Dataset Integrity Check for the Focal Segmental Glomerulosclerosis (FSGS) Clinical Trial Data Files

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Table of Contents

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

Focal segmental glomerulosclerosis (FSGS) is one of the leading causes of end-stage kidney disease (ESKD). The 5 year kidney survival rates approach 100% occur following complete proteinuria remission, 90% after partial remission and 60% with treatment resistance. [1]

The initial treatment of primary FSGS usually involves corticosteroids and results in proteinuria remission in ~25% of patients. In observational and uncontrolled trials, prolonged prednisone therapy (mean 9 months) in adults resulted in complete and partial remission rates of 33% and 29%, respectively. Smith et al. evaluated pulse oral dexamethasone (DEX) over 32 weeks in 15 adults with primary FSGS and nephrotic range proteinuria. One complete remission and six partial remissions (urine protein/creatinine (Up/c) <2 grams per grams (g/g)) were observed, yielding a combined response of 47%, which fell to 20% with longer follow-up. Uncontrolled data from a single center suggest improved control of FSGS with long-term high-dose pulse corticosteroid therapy in conjunction with cytotoxic agents compared with historic controls. Together, these studies suggest that long-term corticosteroid therapy may improve the partial and complete remission rate in patients with FSGS and resistance to a standard short course of corticosteroids. [1]

The only medications that have been evaluated in randomized clinical trials (RCTs) and have shown to increase the rate of partial and complete remission are cyclosporine (CSA) coupled with low-dose prednisone. The high relapse rate following discontinuation of CSA12 and its side effect profile, including nephrotoxicity, have stimulated a search for alternative therapy. Mycophenolate mofetil (MMF), which reduces proteinuria in steroid-resistant FSGS with less toxicity than CSA, has not been tested in a large RCT. [1]

The NIH-funded multicenter randomized study of focal segmental glomerulosclerosis (FSGS) treatment compared the efficacy of a 12-month course of cyclosporine to a combination of oral pulse dexamethasone and mycophenolate mofetil in children and adults with steroid-resistant primary FSGS.

Of the 192 patients enrolled, 138 were randomized to cyclosporine (72) or to mycophenolate/ dexamethasone (66). [1]

The primary analysis compared the levels of an ordinal variable measuring remission during the first year. The odds ratio (0.59) for achieving at least a partial remission with mycophenolate/dexamethasone compared to cyclosporine was not significant. Partial or complete remission was achieved in 22 mycophenolate/mdexamethasone- and 33 cyclosporine-treated patients at 12 months. The main secondary outcome, preservation of remission for 26 weeks following cessation of treatment, was not significantly different between these two therapies. During the entire 78 weeks of study, 8 patients treated with cyclosporine and 7 with mycophenolate/dexamethasone died or developed kidney failure. [1]

The FSGS study did not find a difference in rates of proteinuria remission following 12 months of cyclosporine compared to mycophenolate/dexamethasone in patients with steroid-resistant FSGS. However, the study noted that the small sample size might have prevented detection of a moderate treatment effect. [1]

3 Archived Datasets

All SAS data files, as provided by the Data Coordinating Center (DCC), are located in the FSGS "sas_data" folder in the data package. For this replication, variables were taken from the "bsl_dataset" and the "fsgs_primary" datasets. These datasets were analysis datasets created by the DCC from the forms datasets, which are also included.

4 Statistical Methods

Analyses were performed to duplicate results for the data published by Gipson et al [1] in Kidney International in October 2011.

To verify the integrity of the "bsl_dataset" SAS dataset, descriptive statistics of baseline characteristics were computed, by treatment group (Table B). To verify the integrity of the "fsgs_primary" SAS dataset, frequencies and logistic regressions were computed, by treatment group (Tables D and E).

5 Results

Table 1 in the publication [1], FSGS CT baseline characteristics comparing the randomized treatment arms MMF/DEX and CSA, reports on baseline characteristics by treatment group. Our Table A lists the variables we used in our replication and Table B compares the results calculated from the archived data file to the results published in Table 1. The results of the replication are similar to published results, within rounding error.

Table 2 in the publication [1], FSGS CT primary analysis comparing proteinuria remission by week 52 between the randomized treatment arms, reports frequencies, odds ratios, and confidence intervals of the primary outcome level by arm. Our Table C lists the variables we used in our 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 similar to published results, within rounding error.

Table 3 in the publication [1], FSGS CT main secondary analysis comparing sustainable proteinuria remission from study weeks 52–78 between the randomized treatment arms, reports frequencies, odds ratios, and confidence intervals of the main secondary outcome level by arm. Our Table C lists the variables we used in our replication and Table E compares the results calculated from the archived data file to the results published in Table 3. The results of the replication are similar to published results, within rounding error.

Table 4 in the publication [1], Summary of adverse events comparing the randomized treatment arms. Our Table F compares the results calculated from the archived data file to the results published in Table 4. The most of results of the replication are similar to published results, within rounding error, except some adverse events are missing.

6 Conclusion

The NIDDK repository is confident that the FSGS data files to be distributed are a true copy of the study data.

7 References

1. Gipson DS, Trachtman H, Kaskel FJ, Greene TH, Radeva MK, Gassman JJ, Moxey-Mims MM, Hogg RJ, Watkins SL, Fine RN, Hogan SL, Middleton JP, Vehaskari VM, Flynn PA, Powell LM, Vento SM, McMahan JL, Siegel N, D'Agati VD, Friedman AL. Clinical trial of focal segmental glomerulosclerosis in children and young adults. Kidney Int. 2011 Oct; 80(8):868-78. Epub 2011 Jul 6.

Table A: Variables used to replicate Table 1: FSGS CT baseline characteristics comparing the randomized treatment arms MMF/DEX and CSA

Table Variable	**Variables Used in Replication from the "bsl_dataset" Dataset**
Age (years)	age_enr_grp
Race	racegrp*
Hispanic	ethnic
Male	Sex
Study baseline eGFR (ml/min per 1.73m^2)	egfr_study
Up/c (g/g)	MUPC_B01*
Albumin (g/dl)	ALB
Cholesterol, total (mg/dl)	CHOL
Hemoglobin	HGB
FSGS pathology subtype	FSGSTY
Duration of FSGS (months)	fsgsage_mon
Previous steroid exposure (months)	MEDMON
Hypertension	highbp_f10
Family history of kidney disease	famhist_yn
BMI at screening	BMI_f46
Treatment Group	rx

