

Dataset Integrity Check for EDREN18 Data File

Prepared by Michael Spriggs and Allyson Mateja
3901 Calverton Blvd, Suite 200 Calverton MD 20705
December 7, 2015

Contents

1 Standard Disclaimer	2
2 Study Background	2
3 Archived Datasets	2
4 Statistical Methods	2
5 Results	3
6 Conclusions	3
7 References	3
Table B: Comparison of values computed in integrity check to reference article Table 1 values	4
Table C: Variables used to replicate Table 2: DCCT/EDIC renal outcomes through EDIC year 18	7
Table D: Comparison of values computed in integrity check to reference article Table 2 values	7
Attachment A: SAS Code	9

1 Standard Disclaimer

The intent of this DSIC is to provide confidence that the data distributed by the NIDDK repository is a true copy of the study data. Our intent is not to assess the integrity of the statistical analyses reported by study investigators. As with all statistical analyses of complex datasets, complete replication of a set of statistical results should not be expected in secondary analysis. This occurs for a number of reasons including differences in the handling of missing data, restrictions on cases included in samples for a particular analysis, software coding used to define complex variables, etc. Experience suggests that most discrepancies can ordinarily be resolved by consultation with the study data coordinating center (DCC), however this process is labor-intensive for both DCC and Repository staff. It is thus not our policy to resolve every discrepancy that is observed in an integrity check. Specifically, we do not attempt to resolve minor or inconsequential discrepancies with published results or discrepancies that involve complex analyses, unless NIDDK Repository staff suspect that the observed discrepancy suggests that the dataset may have been corrupted in storage, transmission, or processing by repository staff. We do, however, document in footnotes to the integrity check those instances in which our secondary analyses produced results that were not fully consistent with those reported in the target publication.

2 Study Background

The Epidemiology of Diabetes Interventions and Complications (EDIC) study was initiated as follow-up to examine the long-term effects of the original DCCT interventions on diabetic complications such as cardiovascular events and advanced retinal and renal disease. Over 90 percent of participants from the DCCT study were followed by the EDIC study. Similar to the DCCT study, glycosylated hemoglobin values, fasting lipid levels, serum creatinine values, and other risk factors for cardiovascular disease were measured at different intervals for participants. Cardiovascular complications were assessed with standardized means and classified by an independent committee. The EDIC study has found that intensive diabetes therapy reduced risk of cardiovascular disease in patients with type 1 diabetes and that the differences in outcomes between the intensive and conventional therapy groups persist after long-term study.

3 Archived Datasets

The SAS data file, as provided by the Data Coordinating Center (DCC), is located in the data package. For this replication, variables were taken from the SAS file EDREN18.

4 Statistical Methods

Analyses were performed to duplicate results for the data published by The DCCT/EDIC research group. To verify the integrity of the dataset, descriptive statistics were computed.

5 Results

For Table 1 in the publication [1], Table 1: Participant characteristics at DCCT baseline, DCCT closeout (EDIC baseline), and EDIC year 18, Table A lists the variables that can be used in the replication. Table B compares the results calculated from the archived data file to the results published in Table 1. The results of the replication are a true copy when available

For Table 2 in the publication [1], Table 2: DCCT/EDIC renal outcomes through EDIC year 18, Table C lists the variables that were used in the replication and Table D compares the results calculated from the archived data file to the results published in Table 2. The results of the replication are very similar to the results in publication [1].

6 Conclusions

The NIDDK repository is confident that the EDIC data files to be distributed is a true copy to the manuscript data when available.

7 References

[1] Effect of intensive diabetes treatment on albuminuria in type 1 diabetes: long-term follow-up of the Diabetes Control and Complications Trial and Epidemiology of Diabetes Interventions and Complications study. The Lancet Diabetes & Endocrinology, Volume 2, Issue 10, 793 - 800

Table A: Variables used to replicate Table 1: Participant characteristics at DCCT baseline, DCCT closeout (EDIC baseline), and EDIC year 18

