider visits in 2017, gender, ethnicity, insurance coverage, and county of residence. Alternative Hypothesis: The average HgbA1c in 2017 did have a relationship with patient demographics including: type of DM, age in 2017, years diagnosed with DM in 2017, attendance rate to provider visits in 2017, gender, ethnicity, insurance coverage, and county of residence.

Comparing type of DM to average HgbA1c in 2017 demonstrated a significant relationship between type of DM and HgbA1c rate x^2 (1, N =226) = 17.454, $p < 0.05$, Cramer's V = 0.278. For patients with Type 1 DM in 2017, 19.2% had an average HgbA1c of 7.5% or less, 38.5% had an average HgbA1c of 7.6%-9.5%, 25% had an average HgbA1c of 9.6%-11.5%, and 17.3% had an average HgbA1c of 11.6% or more. For patients with Type 2 DM in 2017, 42.9% had an average HgbA1c of 7.5% or less, 22.9% had an average HgbA1c of 7.6%-9.5%, 12.9% had an average HgbA1c of 9.6%-11.5%, and 21.4% had an average HgbA1c of 11.6% or more. Patients with Type 2 DM had the highest rates of controlled DM with a HgbA1c 7.5% or less, but also the highest rates of the least controlled DM with HgbA1c of 11.6% or more. Type 1 DM were most likely to have a HgbA1c of 7.6% to 11.5%. For type of DM the Null Hypothesis was rejected and the Alternative Hypothesis was accepted (see Figure 3. Type of DM).



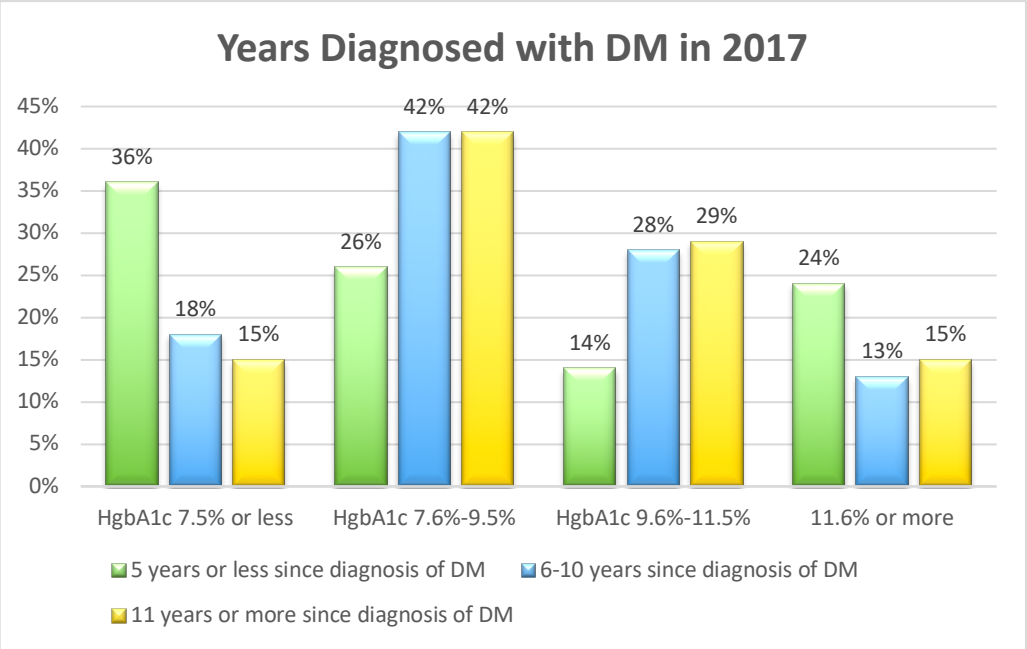
x^2 (1, N =226) = 17.454, $p < 0.05$, Cramer's V = 0.278

Figure 3. Type of DM

Comparing age in 2017 to average HgbA1c in 2017 did not demonstrate a significant relationship between age and average HgbA1c x^2 (1, N =226) = 12.346, $p > 0.05$, Cramer's V = 0.165. For age in 2017 the Null Hypothesis was accepted, and the Alternative Hypothesis was rejected.

Comparing number of years with diagnosis of DM in 2017 to average HgbA1c in 2017 demonstrated a significant relationship between years of diagnosis and average HgbA1c rate x^2 (1, N =226) = 21.299, $p < 0.05$, Cramer's V = 0.217. For patients diagnosed five years or less in 2017, 36.3% had an average HgbA1c of 7.5% or less, 25.7% had an average HgbA1c of 7.6%-9.5%, 14.2% had an average HgbA1c of 9.6%-11.5%, and 23.9% had an average HgbA1c of 11.6% or more. For patients diagnosed six to ten years prior to 2017, 18.1% had an average HgbA1c of 7.5% or less, 41.7% had an average HgbA1c of 7.6%-9.5%,

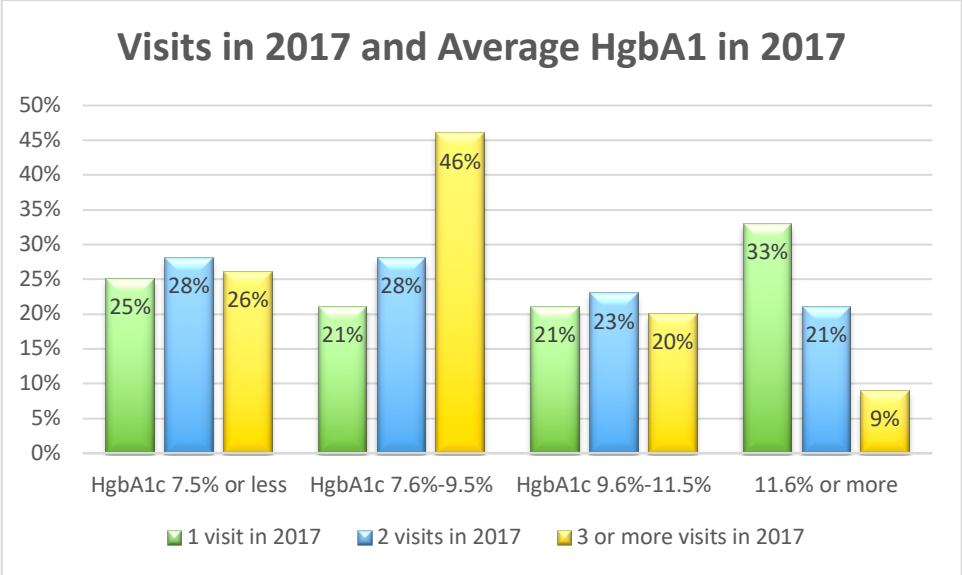
27.8% had an average HgbA1c of 9.6%-11.5%, and 12.5% had an average HgbA1c of 11.6% or more. For patients diagnosed eleven years or more prior to 2017, 14.6% had an average HgbA1c of 7.5% or less, 41.5% had an average HgbA1c of 7.6%-9.5%, 29.3% had an average HgbA1c of 9.6%-11.5%, and 14.6% had an average HgbA1c of 11.6% or more. Patients diagnosed with DM for five years or less were the most likely to have controlled DM with a HgbA1c of 7.5%, while patients diagnosed for eleven years or more were the least likely. The majority of patients diagnosed for six years or more had an average HgbA1c of 7.6%-9.5%. For number of years with diagnosis of DM the Null Hypothesis was rejected and the Alternative Hypothesis was accepted (see Figure 4. Years with diagnosis).



x^2 (1, N =226) = 21.299, $p < 0.05$, Cramer's V = 0.217

Figure 4. Years with diagnosis

Comparing number of attended provider visits in 2017 to average HgbA1c in 2017 demonstrated a significant relationship between visits and average HgbA1c x^2 (1, N =226) = 18.124, $p < 0.05$, Cramer's V = 0.200. For patients who attended one visit in 2017, 25% had an average HgbA1c of 7.5% or less, 21.2% had an average HgbA1c of 7.6%-9.5%, 21.2% had an average HgbA1c of 9.6%-11.5%, and 32.7% had an average HgbA1c of 11.6% or more. For patients who attended two visits in 2017, 28% had an average HgbA1c of 7.5% or less, 28% had an average HgbA1c of 7.6%-9.5%, 23.2% had an average HgbA1c of 9.6%-11.5%, and 20.7% had an average HgbA1c of 11.6% or more. For patients who attended three or more visits in 2017, 26.1% had an average HgbA1c of 7.5% or less, 45.7% had an average HgbA1c of 7.6%-9.5%, 19.6% had an average HgbA1c of 9.6%-11.5%, and 8.7% had an average HgbA1c of 11.6% or more. Patients who attended two visits had the highest rates of controlled DM with a HgbA1c 7.5% or less while patients who attended one visit had the lowest rates. Patients who attended three or more visits had the lowest rates of HgbA1c 11.6% or more while patients who attended one visit had the highest. Patients who attended three or more visits had the highest rate of HgbA1c 7.6%-9.5%, while patients who attended two visits had the highest rate of HgbA1c 9.6%-11.5%. For visits in 2017 compared to HgbA1c in 2017 the Null Hypothesis was rejected, and the Alternative Hypothesis was accepted (see Figure 5. Visits 2017 and HgbA1c).



x^2 (1, N =226) = 18.124, $p < 0.05$, Cramer's V = 0.200

Figure 5. Visits 2017 and HgbA1c

Comparing gender to average HgbA1c in 2017 did not demonstrate a significant relationship between gender and average HgbA1c x^2 (1, N =226) = 1.526, $p > 0.05$, Cramer's V = 0.082. For gender the Null Hypothesis was accepted, and the Alternative Hypothesis was rejected.

Comparing ethnicity to average HgbA1c in 2017 did not demonstrate a significant relationship between ethnicity and average HgbA1c x^2 (1, N =226) = 9.995, $p > 0.05$, Cramer's V = 0.149. For ethnicity the Null Hypothesis was accepted, and the Alternative Hypothesis was rejected.

Comparing insurance coverage type to average HgbA1c in 2017 did not demonstrate a significant relationship between insurance and average HgbA1c x^2 (1, N =226) = 13.543, $p > 0.05$, Cramer's V = 0.141. For insurance type the Null Hypothesis was accepted, and the Alternative Hypothesis was rejected.

Comparing current county or residence to average HgbA1c in 2017 did not demonstrate a significant relationship between county and average HgbA1c x^2 (1, N =226) = 11.965, $p > 0.05$, Cramer's V = 0.133. For current county or residence, the Null Hypothesis was accepted, and the Alternative Hypothesis was rejected.

CHAPTER 5: CONCLUSION

No statistically significant relationship was found between year of birth and visits in 2015 and 2017. However, for 2014 and 2016 visits in relationship to year of birth, a significant relationship was found. Both of these variables demonstrated that patients who were seventeen years old had the highest rates of attending three or more visits in a year. For visits in 2014, patients who were the youngest, fourteen years old, were the least likely to attend visits. This may be due to inclusion criteria for the study was being diagnosed with DM by 2017, therefore patients who had not yet been diagnosed with DM and had no visits in 2016, 2015, and 2014 were included in the study. For visits in 2016 the group least likely to attend visits were nineteen year-olds, born in 1997, making them the oldest age group studied in 2016. In regards, to teaching transition to adult care skills to AYAs, it appears that patients who are seventeen years old are the optimal age group to target because they are most likely to attend the most provider visits. Before this age some patients may not have been diagnosed with DM yet, and after this age rates of attending provider visits decreases.