*Variables modified to match the order in the primary outcome manuscript

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

Variable	Category (if applicable)	MMF/DEX (n=66) N (%) or median (IQR: Q1, Q3) [Manuscript]	MMF/DEX (n=66) N (%) or median (IQR: Q1, Q3) [DSIC]	MMF/DEX (n=66) N (%) or median (IQR: Q1, Q3) [Difference]	CSA (n=72) N (%) or median (IQR: Q1, Q3) [Manuscript]	CSA (n=72) N (%) or median (IQR: Q1, Q3) [DSIC]	CSA (n=72) N (%) or median (IQR: Q1, Q3) [Difference]
Age (years)	2–12	20.0 (30.3%)	20.0 (30.3%)	0.0 (0.0%)	23.0 (31.9%)	23.0 (31.9%)	0.0 (0.0%)
Age (years)	13–17	25.0 (37.9%)	25.0 (37.9%)	0.0 (0.0%)	25.0 (34.7%)	25.0 (34.7%)	0.0 (0.0%)
Age (years)	18+	21.0 (31.8%)	21.0 (31.8%)	0.0 (0.0%)	24.0 (33.3%)	24.0 (33.3%)	0.0 (0.0%)
Race	Black	26.0 (39.4%)	26.0 (39.4%)	0.0 (0.0%)	27.0 (37.5%)	27.0 (37.5%)	0.0 (0.0%)
Race	White	38.0 (57.6%)	38.0 (57.6%)	0.0 (0.0%)	40.0 (55.6%)	40.0 (55.6%)	0.0 (0.0%)
Race	Other	2.0 (3.0%)	2.0 (3.0%)	0.0 (0.0%)	5.0 (6.9%)	5.0 (6.9%)	0.0 (0.0%)
Hispanic		12.0 (18.2%)	12.0 (18.2%)	0.0 (0.0%)	14.0 (19.4%)	14.0 (19.4%)	0.0 (0.0%)
Male		33.0 (50.0%)	33.0 (50.0%)	0.0 (0.0%)	40.0 (55.6%)	40.0 (55.6%)	0.0 (0.0%)
Study baseline eGFR (ml/min per 1.73m^2)		110.1 (80.6, 169.6)	110.1 (80.6, 169.6)	0.0 (0.0, 0.0)	112.8 (75.6, 194.2)	112.8 (75.6, 194.2)	0.0 (0.0, 0.0)
Up/c (g/g)	1–1.99	13.0 (19.7%)	13.0 (19.7%)	0.0 (0.0%)	20.0 (27.8%)	20.0 (27.8%)	0.0 (0.0%)
Up/c (g/g)	2–3.99	22.0 (33.3%)	22.0 (33.3%)	0.0 (0.0%)	14.0 (19.4%)	14.0 (19.4%)	0.0 (0.0%)
Up/c (g/g)	4–7.99	12.0 (18.2%)	12.0 (18.2%)	0.0 (0.0%)	19.0 (26.4%)	19.0 (26.4%)	0.0 (0.0%)
Up/c (g/g)	8+	19.0 (28.8%)	19.0 (28.8%)	0.0 (0.0%)	19.0 (26.4%)	19.0 (26.4%)	0.0 (0.0%)
Albumin (g/dl)		2.7 (2.1, 3.7)	2.8 (2.1, 3.7)	-0.1 (0.0, 0.0)	3.0 (2.3, 3.7)	3.0 (2.3, 3.7)	0.0 (0.0, 0.0)
Cholesterol, total (mg/dl)		312.0 (260.0, 455.0)	312.0 (260.0, 455.0)	0.0 (0.0, 0.0)	283.0 (241.0, 390.0)	283.0 (241.0, 390.0)	0.0 (0.0, 0.0)
Hemoglobin		13.8 (12.9, 15.0)	13.9 (12.9, 15.0)	-0.1 (0.0, 0.0)	14.0 (13.0, 15.2)	14.1 (13.1, 15.2)	-0.1 (-0.1, 0.0)
FSGS pathology subtype	NOS	43.0 (65.2%)	43.0 (65.2%)	0.0 (0.0%)	51.0 (70.8%)	51.0 (70.8%)	0.0 (0.0%)
FSGS pathology subtype	Perihilar	4.0 (6.1%)	4.0 (6.1%)	0.0 (0.0%)	6.0 (8.3%)	6.0 (8.3%)	0.0 (0.0%)
FSGS pathology subtype	Cellular	2.0 (3.0%)	2.0 (3.0%)	0.0 (0.0%)	2.0 (2.8%)	2.0 (2.8%)	0.0 (0.0%)
FSGS pathology subtype	Tip	10.0 (15.2%)	10.0 (15.2%)	0.0 (0.0%)	4.0 (5.6%)	4.0 (5.6%)	0.0 (0.0%)
FSGS pathology subtype	Collapsing	7.0 (10.6%)	7.0 (10.6%)	0.0 (0.0%)	9.0 (12.5%)	9.0 (12.5%)	0.0 (0.0%)
Duration of FSGS (months)		6.5 (3.2, 16.2)	6.5 (3.2, 16.2)	0.0 (0.0, 0.0)	7.1 (4.1, 16.3)	7.1 (4.0, 16.3)	0.0 (0.1, 0.0)
Previous steroid exposure (months)		3.0 (2.0, 6.0)	3.0 (2.0, 6.0)	0.0 (0.0, 0.0)	3.0 (2.0, 4.0)	3.0 (2.0, 4.0)	0.0 (0.0, 0.0)
Hypertension		39.0 (59.1%)	39.0 (59.1%)	0.0 (0.0%)	41.0 (56.9%)	41.0 (56.9%)	0.0 (0.0%)
Family history of kidney disease		6.0 (9.8%)	6.0 (9.8%)	0.0 (0.0%)	8.0 (11.6%)	8.0 (11.6%)	0.0 (0.0%)
BMI at screening		24.2 (20.4, 27.6)	24.2 (20.4, 27.6)	0.0 (0.0, 0.0)	23.0 (19.3, 29.9)	23.0 (19.4, 29.9)	0.0 (-0.1, 0.0)

Table C: Variables used to replicate Table 2: FSGS CT primary analysis comparing proteinuria remission by week 52 between the randomized treatment arms, and Table 3: FSGS CT main secondary analysis comparing sustainable proteinuria remission from study weeks 52–78 between the randomized treatment arms

Table Variable	**Variables Used in Replication from the "fsgs_primary" Dataset**
Primary outcome level (Table 2)	level
Main secondary outcome level (Table 3)	level_sec*
Treatment Group	trt

*Variable modified to match the format in the primary outcome manuscript

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

Primary Outcome	MMF/DEX Frequencies [Manuscript]	MMF/DEX Frequencies [DSIC]	MMF/DEX Frequencies [Difference]	CSA Frequencies [Manuscript]	CSA Frequencies [DSIC]	CSA Frequencies [Difference]	MMF/DEX Cumulative Frequencies [Manuscript]	MMF/DEX Cumulative Frequencies [DSIC]	MMF/DEX Cumulative Frequencies [Difference]	CSA Cumulative Frequencies [Manuscript]	CSA Cumulative Frequencies [DSIC]	CSA Cumulative Frequencies [Difference]
1	2 (3%)	2 (3%)	0 (0%)	4 (5.6%)	4 (5.6%)	0 (0%)	2 (3%)	2 (3%)	0 (0%)	4 (5.6%)	4 (5.6%)	0 (0%)
2	4 (6.1%)	4 (6.1%)	0 (0%)	10 (13.9%)	10 (13.9%)	0 (0%)	6 (9.1%)	6 (9.1%)	0 (0%)	14 (19.4%)	14 (19.4%)	0 (0%)
3	16 (24.2%)	16 (24.2%)	0 (0%)	19 (26.4%)	19 (26.4%)	0 (0%)	22 (33.3%)	22 (33.3%)	0 (0%)	33 (45.8%)	33 (45.8%)	0 (0%)
4	4 (6.1%)	4 (6.1%)	0 (0%)	6 (8.3%)	6 (8.3%)	0 (0%)	26 (39.4%)	26 (39.4%)	0 (0%)	39 (54.2%)	39 (54.2%)	0 (0%)
5	15 (22.7%)	15 (22.7%)	0 (0%)	6 (8.3%)	6 (8.3%)	0 (0%)	41 (62.1%)	41 (62.1%)	0 (0%)	45 (62.5%)	45 (62.5%)	0 (0%)
6	25 (37.9%)	25 (37.9%)	0 (0%)	27 (37.5%)	27 (37.5%)	0 (0%)	66 (100%)	66 (100%)	0 (0%)	72 (100%)	72 (100%)	0 (0%)

Primary outcome	Odds ratio [Manuscript]	Odds ratio [DSIC]	Odds ratio [Difference]	95% CI [Manuscript]	95% CI [DSIC]	95% CI [Difference]
1	0.53	0.53	0	(0.09-3.03)	(0.09-3)	(0-0.03)
2	0.41	0.41	0	(0.15-1.15)	(0.15-1.15)	(0-0)
3	0.59	0.59	0	(0.3-1.18)	(0.3-1.18)	(0-0)
4	0.55	0.55	0	(0.28-1.08)	(0.28-1.08)	(0-0)
5	0.98	0.98	0	(0.49-1.96)	(0.49-1.96)	(0-0)
6	-	-	-	-	-	-

Table E: Comparison of values computed in integrity check to reference article Table 3 values