Table Variable	Variables Used in Replication from the Dataset(s)
Age (years)	AGE
Women	SEX
Diabetes duration (years)	F ATTDURY
Hypertension	FHT
Hyperlipidaemia	FHLIP
Present cigarette smoking	FSMOKES
Glucose management: Pump or multiple daily injections (≥three)	FMDI
Glucose management: Glucose monitoring ≥four times a day	FGLUC4
Antihypertensive Drug: Any	ANTIHYIP
Antihypertensive Drug: RAS inhibitor	ANACEARB
BMI (kg/m ²)	FBMI
Obese (BMI≥30kg/m ²)	FOBESE
Systolic blood pressure (mm Hg)	FSBP
Diastolic blood pressure (mm Hg)	FDBP
Mean arterial pressure (mm Hg)	FBPM
HbA1c%	FHBA1C, DCCT_HBA, EDIC_HBA
No Retinopathy	ETDRSPAT (not equal to 1), ETRSCAT3 (=1)
Microaneurysms only	ETDRSPAT (= 2 or 3), ETRSCAT3 (=2)
Mild NPDR	ETDRSPAT (= 4 or 5), ETRSCAT3 (=3)
Moderate NPDR	ETDRSPAT (= 6, 7, 8 or 9), ETRSCAT3 (=4)
Severe PDR or worse	ETDRSPAT (>= 10), ETRSCAT3 (>=5)
Neuropathy	CCN00, CCN99, CCN

Table B: Comparison of values computed in integrity check to reference article Table 1 values

Characteristic	DCCT baseline (1983–89): INT (n=711) [Manuscript]	DCCT baseline (1983–89): INT (n=711) [DSIC]	DCCT baseline (1983–89): INT (n=0) [DIFF]	DCCT baseline (1983–89): CONV (n=730) [Manuscript]	DCCT baseline (1983–89): CONV (n=730) [DSIC]	DCCT baseline (1983–89): CONV (n=0) [DIFF]
Age (years)	27.2 (7.1)	27.1 ± 7.1	0	26.7 (7.1)	26.5 ± 7.1	0
Women	345 (49%)	345 (49%)	0	335 (46%)	335 (46%)	0
Diabetes duration (years)	5.8 (4.2)	5.8 ± 4.2	0	5.5 (4.1)	5.5 ± 4.1	0
Hypertension	22 (3%)	22 (3%)	0	15 (2%)	15 (2%)	0
Hyperlipidaemia	162 (23%)	162 (23%)	0	171 (23%)	170 (23%)	0
Present cigarette smoking	132 (19%)	132 (19%)	0	134 (18%)	134 (18%)	0

Characteristic	DCCT baseline (1983–89): INT (n=711) [Manuscript]	DCCT baseline (1983–89): INT (n=711) [DSIC]	DCCT baseline (1983–89): INT (n=0) [DIFF]	DCCT baseline (1983–89): CONV (n=730) [Manuscript]	DCCT baseline (1983–89): CONV (n=730) [DSIC]	DCCT baseline (1983–89): CONV (n=0) [DIFF]
Glucose management: Pump or multiple daily injections (≥three)	0 (0%)	0 (0%)	0	0 (0%)	0 (0%)	0
Glucose management: Glucose monitoring ≥four times a day	0 (0%)	0 (0%)	0	0 (0%)	0 (0%)	0
Antihypertensive Drug: Any	0 (0%)	0 (0%)	0	0 (0%)	0 (0%)	0
Antihypertensive Drug: RAS inhibitor	0 (0%)	0 (0%)	0	0 (0%)	0 (0%)	0
BMI (kg/m ²)	23.4 (2.7)	23.4 ± 2.7	0	23.5 (2.9)	23.5 ± 2.9	0
Obese (BMI≥30kg/m ²)	9 (1%)	9 (1%)	0	14 (2%)	14 (2%)	0
Systolic blood pressure (mm Hg)	114.5 (11.3)	114.5 ± 11.3	0	114.6 (11.4)	114.6 ± 11.4	0
Diastolic blood pressure (mm Hg)	73.1 (8.2)	73.1 ± 8.2	0	72.9 (8.7)	72.9 ± 8.7	0
Mean arterial pressure (mm Hg)	86.9 (8.2)	86.9 ± 8.2	0	86.8 (8.6)	86.8 ± 8.6	0
HbA1c [†]	9.1 (1.6%)	9.1 ± 1.6	0	9.1 (1.6%)	9.1 ± 1.6	0
No Retinopathy	347 (49%)	347 (49%)	0	378 (52%)	378 (52%)	0
Microaneurysms only	249 (35%)	249 (35%)	0	203 (28%)	203 (28%)	0
Mild NPDR	82 (12%)	82 (12%)	0	111 (15%)	111 (15%)	0
Moderate NPDR	32 (5%)	32 (5%)	0	37 (5%)	37 (5%)	0
Severe PDR or worse	0 (0%)	0 (0%)	0	1 (0%)	1 (0%)	0
Neuropathy	48 (7%)	48 (7%)	0	41 (6%)	41 (6%)	0