No statistically significant relationship was found between age, gender, ethnicity, insurance, and county with average HgbA1c in 2017. There were three demographic categories that did demonstrate significant relationship with average HgbA1c in 2017. These categories included type of DM, years since diagnosis of DM in 2017, and rate of attendance to provider visits in 2017.

Patients with Type 2 DM had the highest rates of controlled DM, but also the highest rates of the least controlled DM. Type 1 DM had the highest rates of moderately uncontrolled DM with HgbA1cs of 7.6%-11.5%. More research may be needed to understand this phenomenon but may be attributed to some Type 2 DM having HgbA1c controlled with lifestyle interventions and others requiring insulin.

Patients diagnosed with DM for five years or less were the most likely to have controlled DM with a HgbA1c of 7.5% or less, while patients diagnosed for eleven years or more had the lowest rates of controlled DM. It appears that the longer a patient has DM, rates of controlled DM decreases.

Patients who attended two visits had the highest rates of controlled DM with a HgbA1c 7.5% or less while patients who attended one visit had the lowest rates. This may be due to some providers scheduling controlled Type 2 DM for follow visits every six months instead of three. Patients who attended three or more visits had the lowest rates of HgbA1c 11.6% or more, while patients who attended one visit had the highest. Patients who attend one visit are the most likely to have the most poorly controlled DM and the least likely to have controlled DM.

AYAs who are at the highest risk of having uncontrolled DM are patients who attend one visit per year, have had DM for eleven years or more, and have Type 2 DM. Patients from this population who have the highest rates of controlled DM attend two visits per year, have had DM for five years or less, and

have Type 2 DM. Special considerations to target patients with low attendance to follow-up visits, have had DM for longer periods of time, and have Type 2 DM would be vital in providing effective transition to adult care education. It is also important to note that 81% of the sample used Medi-Cal CCS insurance and 60% identified as Hispanic. It would be essential to incorporate insurance issues and culturally appropriate care into education materials developed for this population.

Future Research Recommendations

There are still many issues that need to be researched to create successful transition to adult care programs. Long-term studies on the effectiveness of transitional programs are still needed. More research is still needed to create formalized and standardized transitional tools and measurements of success for transitional programs. There are also questions this study brought to light. Patients with Type 2 DM had the highest rates of controlled DM with a HgbA1c 7.5% or less, but also the highest rates of the least controlled DM with HgbA1c of 11.6% or more. This is a phenomenon that could be further explored in research. More studies evaluating patients with Type 2 DM and transition to adult care are needed.

Impact on Nursing

The results of the study will have implications for future nursing practice. The study identified that seventeen years old is the ideal age to provide transition to adult care education to AYAs with DM. In addition, the study identified that patients with Type 2 DM, have had the diagnosis of DM for eleven years or more,

and attend one visit per year have the lowest rates of controlled DM in this population. This information can be used to create a targeted transition to adult care education intervention for pediatric patients with DM at this age. This education could possibly improve DM control during the transition to adult care and increase knowledge of how to transition to adult care. General benefits of this study include increasing knowledge and awareness of how to support and provide demographic and age targeted education to AYAs with DM transitioning to adult care. There are also potentially specific benefits for improving nursing care provided to children who live below the federal poverty level in California with DM using Medi-Cal CCS as their primary insurance and Hispanic children.

The results of the study can be shared with diabetes educators and nursing administrations to create consensus and support for creating a formalized transitional program that is initiated for patients who are seventeen years old with DM. Zion et al. (2018) have already validated that nurse-led transitional programs are effective. This study may be the first step in creating a nurse-led transitional clinic for pediatric patients with DM transitioning to adult care at VCH.

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APPENDICES

APPENDIX A: DNP DATA INSTRUMENT

Subject ID #	Athena #/DOB	Year of Birth	Age 1/1/17	# yr w/ dx	insurance	Ethnicity	Gender	County	Type of DM	visits 2014	visits 2015	visits 2016	visits 2017	HgbA1c 2017

APPENDIX B: DNP CODING KEY

DNP Data Coding Key

Column A: Subject ID #
A unique code assigned by the researcher.

Column B: patient identify (removed for analysis and write-up) Pt initials, Athena number, and date of birth

Column C: Year of Birth
1 - 1997 (20 years old)
2 - 1998 (19 years old)
3 - 1999 (18 years old)

Column D: Age on 1/1/17
1 - 18 yrs
2 - 19 yrs
3 - 20 yrs

Column E: Number of years since diagnosis of DM to 2017 (rounded up to years)
0 – Less than 6 months
1 – 1 year to 5 years
2 – 6 years to 10 years
3 – 11 years to 15 years
4 – 16 years to greater than 20 years

Column F: Insurance Type in 2017
1 – California Children's Services (CCS) and/or Medi-Cal
2 – Private insurance (Preferred Provider Organization or Health Maintenance Organization)
3 – Both CCS or Medi-Cal and Private Insurance 4 – Cash pay or No insurance
5 - Other

Column G: Ethnicity
1 - Asian
2 - American Indian/Native Alaskan
3 - Black/African American
4 – Hispanic/Latino
5 - Native Hawaiian/ other Pacific islander
6 - White
7 - Other/not listed

Column H: Gender
1 - Female
2 - Male
3 - Other/not list

Column I: Current county of Residence, California County Codes
1 – Alameda
2 – Alpine
3 – Amador
4 – Butte
5 – Calaveras
6 – Colusa
7 – Contra Costa
8 – Del Norte
9 - El Dorado
10 – Fresno
11 – Glenn
12 – Humboldt
13 – Imperial
14 – Inyo
15 - Kern
16 – Kings
17 – Lake
18 – Lassen
19 – Los Angeles
20 – Madera
21 – Marin
22 – Mariposa
23 – Mendocino
24 – Merced
25 – Modoc
26 - Mono
27 – Monterey
28 – Napa
29 – Nevada
30 – Orange
31 – Placer
32 – Plumas
33 – Riverside
34 – Sacramento
35 – San Benito
36 – San Bernardino 37 – San Diego

38 – San Francisco 39 – San Joaquin
40 – San Luis Obispo 41 – San Mateo
42 - Santa Barbara 43 – Santa Clara
44 – Santa Cruz
45 – Shasta
46 – Sierra
47 – Siskiyou 48 – Solano
49 – Sonoma 50 – Stanislaus 51 – Sutter
52 – Tehama 53 – Trinity
54 – Tulare
55 – Tuolumne 56 – Ventura 57 – Yolo
58 – Yuba

Column J: Type of DM: Defined by ICD 10-codes
1 - Type 1 DM: ICD 10- E10.65 and E10.9
2 - Type 2 DM: ICD 10- E11.65 and E11.9

Column K, L, M, N: Number of Provider (NP or MD) visits between 2014-2017
0 – 0 visits in a year (including not yet diagnosed with DM or lost to follow-up)
1 – 1 visit per year
2 – 2 visits per year
3 -3 visits per year
4 - 4 or more visits per year

Column O: Average HgbA1c in 2017
0 – 0 visits in year group, no HgbA1c available
1 - 7.5% or less
2 - 7.6%-9.5%
3 - 9.6%- 11.5%
4 - 11.6%-13.5%
5 - 13.5% or More

APPENDIX C: VCH HC-0020 and HC-0021

Valley Children's Healthcare

Policy/Procedure Number	HC-0020
Policy/Procedure Name	Information Technology Data Sanitization Policy
Type of Policy/Procedure	Valley Children's Healthcare - Information Management
Date Approved	07/17
Date Due for Review	02/20
Policy/Procedure Description	Establishes policy for the sanitization and/or destruction of hospital owned electronic devices.
Supersedes	IM-1018, Information Management, Information Technology Data Sanitization Policy AD-1018, Administration, Information Technology Data Sanitization Policy 1.1739, Policy: Organization & Governance, ITS Retired Equipment Sanitization 1.1739, Policy: Organization & Governance, Sanitization and Data Removal Process for Retired IT Equipment AD-1018, Admin-IT, ITS Retired Equipment Sanitation

Purpose Statement

The purpose of this policy is to ensure that all confidential data is permanently removed from hospital devices prior to their reuse, or disposal.

Scope

This policy applies to all users of Valley Children's Hospital (Hospital) information technology resources including, but not limited to, all employees, physicians, volunteers, vendors, contractors, and employees or affiliated organizations. Employees include all staff, administrators, full- or part-time, who are paid by the hospital.

This policy applies to all electronic devices owned by Hospital that have the ability to store data including but not limited to computers, thumb drives, memory cards, PDA's, flash cards, or any other device that can store data. (Reference NIST publication 800-88 revision 1 for a list of media types.)

Policy

In the event that hospital owned electronic devices are marked for destruction, donation or redeployment, all data residing on the hospital owned device is to be destroyed or thoroughly sanitized such that there is reasonable assurance that no usable data remains on the devices.

The Family Educational Rights and Privacy Act (FERPA), the Gramm-Leach-Bliley Act (GLBA), the Health Insurance Portability and Accountability Act of 1996 (HIPAA), and Payment Card Industry Data Security Standards (PCI DSS) require formal documentation of disposal procedures to ensure specific types of information is properly sanitized prior to being discarded.

Sanitation Methods

The National Institute of Standards and Technology (NIST) has defined four methods of data sanitization. These four methods are as follows:

- **Disposal**

  Defined as the act of discarding media with no other sanitization considerations. Examples of Disposal include discarding paper in a recycling container, deleting electronic documents using standard file deletion methods and discarding electronic storage media in a standard trash receptacle.

- **Clearing**
  Defined as a level of sanitization that renders media unreadable through normal means. Clearing is typically accomplished through an overwriting process that replaces actual data with 0's or

random characters. Clearing prevents data from being recovered using standard disk and file recovery utilities.

- **Purging**
  An advanced media sanitization process that protects the confidentiality of information against a laboratory attack. This type of attack involves using signal processing equipment and specially trained personnel. Executing a 7-pass-wipe and degaussing are examples of acceptable methods for purging. In many cases, the same tool can be used for clearing and purging the information.

- **Destroying**
  Destruction of media is the ultimate form of sanitization. After media are destroyed, they cannot be reused as originally intended. Physical destruction can be accomplished using a variety of methods, including disintegration, incineration, pulverizing, shredding, and melting.

General Sanitization

- The Valley Children's Hospital IT department and the biomedical department are the only authorized departments to sanitize or dispose of electronic storage equipment owned or managed by the hospital.
- Staff, physicians, contractors and other non-IT personal cannot destroy, resell or otherwise remove hospital-owned or managed equipment except through this process.
- All electronic storage media will be sanitized when it is no longer necessary for business use, provided that the sanitization does not conflict with data retention policies, or any regulatory requirements. Questions about retention requirements should be directed toward the appropriate data owner.
- All electronic storage media is to be sanitized prior to sale, donation or transfer of ownership. A transfer of ownership may include transitioning devices interdepartmentally, to another department, or replacing media as part of a service agreement.

Media reuse sanitization

- Electronic storage media that is removed from a department and is to be reused within the organization will have all data **cleared** to prevent unauthorized disclosure.
- Data will be cleared using a method consistent with the NIST 800-88 specification and according to the media type.

Retired media sanitation

- Electronic storage media leaving control of the organization and destined for reuse by another organization or final disposal must have all data **purged** in a manner that renders the data unrecoverable.
- Data is to be purged using a method consistent with the NIST 800-88 specification and according to the media type.
- Electronic storage media must be physically **destroyed** when other approved sanitization methods are not effective. Approved methods for physical destruction include shredding, pulverizing, disintegration or incineration.