Main secondary outcome	MMF/DEX Frequencies [Manuscript]	MMF/DEX Frequencies [DSIC]	MMF/DEX Frequencies [Difference]	CSA Frequencies [Manuscript]	CSA Frequencies [DSIC]	CSA Frequencies [Difference]	MMF/DEX Cumulative Frequencies [Manuscript]	MMF/DEX Cumulative Frequencies [DSIC]	MMF/DEX Cumulative Frequencies [Difference]	CSA Cumulative Frequencies [Manuscript]	CSA Cumulative Frequencies [DSIC]	CSA Cumulative Frequencies [Difference]
1	3 (4.6%)	3 (4.5%)	0 (0.1%)	5 (6.9%)	5 (6.9%)	0 (0%)	3 (4.5%)	3 (4.5%)	0 (0%)	5 (6.9%)	5 (6.9%)	0 (0%)
2	1 (1.5%)	1 (1.5%)	0 (0%)	1 (1.4%)	1 (1.4%)	0 (0%)	4 (6.1%)	4 (6.1%)	0 (0%)	6 (8.3%)	6 (8.3%)	0 (0%)
3	13 (19.7%)	13 (19.7%)	0 (0%)	10 (13.9%)	10 (13.9%)	0 (0%)	17 (25.8%)	17 (25.8%)	0 (0%)	16 (22.2%)	16 (22.2%)	0 (0%)
3.5	1 (1.5%)	1 (1.5%)	0 (0%)	6 (8.3%)	6 (8.3%)	0 (0%)	18 (27.3%)	18 (27.3%)	0 (0%)	22 (30.6%)	22 (30.6%)	0 (0%)
4	4 (6.1%)	4 (6.1%)	0 (0%)	11 (15.3%)	11 (15.3%)	0 (0%)	22 (33.3%)	22 (33.3%)	0 (0%)	33 (45.8%)	33 (45.8%)	0 (0%)
5	44 (66.7%)	44 (66.7%)	0 (0%)	39 (54.2%)	39 (54.2%)	0 (0%)	66 (100%)	66 (100%)	0 (0%)	72 (100%)	72 (100%)	0 (0%)

Main secondary outcome	Odds ratio [Manuscript]	Odds ratio [DSIC]	Odds ratio [Difference]	95% CI [Manuscript]	95% CI [DSIC]	95% CI [Difference]
1	0.64	0.64	0	(0.15-2.78)	(0.15-2.78)	(0-0)
2	0.71	0.71	0	(0.19-2.63)	(0.19-2.63)	(0-0)
3	1.21	1.21	0	(0.56-2.66)	(0.55-2.66)	(0.01-0)
3.5	0.85	0.85	0	(0.41-1.78)	(0.41-1.78)	(0-0)
4	0.59	0.59	0	(0.3-1.18)	(0.3-1.18)	(0-0)
5	-	-	-	-	-	-

Table F: Comparison of values computed in integrity check to reference article Table 4 values

Event	Weeks 0-26 MMF/DEX (n=66) N pts with events [Manuscript]	Weeks 0-26 MMF/DEX (n=66) N pts with events [DSIC]	Weeks 0-26 MMF/DEX (n=66) N pts with events [Difference]	Weeks 0-26 MMF/DEX (n=66) % of pts with events [Manuscript]	Weeks 0-26 MMF/DEX (n=66) % of pts with events [DSIC]	Weeks 0-26 MMF/DEX (n=66) % of pts with events [Difference]	Weeks 0-26 CSA (n=72) N pts with events [Manuscript]	Weeks 0-26 CSA (n=72) N pts with events [DSIC]	Weeks 0-26 CSA (n=72) N pts with events [Difference]	Weeks 0-26 CSA (n=72) % of pts with events [Manuscript]	Weeks 0-26 CSA (n=72) % of pts with events [DSIC]	Weeks 0-26 CSA (n=72) % of pts with events [Difference]
SERIOUS INFECTION REQUIRING HOSPITALIZATION	7	.	.	10.6	.	.	5	.	.	6.9	.	.
SERIOUS CV	0	0	0	0	0	0	0	0	0	0	0	0
HOSPITALIZATIONA	14	.	.	21.2	.	.	12	.	.	16.7	.	.
DEATH	1	1	0	1.5	1.5	0	0	0	0	0	0	0
GASTROINTESTINAL	47	48	-1	71.2	.	.	47	49	-2	65.3	.	.
COUGH	49	49	0	74.2	74.2	0	43	43	0	59.7	59.7	0
DERMATOLOGIC CONDITION	29	.	.	43.9	.	.	43	.	.	59.7	.	.
HYPOTENSION / ORTHOSTASIS / DIZZINESS	31	36	-5	47	54.5	-7.5	27	36	-9	37.5	50	-12.5
INFECTION	27	27	0	40.9	40.9	0	23	25	-2	31.9	34.7	-2.8
PAIN	24	25	-1	36.4	37.9	-1.5	22	24	-2	30.6	33.3	-2.7
NEUROPSYCH CONDITION	16	21	-5	24.2	31.8	-7.6	22	23	-1	30.6	31.9	-1.3
GINGIVAL HYPERPLASIA	0	1	-1	0	1.5	-1.5	11	13	-2	15.3	18.1	-2.8
ANEMIA	10	10	0	15.2	15.2	0	11	11	0	15.3	15.3	0
HYPERTENSION	6	7	-1	9.1	10.6	-1.5	11	16	-5	15.3	22.2	-6.9

Event	Weeks 0-26 MMF/DEX (n=66) N pts with events [Manuscript]	Weeks 0-26 MMF/DEX (n=66) N pts with events [DSIC]	Weeks 0-26 MMF/DEX (n=66) N pts with events [Difference]	Weeks 0-26 MMF/DEX (n=66) % of pts with events [Manuscript]	Weeks 0-26 MMF/DEX (n=66) % of pts with events [DSIC]	Weeks 0-26 MMF/DEX (n=66) % of pts with events [Difference]	Weeks 0-26 CSA (n=72) N pts with events [Manuscript]	Weeks 0-26 CSA (n=72) N pts with events [DSIC]	Weeks 0-26 CSA (n=72) N pts with events [Difference]	Weeks 0-26 CSA (n=72) % of pts with events [Manuscript]	Weeks 0-26 CSA (n=72) % of pts with events [DSIC]	Weeks 0-26 CSA (n=72) % of pts with events [Difference]
HYPERLIPIDEMIA	6	6	0	9.1	9.1	0	10	11	-1	13.9	15.3	-1.4
HYPERKALEMIA	2	2	0	3	3	0	6	7	-1	8.3	9.7	-1.4
NON-SERIOUS CV	6	7	-1	9.1	10.6	-1.5	4	4	0	5.6	5.6	0
HYPERGLYCEMIA	6	6	0	9.1	9.1	0	0	0	0	0	0	0
DECREASED MUSCLE STRENGTH	5	5	0	7.6	7.6	0	3	3	0	4.2	4.2	0
CATARACT	3	5	-2	4.6	7.6	-3	0	1	-1	0	1.4	-1.4
ANGIOEDEMA	2	2	0	3	3	0	0	0	0	0	0	0
THROMBOEMBOLISM	1	1	0	1.5	1.5	0	1	1	0	1.4	1.4	0
ADRENAL INSUFFICIENCY	1	1	0	1.5	1.5	0	0	0	0	0	0	0
ALOPECIA	1	1	0	1.5	1.5	0	0	0	0	0	0	0
PREGNANCY	1	1	0	1.5	1.5	0	0	0	0	0	0	0
ABDOMINAL CRAMPS	1	1	0	1.5	1.5	0	0	0	0	0	0	0
DECREASED ANC	0	1	-1	0	1.5	-1.5	0	0	0	0	0	0
GENERALIZED TONIC-CLONIC SEIZURE	0	0	0	0	0	0	0	1	-1	0	1.4	-1.4