Characteristic	End of DCCT (1993)INT (n=698) [Manuscript]	End of DCCT (1993)INT (n=698) [DSIC]	End of DCCT (1993)INT (n=0) [DIFF]	End of DCCT (1993)CONV (n=717) [Manuscript]	End of DCCT (1993)CONV (n=717) [DSIC]	End of DCCT (1993)CONV (n=0) [DIFF]
Age (years)	33.6 (7.0)	33.6 ± 7.0	0	33.0 (7.0)	33.0 ± 7.0	0
Women	342 (49 %)	342 (49%)	0	329 (46%)	329 (46%)	0
Diabetes duration (years)	12.3 (4.9)	12.3 ± 4.9	0	11.9 (4.8)	11.9 ± 4.8	0
Hypertension	31 (4%)	31 (4%)	0	28 (4%)	28 (4%)	0
Hyperlipidaemia	179 (26%)	179 (26%)	0	213 (30%)	213 (30%)	0
Present cigarette smoking	141 (20%)	141 (20%)	0	142 (20%)	142 (20%)	0
Glucose management: Pump or multiple daily injections (≥three)	680 (97%)	680 (97%)	0	36 (5%)	36 (5%)	0
Glucose management: Glucose monitoring ≥four times a day	368 (53%)	368 (53%)	0	27 (4%)	27 (4%)	0
Antihypertensive Drug: Any	..	--	--	..	--	--
Antihypertensive Drug: RAS inhibitor	..	--	--	..	--	--

Characteristic	End of DCCT (1993)INT (n=698) [Manuscript]	End of DCCT (1993)INT (n=698) [DSIC]	End of DCCT (1993)INT (n=0) [DIFF]	End of DCCT (1993)CONV (n=717) [Manuscript]	End of DCCT (1993)CONV (n=717) [DSIC]	End of DCCT (1993)CONV (n=0) [DIFF]
BMI (kg/m ²)	26.6 (4.2)	26.6 ± 4.2	0	25.0 (3.1)	25.0 ± 3.1	0
Obese (BMI≥30kg/m ²)	130 (19%)	130 (19%)	0	40 (6%)	40 (6%)	0
Systolic blood pressure (mm Hg)	116.3 (11.7)	116.3 ± 11.7	0	115.3 (12.0)	115.3 ± 12.0	0
Diastolic blood pressure (mm Hg)	74.4 (8.8)	74.84 ± 8.8	0	74.3 (8.8)	74.3 ± 8.8	0
Mean arterial pressure (mm Hg)	88.3 (8.9)	88.3 ± 8.9	0	88.0 (8.9)	88.0 ± 8.9	0
HbA1c [¶]	7.2 (0.9%)	7.2 ± 0.9	0	9.1 (1.3%)	9.1 ± 1.3	0
No Retinopathy	197 (28%)	197 (28%)	0	124 (17%)	124 (17%)	0
Microaneurysms only	277 (40%)	277 (40%)	0	230 (32%)	230 (32%)	0
Mild NPDR	148 (21%)	148 (21%)	0	204 (29%)	204 (29%)	0
Moderate NPDR	57 (8%)	57 (8%)	0	102 (14%)	102 (14%)	0
Severe PDR or worse	18 (3%)	18 (3%)	0	56 (8%)	56 (8%)	0
Neuropathy	64 (9%)	64 (9%)	0	124 (18%)	124 (17%)	0 (1)