Responsibilities

- The Information Security Officer will establish and oversee disposal of electronic devices accordance with this policy.
- Information technology department managers will ensure that equipment under the management of their department is disposed of in accordance with this policy.

- Biomedical department management will ensure that equipment under the management of their department is disposed of in accordance with this policy.
- Information technology department managers must maintain records of the data sanitization method used when electronic devices are retired or ownership is transferred to another organization.
- The biomedical department must report data sanitations to the Information technology department so records can be maintained

Definitions
Degaussing
Exposing the magnetic media to a strong magnetic field in order to disrupt the recorded magnetic domains. Degaussing can be an effective method for purging damaged media, for purging media with exceptionally large storage capacities, or for quickly purging diskettes. Degaussing is not effective for purging nonmagnetic media, such as optical media [compact discs (CD), digital versatile discs (DVD), etc.).

Disk Wipe

A procedure that uses a single character to overwrite all addressable locations on a hard drive.

Re-image

To reconfigure a new PC by overwriting the installed operating system with the same or different one, but combined with drivers, applications and settings required by the users.

Media

Material on which data are or may be recorded, such as magnetic disks or tapes, solid state devices like USB flash drives, optical discs like CDs and DVDs and integrated storage devices such as smart phones and iPads.

Media sanitization

The process of removing data from storage media such that there is reasonable assurance that the data may not be retrieved and reconstructed.

Pulverization

A physically destructive method of sanitizing media.

References/Regulations	C.F.R. § 164.316 (b)(2)(i); C.F.R. § 164.316 (b)(2)(ii); C.F.R. § 164.316 (b)(2)(iii) NIST publication 800-88

Other Related Policies/ Procedures	
Policy Lead	Director, IT Security

3

Valley Children's Healthcare

Content Expert(s) Review	**Date(s)**
Director, IT Support & Technical Services	10/12, 09/16
Manager, Technical Services	10/12, 12/16
Manager, IT Support	10/12, 01/17

Approved by	**Date(s)**
Director, Information Security	10/12, 04/17
VP & Chief Information Officer	04/17
EC	02/13, NA
COO/CEO	02/13, 07/17

BOT	02/13, 07/17

4

Valley Children's Healthcare

Policy/Procedure Number	HC-0021
Policy/Procedure Name	Information Technology Data Classification Policy
Type of Policy/Procedure	Valley Children's Healthcare - Information Management
Date Approved	05/18
Date Due for Review	05/21
Policy/Procedure Description	The purpose of this policy is to outline the required data protections based on classification and sensitivity.
Supersedes	IM-1032, Information Management, Information Technology Data Classification Policy AD-1032, Administration, Information Technology Data Classification Policy

Purpose Statement

Valley Children's Healthcare and its subsidiary entities, Valley Children's Hospital, Valley Children's Medical Group and Valley Children's Healthcare Foundation (collectively, the "Healthcare Network")is committed to the protection of confidential information. Classifying data is a method of assigning a level of sensitivity to data. The classification of the data determines the extent to which it needs to be controlled and secured. This policy defines the guidelines to be used in establishing required data protection criteria based on the type of data at issue, its classification and sensitivity.

Scope

This policy applies to all users of Healthcare Network data and information technology resources. This policy governs all information technology resources whether owned by or operated for the Healthcare Network through contractual arrangements, including, but not limited to, all employees, physicians, volunteers, vendors, contractors, employees of affiliated organizations, and visitors to the institution.

Policy

All workforce members of the Healthcare Network have a responsibility to protect the confidentiality, integrity and availability of Healthcare Network data from unauthorized generation, access, modification, disclosure, transmission or destruction, and are expected to be familiar with and comply with this policy.

Data owned, used, created or maintained by the Healthcare Network is classified into the following three categories:

1. Public
2. Sensitive
3. Confidential

(Low Risk)
(Internal Use; Moderate Risk) (High Risk)

Data Classifications
Public Data (Low Risk)

Definition

Public data is information that may or must be open to the general public. It is defined as information with no existing corporate, local, national or international legal restrictions on access or usage. Public data, while subject to hospital disclosure rules, is available to all employees and to all individuals and entities external to the organization.

Protections

Protection of this data is at the discretion of the data owner

Examples

By way of illustration only, some examples of Public Data include: ○ Publicly posted press releases
○ Maps, directions and organization descriptions
○ Organizational Charts

○ Annual Reports

Valley Children's Healthcare
- Press Statements

- Marketing Materials

Sensitive Data (Internal Use; Moderate Risk) Definition

Sensitive Data is information that must be guarded due to proprietary, ethical, or privacy considerations, and must require protection from unauthorized access, modification, transmission, storage or other use. This classification applies even though there may not be a civil statute requiring this protection. Compromise of Sensitive Data may inconvenience the organization, but is unlikely to result in a breach of confidentiality, loss of value or serious damage to integrity. Sensitive Data is information that is restricted to members of the organization who have a legitimate purpose for accessing such data and may be disclosed to other external individuals with the proper consent.

Protections

- Must be protected to prevent unauthorized access and/or unauthorized disclosure.
- May require protection to prevent loss from system failures such as backups. (discretion

of the data owner)

- Must be stored in a nonpublic location (i.e. file cabinet, closed office, or department where physical controls are in place to prevent disclosure) when not in use.

- Must not be posted on any public website.
- Must be destroyed when no longer needed subject to data sanitation policies.

Examples

By way of illustration only, some examples of Sensitive Data include:
- Internal phone books and directories
- Technical procedures and processes and configuration documents ○ Healthcare Network policies and procedures

- Meeting Minutes
- Internal Project Reports
- Public Video Surveillance Footage

Confidential Data (High Risk) Definition

Confidential Data is information protected by statutes, regulations, organizational policies or contractual language. Data owners may also designate data as Confidential. Confidential Data may be disclosed to individuals on a need-to-know basis only. Disclosure to parties outside the organization should be authorized by executive management and/or the Senior Vice-President, Chief Legal Officer.

Protections

o When stored in an electronic format, must be protected with effective passwords and stored on systems that have protection against loss, theft, unauthorized access and unauthorized disclosure.

o Requires multi-factor authentication when available remotely via the Internet.
o Must not be disclosed to parties without explicit authorization by the data owner and in

accordance with state and federal regulations.
o When stored, must be stored only in a locked drawer or room or an area where access

is controlled by a guard, cipher lock, and/or card reader, or that otherwise has sufficient physical access control measures to afford adequate protection and prevent unauthorized access by members of the public, visitors, or other persons without a need-to-know.

o When transported, must be transported only in a locked box, case, bag, or device/technology and stored during transport in a location that otherwise has sufficient

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Valley Children's Healthcare

physical access control measures to afford adequate protection and prevent unauthorized access by members of the public, visitors, or other persons without a need-to-know. (An example, brief case with lock and stored in trunk of car).

o When sent via fax must be sent only to a previously established and used address or one that has been verified as using a secured location.

o Must not be posted on any public website.
o When sent to an external email address, must use encryption technology.
o Must be protected with FIPS 140-2 encryption technology when stored outside the

protected datacenter systems in digital format.
o Must be destroyed when no longer needed subject to data sanitation policies

.

Examples

By way of illustration only, some examples of Confidential Data include:

- Protected Health Information (PHI)
- Electronic Protected Health Information (ePHI)
- Credit Card Numbers
- Social Security Numbers
- Financial Records
- Payroll Information
- Personnel Records
- Trade Secrets **Roles and Responsibilities**

Data Owner

- Data Owners are Healthcare Network leaders having direct operational-level

responsibility for information management, usually department directors. Data Owners

are responsible for data access and policy implementation issues.
- All organizational information must have an associated data owner.
- The data owner is responsible for classifying the data into one of the above categories.
- The data owner is responsible for ensuring that the data is protected according to the

classification.

Data Custodian

- Information Technology Services (ITS) is the data custodian. The custodian is

responsible for providing a secure infrastructure in support of the data including, but not limited to, providing physical security, backup and recovery processes, granting access privileges to authorized system users and implementing and administering controls over the information.

- The data custodian is responsible to protect information according to the classification.

Data User

- Data users are individuals who need and use Healthcare Network data as part of their

assigned duties. Individuals who are given access to sensitive data have a position of

special trust and are thus responsible to protect the security and integrity of the data.
- The data users have authorized access to information by the data owner.

Failure to comply with any or all of this policy may result in corrective action up to, and including, termination of employment.

References/Regulations	
Other Related Policies/ Procedures	HR-1010 Work at Home.

Policy Lead	Director, Information Security

Content Expert (s) Review	**Date(s)**
Director, IT Support & Technical Services	10/12 09/17
Manager, Information Security	10/12, NA, 09/16, 04/17
Manager, IT Technical Services	10/12, 05/17
Manager, IT Support	10/12, 08/17
Information Privacy Officer	10/12, NA
Director, IT Applications & Programming	05/17
Director, Clinical Documentation & Coding	10/17
Executive Director, Corporate Compliance Officer	05/18

Approved by	**Date(s)**
Director, Information Security	05/18
VP & CIO	05/18
EC	02/13, NA

CNO	02/13, NA
Sr VP & Chief Legal Officer	05/18
President VCMG	05/18
President & Chief Operating Officer Valley Children's Hospital	05/18
Sr VP & Chief Physician Executive	05/18
Sr VP & Clinical Integration, Patient Experience & CNO	05/18
CEO/BOT	02/13, 05/18

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APPENDIX D: DNP DATA WITH CONTINGENCY TABLES

Subject ID #	ID	Year of Birth	Age	# yr w/ dx	insurance	Ethnicity	Gender	County	Type DM	visits 2014	visits 2015	visits 2016	visits 2017	Hgb A1c 2017
1 Ban		1	2	2	1	4	2	10	1	4	4	2	4	2
2 Ban		2	1	2	2	6	2	54	1	4	4	2	1	2
3 Ban		3	1	2	1	6	1	54	1	2	3	2	4	1
4 Ban		3	1	3	3	4	1	24	1	2	3	1	4	2
5 Ban		3	2	2	1	4	2	10	1	4	3	2	4	2
6 Ban		3	1	2	1	4	1	15	1	4	4	3	4	3
7 Ban		3	1	4	3	4	2	54	1	4	3	0	3	2
8 Ban		1	3	3	1	3	1	10	1	2	1	1	1	4
9 Ban		2	1	2	1	1	2	10	2	4	4	1	4	3
10 Ban		3	1	1	1	4	1	50	2	0	0	3	2	1
11 Ban		1	3	2	2	6	2	24	1	3	4	1	4	4
12 Ban		3	1	3	1	4	2	10	1	4	3	2	3	2
13 Ban		3	1	3	1	6	2	24	1	3	3	2	4	2
14 Ban		3	1	1	2	3	1	10	1	4	2	3	3	1
15 Ban		2	1	3	1	6	2	10	1	3	4	3	3	2
16 Ban		1	3	3	1	7	2	24	1	4	3	3	4	1
17 Ban		3	1	3	1	4	1	54	1	4	4	2	4	3
18 Ban		3	1	2	2	4	2	10	1	4	2	2	3	2
19 Ban		1	2	1	1	4	2	10	1	0	2	3	2	1
20 Ban		3	1	2	2	4	2	10	2	4	3	2	2	1
21 Ban		2	2	2	1	4	2	20	1	4	4	3	4	5
22 Ban		1	3	1	1	4	2	10	2	4	1	0	2	4
23 Ban		1	2	2	1	4	1	10	1	0	0	2	2	2