Event	Weeks 0-52 MMF/DEX (n=66) N pts with events [Manuscript]	Weeks 0-52 MMF/DEX (n=66) N pts with events [DSIC]	Weeks 0-52 MMF/DEX (n=66) N pts with events [Difference]	Weeks 0-52 MMF/DEX (n=66) % of pts with events [Manuscript]	Weeks 0-52 MMF/DEX (n=66) % of pts with events [DSIC]	Weeks 0-52 MMF/DEX (n=66) % of pts with events [Difference]	Weeks 0-52 CSA (n=72) N pts with events [Manuscript]	Weeks 0-52 CSA (n=72) N pts with events [DSIC]	Weeks 0-52 CSA (n=72) N pts with events [Difference]	Weeks 0-52 CSA (n=72) % of pts with events [Manuscript]	Weeks 0-52 CSA (n=72) % of pts with events [DSIC]	Weeks 0-52 CSA (n=72) % of pts with events [Difference]
SERIOUS INFECTION REQUIRING HOSPITALIZATION	9	.	.	13.6	.	.	7	.	.	9.7	.	.
SERIOUS CV	1	1	0	1.5	1.5	0	0	0	0	0	0	0
HOSPITALIZATIONA	18	.	.	27.3	.	.	17	.	.	23.6	.	.
DEATH	2	2	0	3	3	0	0	0	0	0	0	0
GASTROINTESTINAL	49	49	0	74.2	.	.	50	51	-1	69.4	.	.
COUGH	53	53	0	80.3	80.3	0	45	45	0	62.5	62.5	0
DERMATOLOGIC CONDITION	33	.	.	50	.	.	44	.	.	61.1	.	.
HYPOTENSION / ORTHOSTASIS / DIZZINESS	35	38	-3	53	57.6	-4.6	29	37	-8	40.3	51.4	-11.1
INFECTION	30	30	0	45.5	45.5	0	29	30	-1	40.3	41.7	-1.4
PAIN	27	28	-1	40.9	42.4	-1.5	29	30	-1	40.3	41.7	-1.4
NEUROPSYCH CONDITION	16	21	-5	24.2	31.8	-7.6	23	24	-1	31.9	33.3	-1.4
GINGIVAL HYPERPLASIA	0	1	-1	0	1.5	-1.5	17	17	0	23.6	23.6	0
ANEMIA	11	11	0	16.7	16.7	0	16	16	0	22.2	22.2	0
HYPERTENSION	7	8	-1	10.6	12.1	-1.5	12	17	-5	16.7	23.6	-6.9

Event	Weeks 0-52 MMF/DEX (n=66) N pts with events [Manuscript]	Weeks 0-52 MMF/DEX (n=66) N pts with events [DSIC]	Weeks 0-52 MMF/DEX (n=66) N pts with events [Difference]	Weeks 0-52 MMF/DEX (n=66) % of pts with events [Manuscript]	Weeks 0-52 MMF/DEX (n=66) % of pts with events [DSIC]	Weeks 0-52 MMF/DEX (n=66) % of pts with events [Difference]	Weeks 0-52 CSA (n=72) N pts with events [Manuscript]	Weeks 0-52 CSA (n=72) N pts with events [DSIC]	Weeks 0-52 CSA (n=72) N pts with events [Difference]	Weeks 0-52 CSA (n=72) % of pts with events [Manuscript]	Weeks 0-52 CSA (n=72) % of pts with events [DSIC]	Weeks 0-52 CSA (n=72) % of pts with events [Difference]
HYPERLIPIDEMIA	6	6	0	9.1	9.1	0	13	13	0	18.1	18.1	0
HYPERKALEMIA	2	2	0	3	3	0	9	9	0	12.5	12.5	0
NON-SERIOUS CV	7	8	-1	10.6	12.1	-1.5	4	4	0	5.6	5.6	0
HYPERGLYCEMIA	6	6	0	9.1	9.1	0	2	2	0	2.8	2.8	0
DECREASED MUSCLE STRENGTH	5	5	0	7.6	7.6	0	3	3	0	4.2	4.2	0
CATARACT	4	6	-2	6.1	9.1	-3	1	2	-1	1.4	2.8	-1.4
ANGIOEDEMA	2	2	0	3	3	0	0	0	0	0	0	0
THROMBOEMBOLISM	1	1	0	1.5	1.5	0	1	1	0	1.4	1.4	0
ADRENAL INSUFFICIENCY	1	1	0	1.5	1.5	0	0	0	0	0	0	0
ALOPECIA	1	1	0	1.5	1.5	0	0	0	0	0	0	0
PREGNANCY	1	1	0	1.5	1.5	0	0	0	0	0	0	0
ABDOMINAL CRAMPS	1	1	0	1.5	1.5	0	0	0	0	0	0	0
DECREASED ANC	1	1	0	1.5	1.5	0	0	0	0	0	0	0
GENERALIZED TONIC-CLONIC SEIZURE	0	0	0	0	0	0	1	1	0	1.4	1.4	0