Characteristic	EDIC year 18 (2010–12) INT (n=622) [Manuscript]	EDIC year 18 (2010–12) INT (n=622) [DSIC]	EDIC year 18 (2010–12) INT (n=0) [DIFF]	EDIC year 18 (2010–12) CONV (n=598) [Manuscript]	EDIC year 18 (2010–12) CONV (n=598) [DSIC]	EDIC year 18 (2010–12) CONV (n=0) [DIFF]
Age (years)	52.3 (6.9)	52.3 ± 6.9	0	51.3 (6.9)	51.3 ± 6.9	0
Women	303 (49%)	303 (49%)	0	274 (46%)	274 (46%)	0
Diabetes duration (years)	30.7 (5.0)	30.7 ± 5.0	0	30.2 (4.9)	30.2 ± 4.9	0
Hypertension	415 (67%)	415 (67%)	0	411 (69%)	411 (69%)	0
Hyperlipidaemia	427 (69%)	427 (69%)	0	407 (68%)	407 (68%)	0
Present cigarette smoking	71 (11%)	71 (11%)	0	64 (11%)	64 (11%)	0
Glucose management: Pump or multiple daily injections (≥three)	607 (98%)	607 (98%)	0	584 (98%)	584 (98%)	0
Glucose management: Glucose monitoring ≥four times a day	422 (68%)	422 (68%)	0	423 (71%)	423 (71%)	0
Antihypertensive Drug: Any	374 (60%)	374 (60%)	0	374 (63%)	374 (63%)	0
Antihypertensive Drug: RAS inhibitor	352 (57%)	352 (57%)	0	357 (60%)	357 (60%)	0
BMI (kg/m ²)	29.1 (5.7)	29.1 ± 5.7	0	28.5 (5.1)	28.5 ± 5.1	0
Obese (BMI≥30kg/m ²)	225 (36%)	225 (36%)	0	198 (33%)	189 (33%)	0
Systolic blood pressure (mm Hg)	122.4 (15.4)	122.4 ± 15.4	0	121.8 (15.1)	121.8 ± 15.1	0
Diastolic blood pressure (mm Hg)	71.5 (9.1)	71.5 ± 9.1	0	71.3 (8.8)	71.3 ± 8.8	0
Mean arterial pressure (mm Hg)	88.4 (9.8)	88.4 ± 9.8	0	88.2 (9.6)	88.2 ± 9.6	0
HbA1c [¶]	8.0 (1.0%)	8.0 ± 1.0	0	8.0 (1.0%)	8.0 ± 1.0	0
No Retinopathy	66 (11%)	66 (11%)	0	28 (5%)	28 (5%)	0

Characteristic	EDIC year 18 (2010–12) INT (n=622) [Manuscript]	EDIC year 18 (2010–12) INT (n=622) [DSIC]	EDIC year 18 (2010–12) INT (n=0) [DIFF]	EDIC year 18 (2010–12) CONV (n=598) [Manuscript]	EDIC year 18 (2010–12) CONV (n=598) [DSIC]	EDIC year 18 (2010–12) CONV (n=0) [DIFF]
Microaneurysms only	230 (37%)	230 (37%)	0	160 (27%)	160 (27%)	0
Mild NPDR	132 (21%)	132 (21%)	0	110 (18%)	110 (18%)	0
Moderate NPDR	102 (16%)	102 (16%)	0	117 (20%)	117 (20%)	0
Severe PDR or worse	92 (15%)	92 (15%)	0	183 (31%)	183 (31%)	0
Neuropathy	147 (24%)	147 (24%)	0	195 (33%)	195 (33%)	0

Table C: Variables used to replicate Table 2: DCCT/EDIC renal outcomes through EDIC year 18

Table Variable	Variables Used in Replication from the Datasets
Sustained albumin excretion rate >30 mg per 24 h	FSAER30
Albumin excretion rate >300 mg per 24 h	FAER300
Sustained expected glomerular filtration rate <60 mL per min per 1.73 m ²	FSCGFR60
Dialysis	ANYDIAL
Kidney transplant	ANYTRAN

Table D: Comparison of values computed in integrity check to reference article Table 2 values

Characteristic	Total at risk [Manuscript]	Total at risk [DSIC]	Total at risk [Diff]	Intensive (N=711) [Manuscript]	Intensive (N=711) [DSIC]	Intensive (N=0) [Diff]
Number at risk during DCCT	1441	1441	0	--	--	--
Sustained albumin excretion rate >30 mg per 24 h	1441	1441	0	166 (23%)	167 (23%)	1 (0)
During DCCT	1441	1441	0	95 (13%)	95 (13%)	0
During EDIC*	1172	1174	2	71 (12%)	72 (12%)	1 (0)
Albumin excretion rate >300 mg per 24 h	1441	1441	0	48 (7%)	48 (7%)	0
During DCCT	1441	1441	0	17 (2%)	17 (2%)	0
During EDIC*	1350	1352	2	31 (5%)	31 (5%)	0
Sustained expected glomerular filtration rate, <60 mL per min per 1.73 m ²	1441	1441	0	31 (4%)	31 (4%)	0
During DCCT	1441	1441	0	1 (0%)	1 (0%)	0
During EDIC*	1398	1398	0	30 (4%)	30 (4%)	0
Dialysis or kidney transplant‡	1441	1441	0	10 (1%)	10 (1%)	0
Dialysis	1399	1401	2	10 (1%)	10 (1%)	0

Characteristic	Total at risk [Manuscript]	Total at risk [DSIC]	Total at risk [Diff]	Intensive (N=711) [Manuscript]	Intensive (N=711) [DSIC]	Intensive (N=0) [Diff]
Kidney transplant	1399	1401	2	6 (1%)	6 (1%)	0