24 Ban		3	1	2	1	4	1	20	1	3	2	2	2	1
25 Ban		3	1	2	4	7	2	10	1	0	0	1	1	2
26 Ban		3	2	2	1	4	1	10	1	4	4	4	3	1
27 Ban		3	2	1	1	4	2	54	2	2	3	1	2	1
28 Ban		2	2	2	1	3	2	10	1	4	1	1	1	5
29 Ban		1	2	2	1	4	2	10	2	4	3	1	4	2
30 Ban		2	1	1	1	6	2	24	1	3	4	1	1	4
31 Ban		3	2	3	2	4	2	50	1	0	2	0	1	2
32 Ban		2	1	3	1	1	2	15	1	4	4	2	3	3
33 Ban		1	2	2	1	4	2	15	1	4	3	2	2	2
34 Ban		1	3	2	1	4	1	10	1	4	3	2	4	3
35 Ban		1	3	3	1	4	1	10	1	4	3	2	2	4
36 Ban		2	1	4	2	4	2	54	1	4	3	1	1	3
37 Ban		3	1	3	1	4	2	15	1	4	3	3	2	2
38 Ban		2	1	3	1	4	1	10	1	3	3	1	4	2
39 Ban		3	1	1	2	7	2	16	2	3	4	2	1	1
40 Ban		2	1	3	1	6	2	15	1	3	4	2	1	3
41 Ban		3	2	2	1	4	2	20	1	4	2	2	3	3
42 Ban		2	1	0	1	4	2	54	2	0	0	1	1	1
43 Ban		2	1	2	2	6	1	20	1	4	4	2	3	3
44 Bri		3	1	2	2	6	1	54	1	3	2	1	2	2
45 Bri		2	1	1	1	4	1	10	2	3	4	0	2	4
46 Bri		2	1	1	1	4	1	10	2	4	3	3	3	2
47 Bri		1	3	2	1	4	2	50	1	3	1	1	2	4
48 Bri		2	1	1	1	4	1	24	2	0	1	4	2	2

49 Bri		2	1	1	1	4	1	24	2	0	1	4	2	2
50 Bri		3	1	1	1	4	2	10	1	3	3	0	3	4
51 Bri		1	2	2	1	4	2	50	2	1	1	3	3	1
52 Bri		2	1	1	1	4	1	10	1	3	4	2	3	1
53 Bri		2	1	3	4	4	1	54	1	0	0	0	2	2
54 Bri		2	1	1	1	6	2	10	1	0	0	2	4	2
55 Bri		3	1	1	1	4	1	10	2	3	2	3	2	1
56 Bri		3	1	1	1	6	2	54	2	2	4	2	2	2
57 Bri		1	2	2	1	6	1	10	1	2	4	2	2	2
58 Bri		3	2	1	1	6	2	54	1	2	1	2	2	4
59 Bri		3	1	1	1	4	1	24	1	3	4	2	2	3
60 Bri		3	1	3	1	4	1	10	1	3	3	2	2	1
61 Bri		1	2	1	1	4	1	54	2	3	3	1	2	3
62 Bri		2	1	1	1	6	2	10	1	0	3	2	2	2
63 Bri		1	2	3	2	6	1	16	1	4	4	2	2	3
64 Bri		3	1	1	1	6	2	50	1	0	3	2	2	1
65 Bri		2	1	2	1	6	1	10	2	3	1	4	2	2
66 Bri		3	1	1	1	4	1	20	2	3	4	3	1	4
67 Bri		1	2	2	2	6	2	10	1	4	3	0	2	1
68 Bri		2	1	3	1	6	2	50	1	4	4	1	2	2
69 Bri		1	2	3	1	6	1	54	1	4	3	3	2	3
70 Bri		3	1	0	1	3	2	10	2	0	0	0	1	5
71 Bri		3	1	1	1	4	1	10	1	2	2	2	3	2
72 Bri		1	2	1	1	4	2	15	1	3	4	1	4	2
73 Bri		3	1	1	1	4	1	50	1	4	4	2	3	2

74 Bri		1	2	2	1	4	2	10	1	3	2	0	3	2
75 Bri		2	1	1	2	6	1	20	1	0	4	2	4	2
76 Bri		2	1	1	1	6	2	24	1	0	2	1	4	2
77 Bri		1	2	2	1	4	2	10	1	3	3	3	2	3
78 RAM		3	1	1	1	4	2	15	2	0	0	2	2	2
79 Ram		1	3	1	1	3	1	10	1	4	1	1	2	4
80 Ram		1	3	2	2	6	2	24	1	4	2	1	2	3
81 Ram		2	2	2	1	6	1	54	2	2	4	3	2	3
82 Ram		2	2	1	1	4	1	54	2	0	3	3	2	4
83 Ram		1	3	2	1	3	1	50	1	4	4	1	2	5
84 Ram		2	2	2	1	4	1	15	2	4	4	2	1	5
85 Ram		3	1	1	1	4	1	20	2	2	2	0	2	3
86 Ram		2	2	1	1	3	2	50	2	0	3	1	1	1
87 Ram		3	1	1	2	6	2	10	1	3	4	2	2	5
88 Men		2	2	2	1	4	1	16	1	2	3	1	2	2
89 Men		2	2	1	2	6	2	24	1	3	1	1	3	5
90 Men		2	2	3	1	4	1	10	1	3	4	2	1	5
91 Men		2	2	3	1	6	1	50	1	0	0	1	1	5
92 Men		1	3	4	1	6	2	50	1	3	4	1	4	2
93 Men		3	1	1	2	4	1	10	2	3	4	4	3	1
94 Men		3	1	2	1	4	1	50	2	0	3	3	1	2
95 Men		3	1	3	1	6	1	15	1	0	0	0	3	2
96 Men		2	2	1	1	4	1	54	2	1	3	0	3	2
97 Men		3	1	2	1	4	1	15	1	4	1	3	3	2
98 Men		2	2	2	1	4	1	24	1	4	4	3	4	3

99 Men		3	1	1	3	4	1	10	1	1	1	1	1	5
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101 Mar		3	1	1	1	4	2	10	2	0	4	3	3	1
102 Mar		2	2	4	1	6	2	16	1	4	3	2	3	1
103 Mar		3	1	0	1	6	1	16	2	0	0	1	2	1
104 Mar		3	1	0	1	4	2	10	2	0	0	1	1	1
105 Mar		3	1	2	1	4	2	54	2	4	3	4	2	1
106 Mar		2	2	1	1	4	1	15	2	0	3	1	1	2
107 Mar		3	1	1	1	6	1	54	2	2	0	1	1	1
108 Mar		2	2	1	1	4	1	24	2	4	4	1	2	1
109 Mar		3	1	1	1	6	2	39	2	0	3	2	1	5
110 Mar		3	1	1	1	4	2	54	1	0	1	3	3	4
111 Mar		3	1	0	2	4	1	10	2	0	0	2	3	2
112 Mar		2	2	1	1	3	2	10	2	0	2	1	1	5
113 Mar		1	3	2	2	4	2	54	2	4	3	1	2	2
114 Mar		3	1	2	2	4	1	10	2	3	2	2	3	1
115 Mar		1	3	3	1	3	2	16	2	4	4	2	3	2
116 Mar		1	3	1	1	4	2	54	2	0	0	4	3	1
117 Boc		3	1	1	2	4	1	15	2	2	1	2	3	1
118 Boc		2	2	0	2	6	2	24	2	1	0	1	3	1
119 Boc		2	2	2	1	4	2	10	1	4	4	1	2	4
120 Boc		3	1	2	1	4	2	10	2	3	1	3	3	1
121 Boc		3	1	3	2	6	2	50	1	4	4	1	1	1
122 Boc		3	1	2	1	4	1	15	1	4	3	3	2	2
123 Boc		3	1	1	1	4	1	20	2	4	4	1	1	3

124 Boc		3	1	1	2	4	2	15	2	0	1	4	4	2
125 Boc		2	2	1	1	4	2	15	2	0	3	2	1	1
126 Boc		1	3	1	1	7	2	50	1	1	2	2	2	5
127 Boc		2	2	1	1	4	2	15	2	4	4	3	4	2
128 Boc		3	1	1	1	4	2	54	1	4	4	2	3	2
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130 Boc		3	1	1	1	6	2	50	1	0	4	3	4	4
131 Boc		2	2	1	1	4	1	50	2	0	1	1	1	4
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139 Boc		3	1	1	2	4	2	10	1	2	4	3	4	3
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141 Boc		2	2	3	1	6	1	10	1	3	3	1	2	3
142 Boc		2	2	2	1	4	2	50	1	3	4	1	3	3
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145 Boc		1	3	3	1	6	1	54	1	3	1	1	1	4
146 Boc		3	1	2	1	6	1	10	1	2	3	3	2	2
147 Boc		3	1	2	1	4	1	15	1	3	4	3	2	1
148 Boc		1	3	1	1	4	2	10	1	1	4	1	2	1

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153 Boc		3	1	1	1	4	1	15	2	0	1	4	4	3
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155 Boc		2	2	3	2	4	1	24	1	3	2	2	2	2
156 Boc		2	2	3	1	7	1	10	1	3	3	3	3	3
157 Boc		2	2	2	1	4	1	10	1	3	3	1	4	3
158 Boc		3	1	1	1	4	2	50	1	0	1	3	3	1
159 Boc		3	1	1	1	6	2	50	1	0	2	3	2	2
160 Boc		3	1	1	1	6	2	24	1	4	3	2	2	3
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162 Boc		1	3	2	1	6	2	10	1	4	4	0	1	5
163 Boc		3	1	3	1	6	2	50	1	3	2	1	1	2
164 Boc		2	2	2	1	4	2	10	1	4	4	3	1	2
165 Boc		3	1	3	1	4	2	10	1	4	3	3	3	2
166 Boc		2	2	2	1	4	2	54	1	2	4	2	2	2
167 Boc		1	3	2	1	6	1	54	1	1	4	3	3	2
168 Boc		2	2	1	1	4	2	15	1	4	3	4	3	1
169 Cak		2	2	1	1	4	2	54	2	3	2	2	2	4
170 Cak		3	1	2	1	4	1	10	1	4	2	3	2	1
171 Cak		3	1	1	1	7	2	54	2	1	4	1	4	4
172 Cak		3	1	2	1	7	2	54	1	4	3	2	3	2
173 Cak		1	3	2	1	4	2	54	1	4	3	2	2	2

174 Cak		3	1	2	1	6	2	50	1	3	4	3	3	2
175 Cak		3	1	2	1	4	1	40	1	0	3	2	2	1
176 Cak		3	1	0	1	4	1	10	2	0	0	3	2	1
177 Cak		3	1	2	1	4	2	24	1	3	3	2	2	3
178 Caik		3	1	1	1	4	2	54	1	4	4	2	3	3
179 Cak		2	2	1	1	4	2	15	1	0	2	4	4	2
180 Cak		1	3	3	1	6	1	54	1	4	3	1	1	3
181 Cak		2	3	3	1	4	2	10	1	1	3	2	1	3
182 Cak		3	1	0	1	4	2	10	2	0	0	1	1	3
183 Cak		3	1	1	1	1	1	10	2	0	1	2	3	1
184 Cak		3	1	2	1	4	2	10	1	4	3	3	2	3
185 Sha		2	2	3	1	4	1	20	1	4	2	2	3	2
186 Sha		3	1	1	1	4	2	10	1	0	2	2	3	1
187 Sha		3	1	1	1	6	2	10	1	0	4	1	3	3
188 Sha		1	3	1	2	6	2	54	1	4	4	2	1	2
189 Sha		3	1	1	2	4	2	10	1	0	2	2	2	4
190 Sha		2	2	2	1	4	2	10	1	4	4	2	1	2
191 Sha		1	3	2	1	6	2	24	1	4	3	1	2	3
192 Sha		2	2	1	2	1	2	54	1	0	1	2	2	1
193 Sha		2	2	1	1	6	1	54	1	4	3	2	3	2
194 Sha		1	3	3	3	6	1	10	1	4	4	2	1	5
195 Sha		1	3	2	1	4	2	15	1	4	3	2	1	3
196 Sha		2	2	2	1	4	2	15	1	4	3	2	2	2
197 Sha		1	3	2	1	4	1	10	1	2	2	2	3	2
198 Sha		3	1	0	2	3	1	10	1	0	0	1	1	1