Attachment A: SAS Code

```
/*************************************************************************************************************************
***Program: /prj/niddk/ims_analysis/FSGS/prog_initial_analysis/fsgs_integrity_check.sas;
***Programmer: Corey Del Vecchio
***Date Created: 7/31/2013 4:19:50 PM
***Purpose: To perform a Dataset Integrity Check (DSIC) between the FSGS data and the primary outcome paper:
***                          Gipson DS, Trachtman H, Kaskel FJ, Greene TH, Radeva MK, Gassman JJ, Moxey-Mims MM, Hogg RJ, Watkins SL,
**          Fine RN, Hogan SL, Middleton JP, Vehaskari VM, Flynn PA, Powell LM, Vento SM, McMahan JL, Siegel N,
**          D'Agati VD, Friedman AL. Clinical trial of focal segmental glomerulosclerosis in children and young
**          adults. Kidney Int. 2011 Oct; 80(8):868-78. Epub 2011 Jul 6.
***
***        The numbers in Tables 1,2,and 3 of the primary outcome paper will compared to the FSGS data received;
*************************************************************************************************************************;

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

options nofmterr linesize=180;

*** Location of the FSGS SAS dataset;

libname sas_data "/prj/niddk/public_orig_data/FSGS/sas_data";

*** Data from the Primary outcome paper that was converted to .csv format so that the DSIC data could be easily compared;

FILENAME table1  '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table1_data.csv';
FILENAME table2  '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table2_data.csv';
FILENAME table3  '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table3_data.csv';

*** Output CSV files that will be converted to .xls before being added to the DSIC document;

filename out_t1   '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table1_dsic.csv';
filename out_t2fr '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table2_freqs_dsic.csv';
filename out_t2or '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table2_odds_ratios_dsic.csv';
filename out_t3fr '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table3_freqs_dsic.csv';
filename out_t3or '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table3_odds_ratios_dsic.csv';

*** Macro to create a dataset that matches the frequencies in Table 1 of the primary outcome paper;

%macro baseline_freq(var_name);

       *** Creating a frequency table in the format of Table 1 in the primary outcome paper;
  proc freq data = bsl_dataset_anl;
       table (&var_name.)*RX;
       title3 "Frequency table of the &var_name. variable in the bsl_dataset_anl dataset";

       *** Outputting the frequency data to work.&var_name._cross using the ODS output;
  ods output CrossTabFreqs = work.&var_name._cross;
```

```
        run;

        *** Creating two datases (one per arm) so that the data can be in the correct format;
        data &var_name._cross_CSA &var_name._cross_MMF;
          set &var_name._cross;
          if RX = "CSA" and &var_name. NE . then output &var_name._cross_CSA;
          else if RX = "MMF" and &var_name. NE . then output &var_name._cross_MMF;
          else if lengthn(RX) NE 0 and &var_name. NE . then abort;

*** Placing the statisitics in the same order as the primary outcome paper using first and second as the placement of the MMF
subjects;
        data &var_name._cross_MMF (keep = table &var_name. first_stat second_stat);
                set &var_name._cross_MMF;
        first_stat = frequency;
                second_stat = round(colpercent,0.1);

*** Placing the statisitics in the same order as the primary outcome paper using third and fourth as the placement of the CSA
subjects;
        data &var_name._cross_CSA (keep = table &var_name. third_stat fourth_stat);
          set &var_name._cross_CSA;
                third_stat = frequency;
                fourth_stat = round(colpercent,0.1);

*** Creating a dataset with the merged data with the variables that contain the order of the statisitics;
        data &var_name._merge;
          merge &var_name._cross_MMF (in = in1 keep = table &var_name. first_stat second_stat)
                &var_name._cross_CSA  (in = in2 keep = table &var_name. third_stat fourth_stat);
        by table &var_name.;
                if in1 and in2 then output &var_name._merge;
        else abort;

%mend;

*** Macro to create a dataset that matches the median and quartile values in Table 1 of the primary outcome paper;

%macro baseline_median(var_name);

  proc sort data = bsl_dataset_anl;
    by rx;

        *** Creating a means table in the format of Table 1 in the primary outcome paper that contain the median 25th percentile and
75th percentile;
  proc means data = bsl_dataset_anl MEDIAN P25 P75 NOLABELS ;
    var &var_name.;
    by rx;

        *** Outputting the statisitics to the work.&var_name._summary dataset using the ODS output;
  ods output Summary = work.&var_name._summary;

  run;
```

```
*** Creating a dataset with the merged data with the variables that contain the order of the statisitics;

  data &var_name._summary (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat);
    set &var_name._summary end = lastobs;
    length characteristic $25;
    retain first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat .;
    characteristic = "egfr_study_summary";
    if RX = "MMF" then do;
    first_stat  = ROUND(&var_name._Median, 0.1);
    second_stat = ROUND(&var_name._P25, 0.1);
    third_stat  = ROUND(&var_name._P75, 0.1);
    end;
    else if RX = "CSA" then do;
    fourth_stat  = ROUND(&var_name._Median, 0.1);
    fifth_stat   = ROUND(&var_name._P25, 0.1);
    sixth_stat   = ROUND(&var_name._P75, 0.1);
    end;
    else abort;
    if lastobs then output &var_name._summary;

%mend;

*** Import;

*** Reading in the two analysis datasets used for the DSIC;

data bsl_dataset       ; set sas_data.bsl_dataset     ;
data fsgs_primary      ; set sas_data.fsgs_primary    ;

*******************************************************************************;
************** Check Table 1 **************************************************;
*******************************************************************************;

*** Importing the Table 1 Data taken from the primary outcome paper;

data table1_data;
  infile table1 delimiter = ',' MISSOVER DSD  firstobs=2 ls=1080;
  length characteristic $45 char_stat1 char_stat_manuscript $23 category $12;
  input characteristic $ category $ char_stat1 $  char_stat_manuscript $ first_stat_manuscript  second_stat_manuscript
third_stat_manuscript fourth_stat_manuscript fifth_stat_manuscript  sixth_stat_manuscript;
  if lengthn(characteristic) NE 0 then output table1_data;

proc print data = table1_data;
  title3 "Printout of the Table 1 Dataset from the primary outcome paper";


*** Modifying the bsl_dataset so that the MUPC_B01 and racegrp variables are in the same format as the manuscipt;

data bsl_dataset_anl;
  set bsl_dataset;
  if lengthn(RX) NE 0 then do;
```

```
    if 1 <= MUPC_B01 < 2 then MUPC_B01_categ = 1;
    else if 2 <= MUPC_B01 < 4 then MUPC_B01_categ = 2;
    else if 4 <= MUPC_B01 < 8 then MUPC_B01_categ = 3;
    else if 8 <= MUPC_B01 < 32 then MUPC_B01_categ = 4;
    else abort;

    if racegrp = 1 then racegrp2 = 2;
    else if racegrp = 2 then racegrp2 = 1;
    else if racegrp = 3 then racegrp2 = 3;
    else abort;

    output bsl_dataset_anl;
  end;

proc freq data = bsl_dataset_anl;
       table MUPC_B01_categ*MUPC_B01 racegrp2*racegrp / list missing;
       title3 "Check to make sure the two new variables were created correctly";


*** Running the baseline_freq on the 8 categorical variables in the Table 1 manuscript file;

%baseline_freq(age_enr_grp   );
%baseline_freq(racegrp2      );
%baseline_freq(ethnic        );
%baseline_freq(Sex           );
%baseline_freq(MUPC_B01_categ);
%baseline_freq(FSGSTY        );
%baseline_freq(highbp_f10    );
%baseline_freq(famhist_yn    );

*** Running the baseline_media on the 7 continuous variables in the Table 1 manuscript file;

%baseline_median(egfr_study);
%baseline_median(ALB        );
%baseline_median(CHOL       );
%baseline_median(HGB        );
%baseline_median(fsgsage_mon);
%baseline_median(MEDMON     );
%baseline_median(BMI_f46    );