Characteristic	Conventional (N=730) [Manuscript]	Conventional (N=730) [DSIC]	Conventional (N=0) [Diff]
Number at risk during DCCT	--	--	--
Sustained albumin excretion rate >30 mg per 24 h	263 (36%)	264 (36%)	1 (0)
During DCCT	143 (20%)	143 (20%)	0
During EDIC*	120 (21%)	121 (21%)	1 (0)
Albumin excretion rate >300 mg per 24 h	121 (17%)	121 (17%)	0
During DCCT	35 (5%)	35 (5%)	0
During EDIC*	86 (13%)	86 (13%)	0
Sustained expected glomerular filtration rate, <60 mL per min per 1.73 m ²	53 (7%)	53 (7%)	0
During DCCT	3 (0%)	3 (0%)	0
During EDIC*	50 (7%)	50 (7%)	0
Dialysis or kidney transplant‡	16 (2%)	16 (2%)	0
Dialysis	12 (2%)	12 (2%)	0
Kidney transplant	12 (2%)	12 (2%)	0

Attachment A: SAS Code

```
title1 "%sysfunc(getoption(sysin))";
title2 " ";

proc format;
    value retinf 1 = 'No Retinopathy'
                2 = 'MA Only'
                3 = 'Mild NPDR'
                4 = 'Moderate NPDR'
                5,6 = 'Severe NPDR';

%global caser;

*** Frequency Macro, N and % ***;
%macro freqdata2(order=, invar=, level=, roundvar=, digit=);

data data0 data1;
    set _null_;

    proc freq data=table1 noprint;
        tables &invar*&caser/out=data0 outpct;
        format _all_;
    run;

data data1;
    set data0;
    length LEVEL $100;
    LEVEL=strip(&invar);

    data data1(keep=LEVEL &caser name CHARALL ORDERER);
        set data1;
        length name $100 CHARALL $100;
        name=upcase("&invar");
        PCT_DISP=round(PCT_COL,&roundvar.);
        CHARALL=compress(put(COUNT,8.))||" ("||compress(put(PCT_DISP,8.&digit))||'%)';
        ORDERER=&order;
        if level in &level then output data1;

data accumfreq1;
    set accumfreq1 data1;

%mend freqdata2;

%macro meandata1(order=, invar=, roundvar=, digit=);
proc means data=table1 mean stddev noprint;
    var &invar;
    class &caser;
    output out=data1 mean=mean stddev=stddev;
run;

data data1(drop=_TYPE_ _FREQ_ mean stddev);
```

```

set datal;
length name CHARALL $100;
name=upcase("&invar");
mean=round(mean,&roundvar);
stddev=round(stddev,&roundvar);
CHARALL=compress(put(mean,8.&digit)||" ± "||compress(put(stddev,8.&digit)));
ORDERER=&order;

data accummean1;
  set accummean1 datal;

%mend meandatal;

%macro inertdatal(order=);

data inert1;
  length orderer 8. &caser $13.;
  orderer=&order.;
  &caser="EXPERIMENTAL";
  output;
  orderer=&order.;
  &caser="STANDARD";
  output;

data accuminert1;
  set accuminert1 inert1;

%mend inertdatal;

*** Input ***;

libname edic "/prj/niddk/ims_analysis/DCCT_EDIC/private_orig_data/EDIC_REN18/";

data edren18; set edic.edren18;

proc contents data=edren18;

proc means data=edren18;
  var AGE
  AGE0
  AGE99
  ;
title3 'check';

proc freq data=edren18;
  tables DTEDYEAR*group/missing list;
  title3 'check';

data dcct_base dcct_end edic_18;
  set edren18;
  if BMI00>=30 then OBESE00=1;
  else OBESE00=0;
  if BMI99>=30 then OBESE99=1;
  else OBESE99=0;
  if BMI>=30 then OBESE=1;
  else OBESE=0;