199 Sha		3	1	1	2	6	2	10	1	4	4	3	2	3
200 Sha		1	3	1	1	4	2	16	1	4	3	0	1	4
201 Sha		3	1	2	1	6	1	10	1	3	3	3	1	3
202 Sha		3	1	1	1	4	2	24	1	4	1	3	1	1
203 Sha		1	3	1	2	4	2	10	1	4	3	2	1	1
204 Sha		1	3	1	1	4	2	15	1	3	3	1	4	2
205 Sha		1	3	1	2	4	2	10	1	4	4	2	2	5
206 Sha		3	1	1	2	6	2	10	2	0	1	3	1	1
207 Sha		1	3	2	1	4	2	54	2	4	2	0	1	4
208 Chi		2	2	2	4	6	2	20	1	3	3	2	1	2
209 Chi		2	2	2	1	4	2	10	1	4	2	3	3	1
210 Chi		1	3	4	1	1	1	15	1	4	4	2	3	1
211 Chi		2	2	1	3	6	2	15	1	0	3	1	1	2
212 Chi		2	2	1	1	4	1	54	1	0	3	4	4	2
213 Chi		1	3	1	1	4	2	34	1	0	1	1	2	5
214 Chi		1	3	3	2	6	1	15	1	1	1	2	2	1
215 Chi		1	3	1	2	4	2	54	1	4	3	3	2	2
216 Chi		2	2	1	1	6	1	15	2	4	2	1	2	1
217 Chi		3	1	1	1	6	2	15	1	4	4	4	2	1
218 Chi		3	1	0	1	7	1	15	1	0	0	2	3	2
219 Chi		3	1	1	1	6	2	54	2	0	4	3	1	1
220 Chi		2	2	0	1	7	2	50	1	0	0	2	4	1
221 Chi		3	1	1	1	6	2	24	1	4	4	3	2	3
222 Chi		3	1	2	1	6	1	15	1	4	4	4	2	3
223 Chi		3	1	0	2	4	2	16	2	0	0	1	3	1

224 Chi		3	1	2	1	6	1	54	1	3	4	2	3	2
225 Chi		3	1	1	1	6	2	15	1	0	4	4	3	2
226 Chi		1	3	3	1	4	1	54	1	3	1	2	1	3

Visits 2014

Year of Birth	0, 1, & 2	3 &4	Total	
1	13	40	53	
2	29	42	71	
3	51	51	102	
Total	93	133	226	226
			226	

Visits 2015

Year of Birth	0, 1, & 2	3 &4	Total	
1	18	35	53	
2	23	48	71	
3	45	57	102	
Total	86	140	226	226
			226	

Visits 2016

Year of Birth	0, 1, & 2	3 &4	Total	
1	44	9	53	
2	53	18	71	
3	64	38	102	
Total	161	65	226	226
			226	

Visits 2017

Year of Birth	0, 1, & 2	3 & 4	Total	
1	37	16	53	
2	40	31	71	
3	57	45	102	
Total	134	92	226	226
			226	

HgbA1c in 2017

Type of DM	1	2	3	4 & 5	Total	
1	30	60	39	27	156	
2	30	16	9	15	70	
Total	60	76	48	42	226	226
					226	

HgbA1c in 2017

Year of Birth	1	2	3	4 & 5	Total	
1	9	17	11	16	53	
2	15	28	15	13	71	
3	36	31	22	13	102	
Total	60	76	48	42	226	226
					226	

HgbA1c in 2017

#yr w/ dx	1	2	3	4 & 5	Total	
0 &1	41	29	16	27	113	
2	13	30	20	9	72	
3 & 4	6	17	12	6	41	
Total	60	76	48	42	226	226
					226	

HgbA1c in 2017

Visit 2017	1	2	3	4 &5	Total	
1	13	11	11	17	52	
2	23	23	19	17	82	
3&4	24	42	18	8	92	
Total	60	76	48	42	226	226
					226	

HgbA1c in 2017

Gender	1	2	3	4 &5	Total	
1	26	31	24	16	97	
2	34	45	24	26	129	
Total	60	76	48	42	226	226
					226	

HgbA1c 2017

Ethnicity	1	2	3	4 &5	Total	
4	38	47	27	23	135	
6	13	25	18	11	67	
1,2, 3,5, & 7	9	4	3	8	24	
Total	60	76	48	42	226	226
					226	

HgbA1c 2017

Insurance	1	2	3	4 &5	Total	
1	45	58	41	34	178	
2	15	12	7	6	40	
3	0	3	0	2	5	
4	0	3	0	0	3	
Total	60	76	48	42	226	226
					226	

HgbA1c 2017

County	1	2	3	4 & 5	Total	
10	23	22	16	17	78	
15	10	18	6	1	35	
54	9	17	10	9	45	
59: 16,20,24,34,39,40, &50	18	19	16	15	68	
Total	60	76	48	42	226	226
					226	

APPENDIX E: VCH Waiver

REQUEST FOR WAIVER OF PATIENT AUTHORIZATION
FOR USE OF PROTECTED HEALTH INFORMATION IN RESEARCH

Research Project Title: Pediatric Patients with Diabetes Mellitus Transition to Adult Care

Investigator: Sara Jennings, DNPc, FNP-C, CPN, PHN

1. The use or disclosure of Protected Health Information (PHI)* involves no more than a minimal risk to the privacy of individuals. Explain why. Include a detailed list of the PHI to be collected and a list of the source(s) of the PHI.

   Data that will be collected include demographic data such as medical record number (MRN), age, gender, race/ethnicity, and insurance type. Data obtained from patients' medical records will be analyzed to identify if there is relationship between attendance rate to provider appointments, demographics, and current county of residence with control of diabetes, measured by HgbA1c.

2. Describe the plan to protect identifiers and indicate where PHI will be stored and who will have access (researchers must list all of the entities that might have access to the study's PHI such as IRB, VCH representatives, sponsors, FDA, data safety monitoring boards and any others given authority by law).

   Data will be obtained from the VCH electronic medical record (EMR.) Only necessary information will be collected to meet the research objectives. No patient identifiers will be linked to the data. Each patient will be given a study identification number to represent the data gathered from the patient's records. Data will be maintained on a password protected Excel database on the VCH network drive.

3. All identifiers collected during the study will be destroyed at the earliest opportunity consistent with the conduct of research, which is: (explain below).

   Data will be destroyed per hospital policies – HC-0020 and HC-0021, as soon as the study analysis is complete.

4. Please describe the procedure used to destroy all the data collected during the study (electronically, paper, audio/video, photography, other). OR

   Paper forms will be destroyed per hospital policies – HC-0020 and HC-0021, as soon as the study analysis is complete.

5. Alternatively, the identifiers collected during the study will not be destroyed because: (explain below).

* PHI: individually identifiable health information transmitted or maintained in any form (electronic, on paper, or through oral communication) that relates to the past, present or future physical or mental health or conditions of an individual.

Not applicable.

6. Reasons the research could not practicably be conducted without the waiver.
   This is a retrospective chart review. Patients will not be contacted.

7. The research could not practicably be conducted without access to and use of the protected health information because (explain below).
   The research is a chart review only. It is important to have access to the patient's medical record. The analysis involves no more than minimal risk to patients and no PHI will be used in any analysis.

The HIPAA regulation requires reasonable efforts to limit protected health information to the minimum necessary to accomplish the intended purpose of the use, disclosure or request. Please note that researchers are also **accountable** for any PHI released under a waiver. Explain why PHI obtained for this study is/are the minimum information needed to meet the research objectives.

Research is a chart review only.

The information listed in the waiver application is accurate and all research staff will comply with the HIPAA regulations and the waiver criteria. All research staff have completed VCH's privacy competency training prior to study initiation.

I assure that the information I, or my study staff, obtain as part of this research (including protected health information) will not be reused or disclosed to any other person or entity other than those listed on this form, except as required by law. If at any time I want to reuse this information for other purposes or disclose the information to other individuals or entity I will seek approval from the Privacy Officer.

Principal Investigator's Signature — Date: 12/7/18

Approved by Privacy Officer: **Baranda, Roberta** (x35401)

Roberta Baranda — Signature — Date: 12/6/2018

APPENDIX F: Fresno State and VCH IRB Approval

FRESNO STATE
Discovery. Diversity. Distinction.

SAN JOSÉ STATE UNIVERSITY

California State University, Northern California Consortium Doctor of Nursing Practice

California State University, Fresno
School of Nursing
IRB Approval

Date: February 28, 2019

RE: DNP 1835 Pediatric Patients with Diabetes Mellitus Transition to Adult Care

Dear Sara Jennings,

As the Chair of the School of Nursing Research Committee, serving as the Institutional Review Board for the School of Nursing, I have reviewed and approved your review request for the above-referenced project for a period of 12 months. I have determined your study to meet the criteria for Minimal Risk IRB review.

Under the Policy and Procedures for Research with Human Subjects at California State University, Fresno, your proposal meets minimal risk criteria according to section 3.3.7: Research in which the risks of harm anticipated are not greater, probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

The Research Committee may periodically wish to assess the adequacy of research process.
If, in the course of the study, you consider making any changes in the protocol or consent form, you must forward this information to the Research Committee prior to implementation unless the change is necessary to eliminate an apparent immediate hazard to the research participant(s).

This study expires: February 28, 2020

The Research Committee is authorized to periodically assess the adequacy of the consent and research process. All problems having to do with subject safety must be reported to the Research Committee. Please maintain proper data control and confidentiality.

If you have any questions, please contact me through the CSU, Fresno School of Nursing Research Committee at nishanair@csufresno.edu.

Sincerely,

Nisha Nair, DNP, RNC, CNS, CNE, IBCLC
School of Nursing, Research Committee, Chair

Valley Children's HEALTHCARE

9300 Valley Children's Place
Madera, CA 93636

(559) 353-3000
valleychildrens.org

December 11, 2018

Sara Jennings, DNPc, FNP-C, CPN, PHN
Dept. of Endocrinology
Valley Children's Healthcare
9300 Valley Children's Place
Madera, CA 93636

Initial Approval – Expedited Review
HSC2182 – Pediatric Patients' with Diabetes Mellitus Transition to Adult Care

Study Risk Assignment: Minimal Risk
Approval Date: December 11, 2018
Expiration Date: December 10, 2019

Dear Ms. Jennings:

All documents for the above-referenced study were reviewed and approved via expedited review on December 11, 2018. The study was approved for a period of 12 months. Approval for this study will expire on December 10, 2019.

The study was approved in accordance with regulations found at 45CFR46.110(5) – Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for non-research purposes and Subpart D 45CFR46.404.