*** Creating a master Table 1 dataset using the baseline_freq and baseline_median datasets created in the macros above;
*** This dataset is in the same order as the Table 1 SAS dataset taken from the Primary outcome paper;
*** Note that some variables have two categories where the paper only described one of the two categories;
*** (Ex. The Sex variable has both 1 (Male) and 2 (Female), however only the Male frequesncy was included in the manuscript);
*** This was resolved below by using where statments to get the specific group in the ethnic, sex, highbp_f10, and famhist_yn
variables;

data compare_dataset;
  set age_enr_grp_merge     (keep = table first_stat second_stat third_stat fourth_stat )
      racegrp2_merge        (keep = table first_stat second_stat third_stat fourth_stat )
```

```
      ethnic_merge          (keep = table ethnic first_stat second_stat third_stat fourth_stat where = (ethnic = 1))
      Sex_merge             (keep = table Sex first_stat second_stat third_stat fourth_stat where = (Sex = "1"))
      egfr_study_summary    (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
      MUPC_B01_categ_merge  (keep = table first_stat second_stat third_stat fourth_stat )
      ALB_summary           (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
      CHOL_summary          (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
      HGB_summary           (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
      FSGSTY_merge          (keep = table first_stat second_stat third_stat fourth_stat )
      fsgsage_mon_summary   (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
      MEDMON_summary        (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
      highbp_f10_merge      (keep = table highbp_f10 first_stat second_stat third_stat fourth_stat where = (highbp_f10 = "1"))
      famhist_yn_merge      (keep = table famhist_yn first_stat second_stat third_stat fourth_stat where = (famhist_yn = 1))
      BMI_f46_summary       (keep = characteristic first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat);


*** Merging both the DSIC data and the Table 1 data from the manuscript;
*** Note that since the DSIC data was placed in the same order as the Manuscipt Table 1 data, a by statment is not needed;

data combined_table1_dataset;
  merge compare_dataset (keep = first_stat second_stat third_stat fourth_stat fifth_stat sixth_stat)
        table1_data     (keep = first_stat_manuscript second_stat_manuscript third_stat_manuscript fourth_stat_manuscript
fifth_stat_manuscript sixth_stat_manuscript characteristic category);
  diff_first  = round((first_stat_manuscript  -  first_stat), 0.1);
  diff_second = round((second_stat_manuscript - second_stat), 0.1);
  diff_third  = round((third_stat_manuscript  -  third_stat), 0.1);
  diff_fourth = round((fourth_stat_manuscript - fourth_stat), 0.1);
  diff_fifth  = round((fifth_stat_manuscript  -  fifth_stat), 0.1);
  diff_sixth  = round((sixth_stat_manuscript  -  sixth_stat), 0.1);

proc freq data = combined_table1_dataset;
  table diff_first  * first_stat_manuscript  *  first_stat * characteristic *category
        diff_second * second_stat_manuscript * second_stat * characteristic *category
        diff_third  * third_stat_manuscript  *  third_stat * characteristic *category
        diff_fourth * fourth_stat_manuscript * fourth_stat * characteristic *category
        diff_fifth  * fifth_stat_manuscript  *  fifth_stat * characteristic *category
        diff_sixth  * sixth_stat_manuscript  *  sixth_stat * characteristic *category / list missing;

*** Creating final character variables to show the comparison between DSIC and the Primary Outcome Paper;

data combined_table1_dataset;
       set combined_table1_dataset;
       length mmf_dex_manuscript csa_manuscript mmf_dex_dsic csa_dsic $20 mmf_dex_diff csa_diff $16;

       if fifth_stat = . then do;

              mmf_dex_manuscript = strip(put(first_stat_manuscript,8.1)) || " (" || strip(put(second_stat_manuscript,8.1)) || "%)";
              csa_manuscript     = strip(put(third_stat_manuscript,8.1)) || " (" || strip(put(fourth_stat_manuscript,8.1)) || "%)";

              mmf_dex_dsic = strip(put(first_stat,8.1)) || " (" || strip(put(second_stat,8.1)) || "%)";
              csa_dsic     = strip(put(third_stat,8.1)) || " (" || strip(put(fourth_stat,8.1)) || "%)";
```

```
                mmf_dex_diff = strip(put(diff_first,8.1)) || " (" || strip(put(diff_second,8.1)) || "%)";
                csa_diff     = strip(put(diff_third,8.1)) || " (" || strip(put(diff_fourth,8.1)) || "%)";


        end;
        else if fifth_stat NE . then do;

                mmf_dex_manuscript = strip(put(first_stat_manuscript,8.1))  || " (" || strip(put(second_stat_manuscript,8.1)) || ", "
|| strip(put(third_stat_manuscript,8.1)) || ")";
                csa_manuscript = strip(put(fourth_stat_manuscript,8.1)) || " (" || strip(put(fifth_stat_manuscript,8.1))  || ", " ||
strip(put(sixth_stat_manuscript,8.1)) || ")";

                mmf_dex_dsic = strip(put(first_stat,8.1))  || " (" || strip(put(second_stat,8.1)) || ", " || strip(put(third_stat,8.1))
|| ")";
                csa_dsic = strip(put(fourth_stat,8.1)) || " (" || strip(put(fifth_stat,8.1))  || ", " || strip(put(sixth_stat,8.1)) ||
")";

                mmf_dex_diff = strip(put(diff_first,8.1))  || " (" || strip(put(diff_second,8.1)) || ", " || strip(put(diff_third,8.1))
|| ")";
                csa_diff     = strip(put(diff_fourth,8.1)) || " (" || strip(put(diff_fifth,8.1))  || ", " || strip(put(diff_sixth,8.1))
|| ")";

        end;
        else abort;

        label characteristic     = "Variable"
                              category           = "Category (if applicable)"
                              mmf_dex_manuscript = "MMF/DEX (n=66) N (%) or median (IQR: Q1, Q3) [Manuscript]"
                              csa_manuscript     = "CSA (n=72) N (%) or median (IQR: Q1, Q3) [Manuscript]"
                              mmf_dex_dsic       = "MMF/DEX (n=66) N (%) or median (IQR: Q1, Q3) [DSIC]"
                              csa_dsic           = "CSA (n=72) N (%) or median (IQR: Q1, Q3) [DSIC]"
                              mmf_dex_diff       = "MMF/DEX (n=66) N (%) or median (IQR: Q1, Q3) [Difference]"
                              csa_diff           = "CSA (n=72) N (%) or median (IQR: Q1, Q3) [Difference]"
                              ;

proc freq data = combined_table1_dataset;
        table mmf_dex_manuscript*first_stat_manuscript*second_stat_manuscript*third_stat_manuscript
                              csa_manuscript*third_stat_manuscript*fourth_stat_manuscript*fifth_stat_manuscript*sixth_stat_manuscript

                              mmf_dex_dsic*first_stat*second_stat*third_stat
                              csa_dsic*third_stat*fourth_stat*fifth_stat*sixth_stat

                              mmf_dex_diff*diff_first*diff_second*diff_third
                              csa_diff*diff_third*diff_fourth*diff_fifth*diff_sixth

                              / list missing;
        title3 "Check to make sure the character variables were created correctly";

run;

*** Outputting the dataset to a csv file to be added to the DSIC;
```

```
ods csv file = out_t1;

run;

proc print data = combined_table1_dataset NOOBS label;
        var characteristic category mmf_dex_manuscript mmf_dex_dsic mmf_dex_diff csa_manuscript csa_dsic csa_diff;
        title3 "DSIC Check of Table 1 | FSGS CT baseline characteristics comparing the randomized treatment arms MMF/DEX and CSA";

run;

ods csv close;


*******************************************************************************;
************** Check Table 2 **************************************************;
*******************************************************************************;


*** Importing the Table 2 data from the primary outcome paper;

data table2_data;
  infile table2 delimiter = ',' MISSOVER DSD  firstobs=2 ls=1080;
  input level mmf_dex_freq_man mmf_dex_perc_man csa_freq_man csa_perc_man mmf_dex_cum_freq_man mmf_dex_cum_perc_man
                        csa_cum_freq_man csa_cum_perc_man odds_ratio_man ci_min_man ci_max_man;
  if level NE . then output table2_data;

*** Modifying variables in the FSGS_PRIMARY dataset to match the primary outcome paper;

data FSGS_PRIMARY_anl;
        set FSGS_PRIMARY;

        if level = 1 then level_comb1 = 1;
        else if level in(2,3,4,5,6) then level_comb1 = 0;
        else abort;

        if level in (1,2) then level_comb2 = 1;
        else if level in(3,4,5,6) then level_comb2 = 0;