```

```

if etdrspat = 1 then retin = 1;
else retin = 0;
  if etdrspat in (2, 3) then ma_only = 1;
  else ma_only = 0;
  if etdrspat in (4,5) then mildnpdr = 1;
  else mildnpdr = 0;
  if etdrspat in (6, 7, 8, 9) then moderatenpdr = 1;
  else moderatenpdr=0;
  if etdrspat >= 10 then severenpdr = 1;
  else severenpdr = 0;
  if ETDRSCAT3 >= 5 then ETDRSCAT3=5;
if DTEDYEAR=0 then output dcct_base;
else if DTEDYEAR=99 then output dcct_end;
else if dtedyear in (1700, 1800) then output edic_18;

proc sort data=edic_18 nodupkey;
  by mask_pat dtedyear;

data edic_18;
  set edic_18;
  by mask_pat;
  if last.mask_pat and renall8 = 1 then output edic_18;

data ccn;
  set edren18;
  if renall8 = 1 and ccn ne . then output ccn;

proc sort data=ccn;
  by mask_pat dtedyear;

data ccn;
  set ccn;
  by mask_pat dtedyear;
  if last.mask_pat then output;

data retin;
  set edren18;
  if renall8=1 and ETDRSCAT3 ne . then output retin;

proc sort data=retin;
  by mask_pat dtedyear;

data retin;
  set retin;
  by mask_pat dtedyear;
  if last.mask_pat then output;

proc freq data=dcct_base;
  tables group;
  title3 'DCCT Baseline groups';

proc freq data=dcct_end;
  tables group;
  title3 'DCCT End groups';

proc freq data=edic_18;

```

```

tables ETRDRPAT ETRDRSCAT1 ETRDRSCAT2 ETRDRSCAT3 RETBASE aer1718 group;
title3 'EDIC yr 18 groups';

/*
proc freq data=dcct_base;*/

%let caser=GROUP;

*** Column processing: Baseline;
data accumfreq1 accummean1 accummedian1 accuminert1;
  set _null_;

data table1;
  set dcct_base;

%meandatal(order=1 , invar=AGE , roundvar=.1, digit=1);
%freqdata2(order=2 , invar=SEX , level=("F") , roundvar=1, digit=0);
%meandatal(order=3 , invar=FATTDURY , roundvar=.1, digit=1);
%freqdata2(order=4 , invar=fht , level=("1") , roundvar=1, digit=0);
%freqdata2(order=5 , invar=fhflip , level=("1") , roundvar=1, digit=0);
%freqdata2(order=6 , invar=fSMOKES , level=("1") , roundvar=1, digit=0);
%freqdata2(order=7 , invar=fmdi , level=("1") , roundvar=1, digit=0);
%freqdata2(order=8 , invar=fgluc4 , level=("1") , roundvar=1, digit=0);
%freqdata2(order=9 , invar=ANTIHYPER , level=("1") , roundvar=1, digit=0);
%freqdata2(order=10 , invar=ACEARB , level=("1") , roundvar=1, digit=0);
%inertdata1(order=7.1);
%inertdata1(order=8.1);
%inertdata1(order=9.1);
%inertdata1(order=10.1);
%meandatal(order=11 , invar=fbmi , roundvar=.1, digit=1);
%freqdata2(order=12 , invar=fobese , level=("1") , roundvar=1, digit=0);
%meandatal(order=13 , invar=fsbp , roundvar=.1, digit=1);
%meandatal(order=14 , invar=fdbp , roundvar=.1, digit=1);
%meandatal(order=15 , invar=fbpm , roundvar=.1, digit=1);
%inertdata1(order=16);
%inertdata1(order=17);
%inertdata1(order=18);
%inertdata1(order=19);
%inertdata1(order=20);
%inertdata1(order=21);
%meandatal(order=22, invar = FHBA1C, roundvar = .1, digit=1);
%freqdata2(order=23 , invar=retin, level=("1"), roundvar=1, digit=0);
%freqdata2(order=24 , invar=ma_only, level=("1"), roundvar=1, digit=0);
%freqdata2(order=25 , invar=mildnpdr, level=("1"), roundvar=1, digit=0);
%freqdata2(order=26 , invar=moderatenpdr, level=("1"), roundvar=1, digit=0);
%freqdata2(order=27 , invar=severenpdr, level=("1"), roundvar=1, digit=0);
%freqdata2(order=28 , invar=CCN00 , level=("1") , roundvar=1, digit=0);

data accumtab1;
  set accumfreq1 accummean1 accummedian1 accuminert1;
  if &caser=" " then delete;

*** Column processing: End;
data accumfreq1 accummean1 accummedian1 accuminert1;