Your request for a waiver of consent was approved in accordance with regulations at 45CFR46.116(d).

A waiver of HIPAA Authorization is acceptable for the conduct of the study.

1. The study procedures do not adversely affect the rights and welfare of the individuals and pose minimal risk to their privacy, based on, at least, the presence of the following elements:
    a. An adequate plan to protect the identifiers from improper use and disclosure;
    b. An adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, unless a health or research justification for retaining the identifiers was provided or such retention is otherwise required by law;
    c. Adequate written assurances that the protected health information will not be reused or disclosed to any other person or entity, except as required by law, for authorized oversight of the research project, or for other research for which the use or disclosure of protected health information would be permitted by the Privacy Rule;

2. The research could not practicably be conducted without the waiver; and
3. The research could not practicably be conducted without access to and use of the protected health information.

In the future, if you wish to make subsequent changes to the study, they must be re-approved by the IRB prior to implementation of the changes.

The study is approved for a period of one year. The approval period for this study will expire on December 10, 2019 and if not re-approved prior to that date, all activity related to it must immediately cease. Application for annual review is the responsibility of the Principal Investigator.

Please notify the board immediately of any proposed changes to the protocol, amendments, revisions, or any unanticipated problems involving risks to subjects or others in the protocol. If there are any serious or unexpected adverse events, please send a written response, as to your opinion whether it was study-related and whether it is safe to continue the study.

To ensure adherence to good clinical practice, the IRB may audit your study in the future. If you have questions, please do not hesitate to contact the IRB at (559) 353-5171. As soon as the study closes, please inform the IRB immediately with a summary report and submit a Study Retirement Form.

Sincerely,

Stephen Kassel, M.D.

Stephen Kassel, MD
Chair, Institutional Review Board
Valley Children's Healthcare

APPENDIX G: SPSS Results

```
GET
  FILE='C:\Users\gradstud-lab01\Desktop\SaraJennings2014visits data.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
NEW FILE.
DATASET NAME DataSet2 WINDOW=FRONT.
DATASET ACTIVATE DataSet2.
DATASET CLOSE DataSet1.
GET
  FILE='C:\Users\gradstud-lab01\Desktop\SaraJennings2014visits data.sav'.
DATASET NAME DataSet3 WINDOW=FRONT.
DATASET ACTIVATE DataSet2.
WEIGHT BY frequency.
CROSSTABS
  /TABLES=Yearofbirth BY visits2015
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Yearofbirth * visits2015	226	100.0%	0	0.0%	226	100.0%

Yearofbirth * visits2015 Crosstabulation

			visits2015		
			visits 0-2	visits 3-4	Total
Yearofbirth	1997	Count	18	35	53
		Expected Count	20.2	32.8	53.0
		% within Yearofbirth	34.0%	66.0%	100.0%
	1998	Count	23	48	71
		Expected Count	27.0	44.0	71.0
		% within Yearofbirth	32.4%	67.6%	100.0%
	1999	Count	45	57	102
		Expected Count	38.8	63.2	102.0
		% within Yearofbirth	44.1%	55.9%	100.0%
Total		Count	86	140	226
		Expected Count	86.0	140.0	226.0
		% within Yearofbirth	38.1%	61.9%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.932[a]	2	.231
Likelihood Ratio	2.932	2	.231
Linear-by-Linear Association	2.042	1	.153
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.17.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.114	.231
	Cramer's V	.114	.231
N of Valid Cases		226	

```
SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data visits 2015.sav'
  /COMPRESSED.
DATASET ACTIVATE DataSet3.
```

```
DATASET CLOSE DataSet2.
CROSSTABS
  /TABLES=yearofbirth BY visits2014
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
yearofbirth * visits2014	226	100.0%	0	0.0%	226	100.0%

yearofbirth * visits2014 Crosstabulation

			visits2014		
			visits012	visits34	Total
yearofbirth	1997	Count	13	40	53
		Expected Count	21.8	31.2	53.0
		% within yearofbirth	24.5%	75.5%	100.0%
	1998	Count	29	42	71
		Expected Count	29.2	41.8	71.0
		% within yearofbirth	40.8%	59.2%	100.0%
	1999	Count	51	51	102
		Expected Count	42.0	60.0	102.0
		% within yearofbirth	50.0%	50.0%	100.0%
Total		Count	93	133	226
		Expected Count	93.0	133.0	226.0
		% within yearofbirth	41.2%	58.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.348[a]	2	.009
Likelihood Ratio	9.698	2	.008
Linear-by-Linear Association	9.059	1	.003
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.81.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.203	.009
	Cramer's V	.203	.009
N of Valid Cases		226	

```
NEW FILE.
DATASET NAME DataSet4 WINDOW=FRONT.
WEIGHT BY frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data visits 2016.sav'
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CROSSTABS
  /TABLES=Yearofbirth BY visits2016
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet4] C:\Users\gradstud-lab01\Desktop\data visits 2016.sav
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Yearofbirth * visits2016	226	100.0%	0	0.0%	226	100.0%

Yearofbirth * visits2016 Crosstabulation

			visits2016		
			visits 0-2	visits 3-4	Total
Yearofbirth	1997	Count	44	9	53
		Expected Count	37.8	15.2	53.0
		% within Yearofbirth	83.0%	17.0%	100.0%
	1998	Count	53	18	71
		Expected Count	50.6	20.4	71.0
		% within Yearofbirth	74.6%	25.4%	100.0%
	1999	Count	64	38	102
		Expected Count	72.7	29.3	102.0
		% within Yearofbirth	62.7%	37.3%	100.0%
Total		Count	161	65	226
		Expected Count	161.0	65.0	226.0
		% within Yearofbirth	71.2%	28.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.584[a]	2	.023
Likelihood Ratio	7.810	2	.020
Linear-by-Linear Association	7.479	1	.006
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.24.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.183	.023
	Cramer's V	.183	.023
N of Valid Cases		226	

```
DATASET ACTIVATE DataSet3.
NEW FILE.
DATASET NAME DataSet5 WINDOW=FRONT.
WEIGHT BY frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data visits 2017.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=yearofbirth BY visits2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet5] C:\Users\gradstud-lab01\Desktop\data visits 2017.sav
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
yearofbirth * visits2017	226	100.0%	0	0.0%	226	100.0%

yearofbirth * visits2017 Crosstabulation

			visits2017		
			visits 0-2	visits 3-4	Total
yearofbirth	1997	Count	37	16	53
		Expected Count	31.4	21.6	53.0
		% within yearofbirth	69.8%	30.2%	100.0%
	1998	Count	40	31	71
		Expected Count	42.1	28.9	71.0
		% within yearofbirth	56.3%	43.7%	100.0%
	1999	Count	57	45	102
		Expected Count	60.5	41.5	102.0
		% within yearofbirth	55.9%	44.1%	100.0%
Total		Count	134	92	226
		Expected Count	134.0	92.0	226.0
		% within yearofbirth	59.3%	40.7%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.178[a]	2	.204
Likelihood Ratio	3.262	2	.196
Linear-by-Linear Association	2.342	1	.126
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.58.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.119	.204
	Cramer's V	.119	.204
N of Valid Cases		226	

```
DATASET ACTIVATE DataSet4.
DATASET CLOSE DataSet3.
```

```
WEIGHT BY Frequency.
CROSSTABS
  /TABLES=TypeofDM BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

[DataSet0]

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TypeofDM * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

TypeofDM * HgbA1c2017 Crosstabulation

			HgbA1c2017			
			7.5% or less	7.6%-9.5%	9.6%-11.5%	11.6% or more
TypeofDM	T1DM	Count	30	60	39	27
		Expected Count	41.4	52.5	33.1	29.0
		% within TypeofDM	19.2%	38.5%	25.0%	17.3%
	T2DM	Count	30	16	9	15
		Expected Count	18.6	23.5	14.9	13.0
		% within TypeofDM	42.9%	22.9%	12.9%	21.4%
Total		Count	60	76	48	42
		Expected Count	60.0	76.0	48.0	42.0
		% within TypeofDM	26.5%	33.6%	21.2%	18.6%

TypeofDM * HgbA1c2017 Crosstabulation

			Total
TypeofDM	T1DM	Count	156
		Expected Count	156.0
		% within TypeofDM	100.0%
	T2DM	Count	70
		Expected Count	70.0
		% within TypeofDM	100.0%
Total		Count	226
		Expected Count	226.0
		% within TypeofDM	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.454[a]	3	.001
Likelihood Ratio	17.257	3	.001
Linear-by-Linear Association	3.255	1	.071
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.01.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.278	.001
	Cramer's V	.278	.001
N of Valid Cases		226	

```
SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data type of DM.sav'
  /COMPRESSED.
NEW FILE.
DATASET NAME DataSet1 WINDOW=FRONT.
WEIGHT BY Frequency.
```

```
SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data yrofbirth.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=yearofbirth BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet1] C:\Users\gradstud-lab01\Desktop\data yrofbirth.sav
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
yearofbirth * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

yearofbirth * HgbA1c2017 Crosstabulation

			HgbA1c2017		
			7.5% or less	7.6%-9.5%	9.6%-11.5%
yearofbirth	1997-20yo	Count	9	17	11
		Expected Count	14.1	17.8	11.3
		% within yearofbirth	17.0%	32.1%	20.8%
	1998-19yo	Count	15	28	15
		Expected Count	18.8	23.9	15.1
		% within yearofbirth	21.1%	39.4%	21.1%
	1999-18yo	Count	36	31	22
		Expected Count	27.1	34.3	21.7
		% within yearofbirth	35.3%	30.4%	21.6%
Total		Count	60	76	48
		Expected Count	60.0	76.0	48.0
		% within yearofbirth	26.5%	33.6%	21.2%

yearofbirth * HgbA1c2017 Crosstabulation

			HgbA1c2017	
			11.6% or more	Total
yearofbirth	1997-20yo	Count	16	53
		Expected Count	9.8	53.0
		% within yearofbirth	30.2%	100.0%
	1998-19yo	Count	13	71
		Expected Count	13.2	71.0
		% within yearofbirth	18.3%	100.0%
	1999-18yo	Count	13	102
		Expected Count	19.0	102.0
		% within yearofbirth	12.7%	100.0%
Total		Count	42	226
		Expected Count	42.0	226.0
		% within yearofbirth	18.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.346[a]	6	.055
Likelihood Ratio	11.990	6	.062
Linear-by-Linear Association	8.711	1	.003
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.85.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.234	.055
	Cramer's V	.165	.055
N of Valid Cases		226	

```
NEW FILE.
DATASET NAME DataSet2 WINDOW=FRONT.
```

```
WEIGHT BY Frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data years with dx of DM.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=yrwithdx BY HgbA1cin2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

[DataSet2] C:\Users\gradstud-lab01\Desktop\data years with dx of DM.sav

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
yrwithdx * HgbA1cin2017	226	100.0%	0	0.0%	226	100.0%

yrwithdx * HgbA1cin2017 Crosstabulation

			HgbA1cin2017		
			7.5% or less	7.6%-9.5%	9.6%-11.5%
yrwithdx	5 years or less	Count	41	29	16
		Expected Count	30.0	38.0	24.0
		% within yrwithdx	36.3%	25.7%	14.2%
	6-10 years	Count	13	30	20
		Expected Count	19.1	24.2	15.3
		% within yrwithdx	18.1%	41.7%	27.8%
	11 years or more	Count	6	17	12
		Expected Count	10.9	13.8	8.7
		% within yrwithdx	14.6%	41.5%	29.3%
Total		Count	60	76	48
		Expected Count	60.0	76.0	48.0
		% within yrwithdx	26.5%	33.6%	21.2%

yrwithdx * HgbA1cin2017 Crosstabulation

			HgbA1cin2017	
			11.6% or more	Total
yrwithdx	5 years or less	Count	27	113
		Expected Count	21.0	113.0
		% within yrwithdx	23.9%	100.0%
	6-10 years	Count	9	72
		Expected Count	13.4	72.0
		% within yrwithdx	12.5%	100.0%
	11 years or more	Count	6	41
		Expected Count	7.6	41.0
		% within yrwithdx	14.6%	100.0%
Total		Count	42	226
		Expected Count	42.0	226.0
		% within yrwithdx	18.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.299[a]	6	.002
Likelihood Ratio	21.770	6	.001
Linear-by-Linear Association	.967	1	.325
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.62.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.307	.002
	Cramer's V	.217	.002
N of Valid Cases		226	