        else abort;

        if level in (1,2,3) then level_comb3 = 1;
        else if level in(4,5,6) then level_comb3 = 0;
        else abort;

        if level in (1,2,3,4) then level_comb4 = 1;
        else if level in(5,6) then level_comb4 = 0;
        else abort;

        if level in (1,2,3,4,5) then level_comb5 = 1;
        else if level = 6 then level_comb5 = 0;
        else abort;
```

```
        if level_sec = "A" then level_sec_comb1 = 1;
        else if level_sec in("B","C","CD","D","E") then level_sec_comb1 = 0;
        else abort;

        if level_sec in ("A","B") then level_sec_comb2 = 1;
        else if level_sec in("C","CD","D","E") then level_sec_comb2 = 0;
        else abort;

        if level_sec in ("A","B", "C") then level_sec_comb3 = 1;
        else if level_sec in("CD","D","E") then level_sec_comb3 = 0;
        else abort;

        if level_sec in ("A","B", "C", "CD") then level_sec_comb3_5 = 1;
        else if level_sec in("D","E") then level_sec_comb3_5 = 0;
        else abort;

        if level_sec in ("A","B", "C", "CD", "D") then level_sec_comb4 = 1;
        else if level_sec in("E") then level_sec_comb4 = 0;
        else abort;

        if level_sec = "A" then level_sec_num = 1;
        else if level_sec = "B" then level_sec_num = 2;
        else if level_sec = "C" then level_sec_num = 3;
        else if level_sec = "CD" then level_sec_num = 3.5;
        else if level_sec = "D" then level_sec_num = 4;
        else if level_sec = "E" then level_sec_num = 5;


proc freq data = FSGS_PRIMARY_anl;
        table level_comb1*level
                              level_comb2*level
                              level_comb3*level
                              level_comb4*level
              level_comb5*level
              level_sec*level_sec_comb1
              level_sec*level_sec_comb2
              level_sec*level_sec_comb3
              level_sec*level_sec_comb3_5
              level_sec*level_sec_comb4
                level_sec_num*level_sec / list missing;
        title3 "Frequency table to check that the newly created variables in the FSGS_PRIMARY_anl dataset were created correctly";

proc freq data = FSGS_PRIMARY_anl;
        table level / list missing;
        where trt = 0;
        title3 "Frequency table of the MMF subjects to generate the output to check the Table 2 Frequencies";

        *** Outputing the frequency table data to the level_mmf_freq dataset using ODS;
        ods output OneWayFreqs = level_mmf_freq;
```

```
run;

*** Creating renamed and rounded variables to be used for the DSIC;

data level_mmf_freq (keep = level mmf_Frequency mmf_percent mmf_CumFrequency mmf_CumPercent);
        set level_mmf_freq;
         mmf_Frequency    = Frequency;
   mmf_percent      = round(Percent, 0.1);
   mmf_CumFrequency = CumFrequency;
   mmf_CumPercent   = round(CumPercent, 0.1);

proc freq data = level_mmf_freq;
        table mmf_Frequency    * Frequency
              mmf_percent      * Percent
              mmf_CumFrequency * CumFrequency
              mmf_CumPercent   * CumPercent / list missing;
        title3 "Checking the level_mmf_freq dataset to make sure the varaibles were created correctly";

proc freq data = FSGS_PRIMARY_anl;
        table level / list missing;
        where trt = 1;
        title3 "Frequency table of the CSA subjects to generate the output to check the Table 2 Frequencies";

        *** Outputing the frequency table data to the level_csa_freq dataset using ODS;
        ods output OneWayFreqs = level_csa_freq;

data level_csa_freq (keep = level csa_Frequency csa_percent csa_CumFrequency csa_CumPercent);
        set level_csa_freq;
         csa_Frequency    = Frequency;
   csa_percent      = round(Percent, 0.1);
   csa_CumFrequency = CumFrequency;
   csa_CumPercent   = round(CumPercent, 0.1);

proc freq data = level_csa_freq;
        table csa_Frequency    * Frequency
              csa_percent      * Percent
              csa_CumFrequency * CumFrequency
              csa_CumPercent   * CumPercent / list missing;
        title3 "Checking the level_csa_freq dataset to make sure the varaibles were created correctly";

*** Merging the two frequency datasets together;

data combined_level_freq;
        merge level_mmf_freq (in = in1 keep = level mmf_Frequency mmf_percent mmf_CumFrequency mmf_CumPercent)
              level_csa_freq (in = in2 keep = level csa_Frequency csa_percent csa_CumFrequency csa_CumPercent);
        by level;
        if in1 and in2 then output combined_level_freq;
        else abort;

*** Merging the DSIC Table 2 data and the Table 2 data from the manuscript;
*** Creating variables to calculate the difference between the datasets;
```

```
data check_level_freq;
	merge table2_data	(in = in1 keep = level mmf_dex_freq_man mmf_dex_perc_man csa_freq_man

csa_perc_man mmf_dex_cum_freq_man mmf_dex_cum_perc_man
                                                        csa_cum_freq_man csa_cum_perc_man)
		combined_level_freq (in = in2 keep = level mmf_Frequency mmf_percent mmf_CumFrequency mmf_CumPercent

csa_Frequency csa_percent csa_CumFrequency csa_CumPercent);
	by level;
	if in1 and in2 then do;

		mmf_dex_freq_diff     = mmf_dex_freq_man - mmf_Frequency;
		mmf_dex_perc_diff     = mmf_dex_perc_man - mmf_percent;
		mmf_dex_cum_freq_diff = mmf_dex_cum_freq_man - mmf_CumFrequency;
		mmf_dex_cum_perc_diff = mmf_dex_cum_perc_man - mmf_CumPercent;

		csa_freq_diff     = csa_freq_man - csa_Frequency;
		csa_perc_diff     = csa_perc_man - csa_percent;
		csa_cum_freq_diff = csa_cum_freq_man - csa_CumFrequency;
		csa_cum_perc_diff = csa_cum_perc_man - csa_CumPercent;

		output check_level_freq;
	end;

	else abort;

proc freq data = check_level_freq;
	table mmf_dex_freq_diff     * mmf_dex_freq_man * mmf_Frequency
			mmf_dex_perc_diff     * mmf_dex_perc_man * mmf_percent
			mmf_dex_cum_freq_diff * mmf_dex_cum_freq_man * mmf_CumFrequency
			mmf_dex_cum_perc_diff * mmf_dex_cum_perc_man * mmf_CumPercent

			csa_freq_diff     * csa_freq_man * csa_Frequency
			csa_perc_diff     * csa_perc_man * csa_percent
			csa_cum_freq_diff * csa_cum_freq_man * csa_CumFrequency
			csa_cum_perc_diff * csa_cum_perc_man * csa_CumPercent  / list missing;
	title3 "Checking the variables created in the check_level_freq dataset";

*** Creating the final Table 2 dataset (Frequencies) with character variables in the format of the primary outcome paper for
comparisons;

data final_level_check;
	set check_level_freq;

	length mmf_dex_cmb_freq_man mmf_dex_cmb_freq_dsic mmf_dex_cmb_freq_diff csa_cmb_freq_man csa_cmb_freq_dsic csa_cmb_freq_diff
		mmf_dex_cmb_cum_freq_man mmf_dex_cmb_cum_freq_dsic mmf_dex_cmb_cum_freq_diff csa_cmb_cum_freq_man
		csa_cmb_cum_freq_dsic csa_cmb_cum_freq_diff $10;
```

```
  mmf_dex_cmb_freq_man      = strip(mmf_dex_freq_man     ) || " (" || strip(mmf_dex_perc_man     ) || "%)";
  mmf_dex_cmb_freq_dsic     = strip(mmf_Frequency        ) || " (" || strip(mmf_percent          ) || "%)";
  mmf_dex_cmb_freq_diff     = strip(mmf_dex_freq_diff    ) || " (" || strip(mmf_dex_perc_diff    ) || "%)";
  csa_cmb_freq_man          = strip(csa_freq_man         ) || " (" || strip(csa_perc_man         ) || "%)";
  csa_cmb_freq_dsic         = strip(csa_Frequency        ) || " (" || strip(csa_percent          ) || "%)";
  csa_cmb_freq_diff         = strip(csa_freq_diff        ) || " (" || strip(csa_perc_diff        ) || "%)";

  mmf_dex_cmb_cum_freq_man  = strip(mmf_dex_cum_freq_man ) || " (" || strip(mmf_dex_cum_perc_man ) || "%)";
  mmf_dex_cmb_cum_freq_dsic = strip(mmf_CumFrequency     ) || " (" || strip(mmf_CumPercent       ) || "%)";
  mmf_dex_cmb_cum_freq_diff = strip(mmf_dex_cum_freq_diff) || " (" || strip(mmf_dex_cum_perc_diff) || "%)";
  csa_cmb_cum_freq_man      = strip(csa_cum_freq_man     ) || " (" || strip(csa_cum_perc_man     ) || "%)";
  csa_cmb_cum_freq_dsic     = strip(csa_CumFrequency     ) || " (" || strip(csa_CumPercent       ) || "%)";
  csa_cmb_cum_freq_diff     = strip(csa_cum_freq_diff    ) || " (" || strip(csa_cum_perc_diff    ) || "%)";

  label mmf_dex_cmb_freq_man      = "MMF/DEX Frequencies [Manuscript]"
                  mmf_dex_cmb_freq_dsic     = "MMF/DEX Frequencies [DSIC]"
                  mmf_dex_cmb_freq_diff     = "MMF/DEX Frequencies [Difference]"
                  csa_cmb_freq_man          = "CSA Frequencies [Manuscript]"
                  csa_cmb_freq_dsic         = "CSA Frequencies [DSIC]"