```

```

set _null_;

data table1;
  set dcct_end;

%meandatal(order=1 , invar=age , roundvar=.1, digit=1);
%freqdata2(order=2 , invar=SEX , level=("F") , roundvar=1, digit=0);
%meandatal(order=3 , invar=FATTDURY , roundvar=.1, digit=1);
%freqdata2(order=4 , invar=fht , level=("1") , roundvar=1, digit=0);
%freqdata2(order=5 , invar=fhlip , level=("1") , roundvar=1, digit=0);
%freqdata2(order=6 , invar=fSMOKES , level=("1") , roundvar=1, digit=0);
%inertdata1(order=6.1);
%freqdata2(order=7 , invar=fmdi , level=("1") , roundvar=1, digit=0);
%freqdata2(order=8 , invar=fgluc4 , level=("1") , roundvar=1, digit=0);
%inertdata1(order=9.1);
%inertdata1(order=10.1);
%meandatal(order=11 , invar=fbmi , roundvar=.1, digit=1);
%freqdata2(order=12 , invar=fobese , level=("1") , roundvar=1, digit=0);
%meandatal(order=13 , invar=fsbp , roundvar=.1, digit=1);
%meandatal(order=14 , invar=fdbp , roundvar=.1, digit=1);
%meandatal(order=15 , invar=fbpm , roundvar=.1, digit=1);
%inertdata1(order=16);
%inertdata1(order=17);
%inertdata1(order=18);
%inertdata1(order=19);
%inertdata1(order=20);
%inertdata1(order=21);
%meandatal(order=22, invar = DCCT_HBA, roundvar = .1, digit=1);
%freqdata2(order=23 , invar=ETDRSCAT3, level=("1"), roundvar=1, digit=0);
%freqdata2(order=24 , invar=ETDRSCAT3, level=("2"), roundvar=1, digit=0);
%freqdata2(order=25 , invar=ETDRSCAT3, level=("3"), roundvar=1, digit=0);
%freqdata2(order=26 , invar=ETDRSCAT3, level=("4"), roundvar=1, digit=0);
%freqdata2(order=27 , invar=ETDRSCAT3, level=("5"), roundvar=1, digit=0);
%freqdata2(order=28 , invar=CCN99 , level=("1") , roundvar=1, digit=0);

data accumtab2;
  set accumfreq1 accummean1 accummedian1 accuminert1;
  if &caser=" " then delete;

*** Column processing: EDIC 18;

data accumfreq1 accummean1 accummedian1 accuminert1;
  set _null_;

data table1;
  set edic_18;

%meandatal(order=1 , invar=AGE , roundvar=.1, digit=1);
%freqdata2(order=2 , invar=SEX , level=("F") , roundvar=1, digit=0);
%meandatal(order=3 , invar=fATTDURY , roundvar=.1, digit=1);
%freqdata2(order=4 , invar=fHT , level=("1") , roundvar=1, digit=0);
%freqdata2(order=5 , invar=fHLIP , level=("1") , roundvar=1, digit=0);
%freqdata2(order=6 , invar=fSMOKES , level=("1") , roundvar=1, digit=0);
%freqdata2(order=7 , invar=fMDI , level=("1") , roundvar=1, digit=0);
%freqdata2(order=8 , invar=fGLUC4 , level=("1") , roundvar=1, digit=0);
%freqdata2(order=9 , invar=ANTIHYIP , level=("1") , roundvar=1, digit=0);

```

```

%freqdata2(order=10 , invar=ACEARB , level="1" , roundvar=1, digit=0);
%meandatal(order=11 , invar=fBMI , roundvar=.1, digit=1);
%freqdata2(order=12 , invar=fOBESE , level="1" , roundvar=1, digit=0);
%meandatal(order=13 , invar=fSBP , roundvar=.1, digit=1);
%meandatal(order=14 , invar=fDBP , roundvar=.1, digit=1);
%meandatal(order=15 , invar=fBPM , roundvar=.1, digit=1);
%inertdatal(order=16);
%inertdatal(order=17);
%inertdatal(order=18);
%inertdatal(order=19);
%inertdatal(order=20);
%inertdatal(order=21);
%meandatal(order=22, invar = EDIC_HBA, roundvar = .1, digit=1);
%freqdata2(order=23 , invar=retin, level="1", roundvar=1, digit=0);
%freqdata2(order=24 , invar=ma_only, level="1"), roundvar=1, digit=0);
%freqdata2(order=25 , invar=mildnpdr, level="1"), roundvar=1, digit=0);
%freqdata2(order=26 , invar=moderatenpdr, level="1"), roundvar=1, digit=0);
%freqdata2(order=27 , invar=severenpdr, level="1"), roundvar=1, digit=0);
%freqdata2(order=28 , invar=CCN , level="1" , roundvar=1, digit=0);

```

```

data accumtab3;
  set accumfreq1 accummean1 accummedian1 accuminert1;
  if &caser=" " then delete;