```
NEW FILE.
DATASET NAME DataSet3 WINDOW=FRONT.
```

```
DATASET ACTIVATE DataSet2.
DATASET ACTIVATE DataSet2.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data years with dx of DM.sav'
  /COMPRESSED.
DATASET ACTIVATE DataSet0.
DATASET CLOSE DataSet2.
DATASET ACTIVATE DataSet3.
WEIGHT BY Frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data visits2017andHgbA1c.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=Visits2017 BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet3] C:\Users\gradstud-lab01\Desktop\data visits2017andHgbA1c.sav
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Visits2017 * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

Visits2017 * HgbA1c2017 Crosstabulation

			HgbA1c2017		
			7.5% or less	7.6%-9.5%	9.6%-11.5%
Visits2017	1 Visit in 2017	Count	13	11	11
		Expected Count	13.8	17.5	11.0
		% within Visits2017	25.0%	21.2%	21.2%
	2 Visits in 2017	Count	23	23	19
		Expected Count	21.8	27.6	17.4
		% within Visits2017	28.0%	28.0%	23.2%
	3 or more Visits in 2017	Count	24	42	18
		Expected Count	24.4	30.9	19.5
		% within Visits2017	26.1%	45.7%	19.6%
Total		Count	60	76	48
		Expected Count	60.0	76.0	48.0
		% within Visits2017	26.5%	33.6%	21.2%

Visits2017 * HgbA1c2017 Crosstabulation

			HgbA1c2017	
			11.6% or more	Total
Visits2017	1 Visit in 2017	Count	17	52
		Expected Count	9.7	52.0
		% within Visits2017	32.7%	100.0%
	2 Visits in 2017	Count	17	82
		Expected Count	15.2	82.0
		% within Visits2017	20.7%	100.0%
	3 or more Visits in 2017	Count	8	92
		Expected Count	17.1	92.0
		% within Visits2017	8.7%	100.0%
Total		Count	42	226
		Expected Count	42.0	226.0
		% within Visits2017	18.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.124[a]	6	.006
Likelihood Ratio	18.293	6	.006
Linear-by-Linear Association	7.838	1	.005
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.66.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.283	.006
	Cramer's V	.200	.006
N of Valid Cases		226	

```
NEW FILE.
DATASET NAME DataSet4 WINDOW=FRONT.
WEIGHT BY Frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\data gender.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=Gender BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet4] C:\Users\gradstud-lab01\Desktop\data gender.sav
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

Gender * HgbA1c2017 Crosstabulation

			HgbA1c2017			
			7.5% or less	7.6%-9.5%	9.6%-11.5%	11.6% or more
Gender	Female	Count	26	31	24	16
		Expected Count	25.8	32.6	20.6	18.0
		% within Gender	26.8%	32.0%	24.7%	16.5%
	Male	Count	34	45	24	26
		Expected Count	34.2	43.4	27.4	24.0
		% within Gender	26.4%	34.9%	18.6%	20.2%
Total		Count	60	76	48	42
		Expected Count	60.0	76.0	48.0	42.0
		% within Gender	26.5%	33.6%	21.2%	18.6%

Gender * HgbA1c2017 Crosstabulation

			Total
Gender	Female	Count	97
		Expected Count	97.0
		% within Gender	100.0%
	Male	Count	129
		Expected Count	129.0
		% within Gender	100.0%
Total		Count	226
		Expected Count	226.0
		% within Gender	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.526[a]	3	.676
Likelihood Ratio	1.521	3	.677
Linear-by-Linear Association	.013	1	.909
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 18.03.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.082	.676
	Cramer's V	.082	.676
N of Valid Cases		226	

```
NEW FILE.
DATASET NAME DataSet5 WINDOW=FRONT.
WEIGHT BY Frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\Data Ethnicity.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=Ethnicity BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet5] C:\Users\gradstud-lab01\Desktop\Data Ethnicity.sav
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Ethnicity * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

Ethnicity * HgbA1c2017 Crosstabulation

			HgbA1c2017		
			7.5% or less	7.6%-9.5%	9.6%-11.5%
Ethnicity	Hispanic	Count	38	47	27
		Expected Count	35.8	45.4	28.7
		% within Ethnicity	28.1%	34.8%	20.0%
	White	Count	13	25	18
		Expected Count	17.8	22.5	14.2
		% within Ethnicity	19.4%	37.3%	26.9%
	Other:Asian, American Indian, Native Alaskan/Hawaiian, Black, Other	Count	9	4	3
		Expected Count	6.4	8.1	5.1
		% within Ethnicity	37.5%	16.7%	12.5%
Total		Count	60	76	48
		Expected Count	60.0	76.0	48.0
		% within Ethnicity	26.5%	33.6%	21.2%

Ethnicity * HgbA1c2017 Crosstabulation

			HgbA1c2017	
			11.6% or more	Total
Ethnicity	Hispanic	Count	23	135
		Expected Count	25.1	135.0
		% within Ethnicity	17.0%	100.0%
	White	Count	11	67
		Expected Count	12.5	67.0
		% within Ethnicity	16.4%	100.0%
	Other:Asian, American Indian, Native Alaskan/Hawaiian, Black, Other	Count	8	24
		Expected Count	4.5	24.0
		% within Ethnicity	33.3%	100.0%
Total		Count	42	226
		Expected Count	42.0	226.0
		% within Ethnicity	18.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.995[a]	6	.125
Likelihood Ratio	10.011	6	.124
Linear-by-Linear Association	1.013	1	.314
N of Valid Cases	226		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.46.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.210	.125
	Cramer's V	.149	.125
N of Valid Cases		226	

```
NEW FILE.
DATASET NAME DataSet6 WINDOW=FRONT.
```

```
WEIGHT BY Frequency.

SAVE OUTFILE='C:\Users\gradstud-lab01\Desktop\Data Insurance.sav'
  /COMPRESSED.
CROSSTABS
  /TABLES=Insurance BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

[DataSet6] C:\Users\gradstud-lab01\Desktop\Data Insurance.sav

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Insurance * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

Insurance * HgbA1c2017 Crosstabulation

			HgbA1c2017		
			7.5% or less	7.6%-9.5%	9.6%-11.5%
Insurance	CCS	Count	45	58	41
		Expected Count	47.3	59.9	37.8
		% within Insurance	25.3%	32.6%	23.0%
	Private	Count	15	12	7
		Expected Count	10.6	13.5	8.5
		% within Insurance	37.5%	30.0%	17.5%
	Both CCS and Private	Count	0	3	0
		Expected Count	1.3	1.7	1.1
		% within Insurance	0.0%	60.0%	0.0%
	Cash Pay or no insurance	Count	0	3	0
		Expected Count	.8	1.0	.6
		% within Insurance	0.0%	100.0%	0.0%
Total		Count	60	76	48
		Expected Count	60.0	76.0	48.0
		% within Insurance	26.5%	33.6%	21.2%

Insurance * HgbA1c2017 Crosstabulation

			HgbA1c2017	
			11.6% or more	Total
Insurance	CCS	Count	34	178
		Expected Count	33.1	178.0
		% within Insurance	19.1%	100.0%
	Private	Count	6	40
		Expected Count	7.4	40.0
		% within Insurance	15.0%	100.0%
	Both CCS and Private	Count	2	5
		Expected Count	.9	5.0
		% within Insurance	40.0%	100.0%
	Cash Pay or no insurance	Count	0	3
		Expected Count	.6	3.0
		% within Insurance	0.0%	100.0%
Total		Count	42	226
		Expected Count	42.0	226.0
		% within Insurance	18.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.543[a]	9	.140
Likelihood Ratio	15.874	9	.070
Linear-by-Linear Association	.574	1	.449
N of Valid Cases	226		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .56.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.245	.140
	Cramer's V	.141	.140
N of Valid Cases		226	

```
>Warning # 3211
>On at least one case, the value of the weight variable was zero, negative, or
>missing.  Such cases are invisible to statistical procedures and graphs which
>need positively weighted cases, but remain on the file and are processed by
>non-statistical facilities such as LIST and SAVE.
NEW FILE.
DATASET NAME DataSet7 WINDOW=FRONT.
WEIGHT BY Frequency.
CROSSTABS
  /TABLES=County BY HgbA1c2017
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT EXPECTED ROW
  /COUNT ROUND CELL.
```

Crosstabs