```

```

*** Display processing ***;

```

```

proc sort data=accumtab1;
  by group orderer;

```

```

proc sort data=accumtab2;
  by group orderer;

```

```

proc sort data=accumtab3;
  by group orderer;

```

```

proc print data=accumtab1 noobs;
  var name charall orderer;
  by group;
  pageby group;
  title3 'Table 1 DCCT BASE stats';

```

```

proc print data=accumtab2 noobs;
  var name charall orderer;
  by group;
  pageby group;
  title3 'Table 1 DCCT END stats';

```

```

proc print data=accumtab3 noobs;
  var name charall orderer;
  by group;
  pageby group;
  title3 'Table 1 EDIC 18 stats';

```

```

proc freq data=ccn;
  tables ccn*group /list;
  where ccn=1;

```

```

proc freq data=retin;
    tables ETDRCAT3*group /list;
    format ETDRCAT3 retinf.;

proc sort data=edrenl8;
    by MASK_PAT DTEDYEAR;

data edrenl8_short(keep=group AER30_ACCUM_DCCT AER300_ACCUM_DCCT CKDGFR60_ACCUM_DCCT
    AER30_ACCUM_EDIC AER300_ACCUM_EDIC CKDGFR60_ACCUM_EDIC
    ANYDIAL_ACCUM ANYTRAN_ACCUM renall8 aer1718 edrenpop);
    set edrenl8;
    by MASK_PAT;
    length
        AER30_ACCUM_DCCT AER300_ACCUM_DCCT CKDGFR60_ACCUM_DCCT
        AER30_ACCUM_EDIC AER300_ACCUM_EDIC CKDGFR60_ACCUM_EDIC
        ANYDIAL_ACCUM ANYTRAN_ACCUM
        8.;
    retain
        AER30_ACCUM_DCCT AER300_ACCUM_DCCT CKDGFR60_ACCUM_DCCT
        AER30_ACCUM_EDIC AER300_ACCUM_EDIC CKDGFR60_ACCUM_EDIC
        ANYDIAL_ACCUM ANYTRAN_ACCUM
        ;
    if first.MASK_PAT then do;
        AER30_ACCUM_DCCT=0;
        AER300_ACCUM_DCCT=0;
        CKDGFR60_ACCUM_DCCT=0;
        AER30_ACCUM_EDIC=0;
        AER300_ACCUM_EDIC=0;
        CKDGFR60_ACCUM_EDIC=0;
        ANYDIAL_ACCUM=0;
        ANYTRAN_ACCUM=0;
    end;
    if FSAER30=1 and DTEDYEAR<100 then do;
        AER30_ACCUM_DCCT=1;
        AER30_ACCUM_EDIC=.;
    end;
    if FSAER30=1 and DTEDYEAR>=100 and AER30_ACCUM_EDIC=0 and edrenpop ne . then AER30_ACCUM_EDIC=1;
    if FAER300=1 and DTEDYEAR<100 then do;
        AER300_ACCUM_DCCT=1;
        AER300_ACCUM_EDIC=.;
    end;
    if FAER300=1 and DTEDYEAR>=100 and AER300_ACCUM_EDIC=0 and edrenpop ne . then AER300_ACCUM_EDIC=1;
    if FSCGFR60=1 and DTEDYEAR<100 then do;
        CKDGFR60_ACCUM_DCCT=1;
        CKDGFR60_ACCUM_EDIC=.;
    end;
    if FSCGFR60=1 and DTEDYEAR>=100 and CKDGFR60_ACCUM_EDIC=0 then CKDGFR60_ACCUM_EDIC=1;
    if ANYDIAL=1 then ANYDIAL_ACCUM=1;
    if ANYTRAN=1 then ANYTRAN_ACCUM=1;
    if last.MASK_PAT then output;

proc freq data=edrenl8_short;
    tables group*(AER30_ACCUM_DCCT AER300_ACCUM_DCCT CKDGFR60_ACCUM_DCCT ANYDIAL_ACCUM ANYTRAN_ACCUM)

```



```
    group*ANYDIAL_ACCUM*ANYTRAN_ACCUM /list ;
title3 'Table 2';

proc freq data=edren18_short;
tables group*( AER30_ACCUM_EDIC  AER300_ACCUM_EDIC  CKDGFR60_ACCUM_EDIC ANYDIAL_ACCUM ANYTRAN_ACCUM)
    group*ANYDIAL_ACCUM*ANYTRAN_ACCUM /list ;
    where edrenpop ne . or aer1718 ne .;
title3 'Table 2';
```