```
[DataSet7]
```

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
County * HgbA1c2017	226	100.0%	0	0.0%	226	100.0%

County * HgbA1c2017 Crosstabulation

			HgbA1c2017		
			7.5% or less	7.6%-9.5%	9.6%-11.5%
County	Fresno	Count	23	22	16
		Expected Count	20.7	26.2	16.6
		% within County	29.5%	28.2%	20.5%
	Kern	Count	10	18	6
		Expected Count	9.3	11.8	7.4
		% within County	28.6%	51.4%	17.1%
	Tulare	Count	9	17	10
		Expected Count	11.9	15.1	9.6
		% within County	20.0%	37.8%	22.2%
	Other: Kings, Madera, Merced, Sacrament, SLO, San Joaquin, Stanislaus	Count	18	19	16
		Expected Count	18.1	22.9	14.4
		% within County	26.5%	27.9%	23.5%
Total		Count	60	76	48
		Expected Count	60.0	76.0	48.0
		% within County	26.5%	33.6%	21.2%

County * HgbA1c2017 Crosstabulation

			HgbA1c2017	
			11.6% or more	Total
County	Fresno	Count	17	78
		Expected Count	14.5	78.0
		% within County	21.8%	100.0%
	Kern	Count	1	35
		Expected Count	6.5	35.0
		% within County	2.9%	100.0%
	Tulare	Count	9	45
		Expected Count	8.4	45.0
		% within County	20.0%	100.0%
	Other: Kings, Madera, Merced, Sacrament, SLO, San Joaquin, Stanislaus	Count	15	68
		Expected Count	12.6	68.0
		% within County	22.1%	100.0%
Total		Count	42	226
		Expected Count	42.0	226.0
		% within County	18.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.965[a]	9	.215
Likelihood Ratio	14.200	9	.115
Linear-by-Linear Association	1.525	1	.217
N of Valid Cases	226		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.50.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.230	.215
	Cramer's V	.133	.215
N of Valid Cases		226	

APPENDIX H: DNP ORAL DEFENSE PPT

PEDIATRIC PATIENTS WITH DIABETES TRANSITION TO ADULT CARE

Sara Jennings, DNPc, FNP-C, CPN, PHN

California State University Northern California Consortium, Doctor of Nursing Practice Program

ACKNOWLEDGEMENTS

Dr. Kathleen Rindahl, DNP, FNP-C
Chair

Dr. Lisa Walker-Visher
Advisor

Therese Hinz, MSN PNP
Mentor

Lana Frederickson, MSN, RN, CDE
&
Denise McEowen, BSN, RN, CDE
Committee

INTRODUCTION

- In 2011 AAP consensus statement:
  - Pediatric healthcare providers should empower AYA to transition to adult care through formalized programs
- Close to 1 million patients < 18 yo with DM
- Without transition programs patients with DM are at high risk for complications:
  - Acute
    - High/Low BS
    - DKA
  - Chronic
    - Renal and Cardiovascular disease

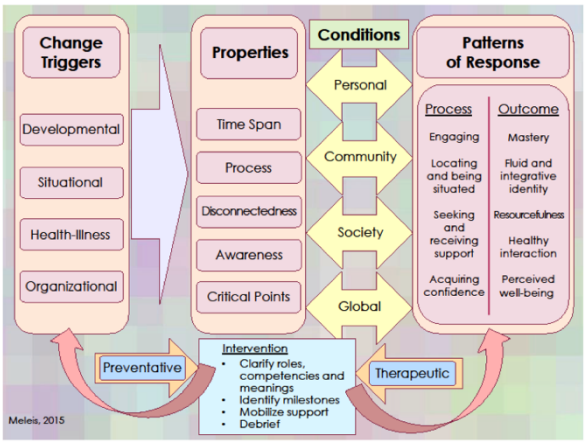
(Peters, Laffel, & American Diabetes Association Transitions Working Group, 2011).

PROBLEM STATEMENT

Current literature lacks conclusive data of when transition to adult care skills should be taught to AYAs with DM and how this may impact diabetic control in AYAs with DM

PURPOSE OF THE PROJECT

1. Identify if there is an optimal age to target transition to adult care education for AYAs with DM
2. Identify if there is a relationship between specific demographic categories and control of DM in AYAs



THEORETICAL FRAMEWORK

- Meleis' Transition Theory

(Penn Nursing Science, 2016)

REVIEW OF THE LITERATURE

- Zoni et al. (2018) identified nurse-led programs are a valid tool to support transition
- Garvey et al. (2017) recognized there is a need for:
  - Development and evaluation of standardized transitional education tools
  - Pediatric endocrinology visits focused on transitional issues may decrease gaps in care at transition to adult care
- Pierce et al. (2017) focused on:
  - The need to develop measurable outcome tools to enable benchmarking between practices. With a focus on:
    - HgbA1c
    - healthcare navigation skills
    - Integration of self-care into adult roles
    - Balancing parent involvement with autonomy
    - Accountability in self-care
- Kime (2013) found that current practices fail to be:
  - Holistic
  - Patient centered
    - Patients recommend the transition process take at least two years.

HYPOTHESES

- 1. Null Hypothesis: The attendance rate to appointments between 2014-2017 did not have a relationship to patient's year of birth.
  - Alternative Hypothesis: The attendance rate to appointments between 2014-2017 had a relationship with patient's year of birth.

- 2. Null Hypothesis: The average HgbA1c in 2017 did not have a relationship with patient demographics including: type of DM, age in 2017, years diagnosed with DM in 2017, attendance rate to provider visits in 2017, gender, ethnicity, insurance coverage, and county of residence.
  - Alternative Hypothesis: The average HgbA1c in 2017 did have a relationship with patient demographics including: type of DM, age in 2017, years diagnosed with DM in 2017, attendance rate to provider visits in 2017, gender, ethnicity, insurance coverage, and county of residence.

METHODS

- A retrospective manual chart audit
- Data was coded and entered into the DNP data tool, an Excel Worksheet
- 12 Contingency tables were:
  - Generated from the DNP Data Instrument
  - Analyzed with Chi-Square Test of Independence by SPSS software
- Inclusion criteria:
  - Born between 1997-1999 (age eighteen to twenty-one years old in 2017)
  - At least one provider (defined as with a visit with a Medical Doctor or Nurse Practitioner) visit in 2017
  - Diagnosed with DM prior to 2017
  - Billed under the ICD 10- billing codes: E10.65, E10.9, E11.65, E11.9 (Type 1 or Type 2 DM).

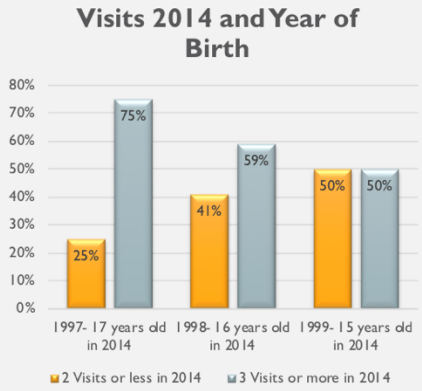
RESULTS

- 5 of the 12 contingency tables had statistically significant results
- Demographic Characteristics:
  - Hispanic- 60%
  - Medi-Cal CCS- 81%

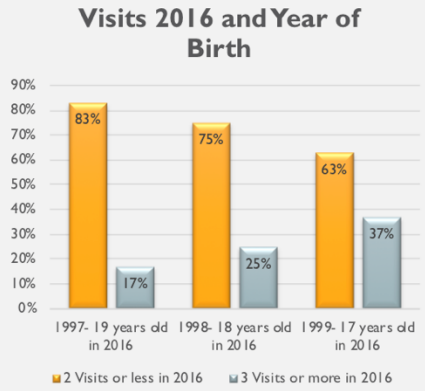
Total Number		226	
		Number	Percentage
Type of DM	Type 1 DM	156	69%
	Type 2 DM	70	31%
Birth Year	1997 (20 years old in 2017)	53	23%
	1998 (19 years old in 2017)	71	31%
	1999 (18 years old in 2017)	102	45%
Years with diagnosis of DM	5 years or less	113	50%
	6-10 years	72	32%
	11 years or more	41	19%
Gender	Female	97	43%
	Male	129	57%
Ethnicity	Asian	5	2%
	Black	10	4%
	Hispanic	135	60%
	White	67	30%
	Other	9	4%
Insurance	Medi-Cal CCS	178	79%
	Private	40	18%
	Medi-Cal CCS and Private	5	2%
	Cash Pay or No Insurance	3	1%
County of Residence	Fresno	78	35%
	Kern	35	15%
	Kings	8	4%
	Madera	12	5%
	Merced	22	10%
	Sacramento	1	>1%
	San Joaquin	1	>1%
	San Luis Obispo	1	>1%
	Stanislaus	23	10%
	Tulare	45	20%

DATA ANALYSIS

1. ALTERNATIVE HYPOTHESIS ACCEPTED:
THE ATTENDANCE RATE TO APPOINTMENTS IN 2014 AND 2016 HAD A RELATIONSHIP WITH PATIENT'S YEAR OF BIRTH



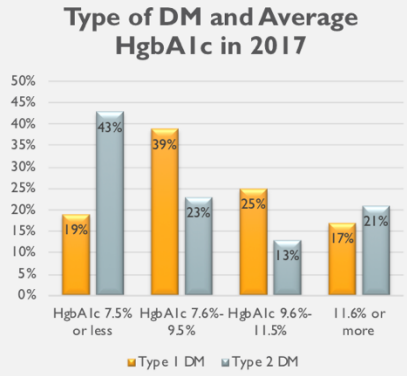
x^2 (1, N =226) = 9.348, $p < 0.05$, Cramer's V = 0.203



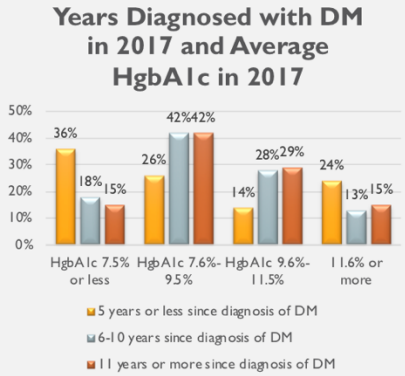
x^2 (1, N =226) = 7.584, $p < 0.05$, Cramer's V = 0.183

DATA ANALYSIS

2. ALTERNATIVE HYPOTHESIS ACCEPTED:
THE AVERAGE HGBAIC IN 2017 DID HAVE A RELATIONSHIP WITH TYPE OF DM
YEARS DIAGNOSED WITH DM IN 2017
ATTENDANCE RATE TO PROVIDER VISITS IN 2017

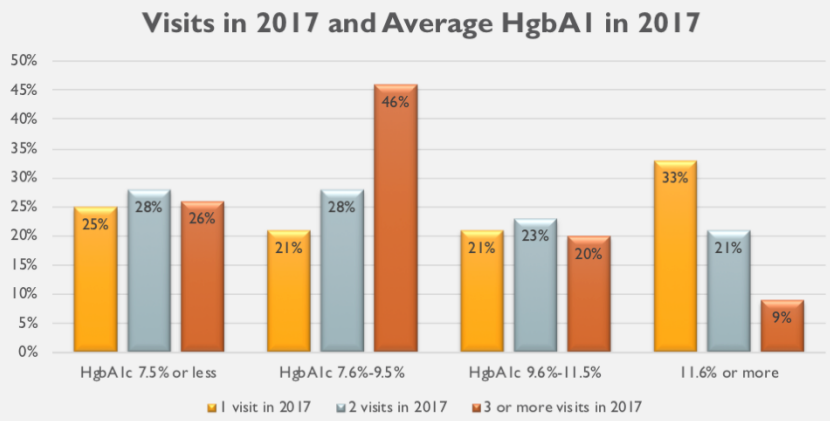


x^2 (1, N =226) = 17.454, $p < 0.05$, Cramer's V = 0.278



x^2 (1, N =226) = 21.299, $p < 0.05$, Cramer's V = 0.217

DATA ANALYSIS



x^2 (1, N =226) = 18.124, $p < 0.05$, Cramer's V = 0.200

DISCUSSION

- 2014 and 2016 visits in relationship to year of birth:
  - 17 yo had the highest rates of attending 3 or more visits in a year.
- 2014 visits
  - 14 were the least likely to attend visits.
    - Inclusion criteria:
      - dx with DM by 2017
      - not yet been dx with DM and had no visits in 2016, 2015, and 2014
- 2016 visits
  - 19 yo the least likely to attend visits
- Type 2 DM had the highest rates of controlled DM, but also the highest rates of the least controlled DM
  - Lifestyle vs Insulin to control DM?
- dx with DM for 5 years or less were the most likely to have controlled DM
  - Patients diagnosed for 11 years or more had the lowest rates of controlled DM.
- Attended 3 or more visits had the lowest rates of HgbA1c 11.6% or more
  - Patients who attended one visit had the highest.

CONCLUSIONS

- 17 yo is the optimal age group to target for transitional education
  - Earlier may not be dx with DM yet
  - Later attending visits decreases
- AYAs who are least likely to have controlled DM:
  - Attend 1 visit per year
  - Have had DM for 11 years or more
  - Type 2 DM.
    - Targeted interventions may be needed for this population to create effective transition to adult care education
      - 81% of the sample used Medi-Cal CCS insurance
        - Below Federal Poverty Level
      - 60% identified as Hispanic.
        - Additional consideration in developing curriculum
- More studies evaluating patients with Type 2 DM and transition to adult care are needed
- This study may be the first step in creating a nurse-led transitional clinic for pediatric patients with DM transitioning to adult care at VCH

REFERENCES

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QUESTIONS?