                  csa_cmb_freq_diff         = "CSA Frequencies [Difference]"
                  mmf_dex_cmb_cum_freq_man  = "MMF/DEX Cumulative Frequencies [Manuscript]"
                  mmf_dex_cmb_cum_freq_dsic = "MMF/DEX Cumulative Frequencies [DSIC]"
                  mmf_dex_cmb_cum_freq_diff = "MMF/DEX Cumulative Frequencies [Difference]"
                  csa_cmb_cum_freq_man      = "CSA Cumulative Frequencies [Manuscript]"
                  csa_cmb_cum_freq_dsic     = "CSA Cumulative Frequencies [DSIC]"
                  csa_cmb_cum_freq_diff     = "CSA Cumulative Frequencies [Difference]";

proc freq data =       final_level_check;
        table mmf_dex_cmb_freq_man      * mmf_dex_freq_man      * mmf_dex_perc_man
              mmf_dex_cmb_freq_dsic     * mmf_Frequency         * mmf_percent
              mmf_dex_cmb_freq_diff     * mmf_dex_freq_diff     * mmf_dex_perc_diff
              csa_cmb_freq_man          * csa_freq_man          * csa_perc_man
              csa_cmb_freq_dsic         * csa_Frequency         * csa_percent
              csa_cmb_freq_diff         * csa_freq_diff         * csa_perc_diff
              mmf_dex_cmb_cum_freq_man  * mmf_dex_cum_freq_man  * mmf_dex_cum_perc_man
              mmf_dex_cmb_cum_freq_dsic * mmf_CumFrequency      * mmf_CumPercent
              mmf_dex_cmb_cum_freq_diff * mmf_dex_cum_freq_diff * mmf_dex_cum_perc_diff
              csa_cmb_cum_freq_man      * csa_cum_freq_man      * csa_cum_perc_man
              csa_cmb_cum_freq_dsic     * csa_CumFrequency      * csa_CumPercent
              csa_cmb_cum_freq_diff     * csa_cum_freq_diff     * csa_cum_perc_diff    / list missing;
        title3 "Checking the newly created variables in the final_level_check dataset";

run;

*** Outputting the dataset in .csv format to be added to the DSIC;

ods csv file = out_t2fr;

run;

proc print data = final_level_check NOOBS label;
```

```
       var level mmf_dex_cmb_freq_man mmf_dex_cmb_freq_dsic mmf_dex_cmb_freq_diff csa_cmb_freq_man csa_cmb_freq_dsic csa_cmb_freq_diff
mmf_dex_cmb_cum_freq_man mmf_dex_cmb_cum_freq_dsic
                     mmf_dex_cmb_cum_freq_diff csa_cmb_cum_freq_man csa_cmb_cum_freq_dsic csa_cmb_cum_freq_diff;
                     title3 "DSIC Check of Table 2 (Frequencies) FSGS CT primary analysis comparing proteinuria remission by week 52
between the randomized treatment arms";

run;

ods csv close;


*** Calculating the Odds Ratio and CIs for the Outcome 1 against 2, 3, 4, 5 and 6;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_comb1 trt;
  model  level_comb1 = trt;
  title3 "Logistic regression of the model level_comb1 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Outcome 1 to the level_comb1_OddsRatios dataset;
       ods output OddsRatios = level_comb1_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Outcomes 1 and 2 against 3, 4, 5 and 6;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_comb2 trt;
  model  level_comb2 = trt;
       title3 "Logistic regression of the model level_comb2 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Outcome 1 to the level_comb1_OddsRatios dataset;
       ods output OddsRatios = level_comb2_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Outcomes 1, 2, and 3 against 4, 5 and 6;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_comb3 trt;
  model  level_comb3 = trt;
       title3 "Logistic regression of the model level_comb3 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Outcome 1 to the level_comb1_OddsRatios dataset;
       ods output OddsRatios = level_comb3_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Outcomes 1, 2, 3, and 4 against 5 and 6;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_comb4 trt;
```

```
  model  level_comb4 = trt;
  title3 "Logistic regression of the model level_comb4 = trt in the FSGS_PRIMARY_anl dataset";

        *** Outputting the Odds ratio and CI for Outcome 1 to the level_comb1_OddsRatios dataset;
        ods output OddsRatios = level_comb4_OddsRatios;
run;

*** Calculating the Odds Ratio and CIs for the Outcomes 1, 2, 3, 4, and 5 against 6;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_comb5 trt;
  model  level_comb5 = trt;
  title3 "Logistic regression of the model level_comb5 = trt in the FSGS_PRIMARY_anl dataset";

        *** Outputting the Odds ratio and CI for Outcome 1 to the level_comb1_OddsRatios dataset;
        ods output OddsRatios = level_comb5_OddsRatios;
run;

*** Setting the odds ratio data into one combined dataset and creating a key so that the datasets can be merged;

data all_level_odds_ratios;
        set level_comb1_OddsRatios (in = in1)
                        level_comb2_OddsRatios (in = in2)
                        level_comb3_OddsRatios (in = in3)
                        level_comb4_OddsRatios (in = in4)
                        level_comb5_OddsRatios (in = in5);
        if in1 then level = 1;
        else if in2 then level = 2;
        else if in3 then level = 3;
        else if in4 then level = 4;
        else if in5 then level = 5;
        else abort;

        odds_ratio_anl = round(OddsRatioEst, 0.01);
        LowerCL_anl    = round(LowerCL, 0.01);
        UpperCL_anl    = round(UpperCL, 0.01);

proc sort data = all_level_odds_ratios;
        by level;

*** Merging the DSIC data with the Table 2 Odds ratio data from the primary outcome paper;
*** Variables that contain the differences between the two datasets are created;

data check_level_odds_ratio;
        merge table2_data           (in = in1 keep = level odds_ratio_man ci_min_man ci_max_man)
                  all_level_odds_ratios (in = in2 keep = level odds_ratio_anl LowerCL_anl UpperCL_anl);
        by level;
        if in1 and in2 then do;

                odds_ratio_diff = odds_ratio_man - odds_ratio_anl;
                ci_min_diff = ci_min_man - LowerCL_anl;
```

```
                ci_max_diff = ci_max_man - UpperCL_anl;

                output check_level_odds_ratio;
        end;

        else if level NE 6 then abort;

proc freq data = check_level_odds_ratio;
        table  odds_ratio_diff * odds_ratio_man * odds_ratio_anl
                                ci_min_diff     * ci_min_man     * LowerCL_anl
                                ci_max_diff     * ci_max_man     * UpperCL_anl     / list missing;
        title3 "Checking that the new variables created in the check_level_odds_ratio are correct";

*** Creating the final Table 2 level dataset (Odds Ratios) with character variables noting the differences between the two datasets;

data final_level_odds_ratio;
        set check_level_odds_ratio;
        ci_man  = "(" || strip(ci_min_man)  || "-" || strip(ci_max_man)  || ")";
        ci_anl  = "(" || strip(LowerCL_anl) || "-" || strip(UpperCL_anl) || ")";
        ci_diff = "(" || strip(ci_min_diff) || "-" || strip(ci_max_diff) || ")";
        label  odds_ratio_man  = "Odds ratio [Manuscript]"
               odds_ratio_anl  = "Odds ratio [DSIC]"
               odds_ratio_diff = "Odds ratio [Difference]"
               ci_man          = "95% CI [Manuscript]"
               ci_anl          = "95% CI [DSIC]"
               ci_diff         = "95% CI [Difference]"
               level           = "Primary outcome";

run;

*** Outputting the data to a csv format to be added to the DSIC;

ods csv file = out_t2or;

run;

proc print data = final_level_odds_ratio NOOBS label;
        var level odds_ratio_man odds_ratio_anl odds_ratio_diff ci_man ci_anl ci_diff;
        title3 "DSIC Check of Table 2 (Odds Ratios) FSGS CT primary analysis comparing proteinuria remission by week 52 between the
randomized treatment arms";

run;

ods csv close;

run;

*******************************************************************************;
************** Check Table 3 ***************************************************;
*******************************************************************************;
```

```
*** Importing the table 3 data from the primary outcome paper;

data table3_data;
  infile table3 delimiter = ',' MISSOVER DSD  firstobs=2 ls=1080;
  input level_sec_num mmf_dex_freq_man mmf_dex_perc_man csa_freq_man csa_perc_man mmf_dex_cum_freq_man
        mmf_dex_cum_perc_man csa_cum_freq_man csa_cum_perc_man odds_ratio_man ci_min_man ci_max_man;
  if level_sec_num NE . then output table3_data;


proc freq data = FSGS_PRIMARY_anl;
       table level_sec_num / list missing;
       where trt = 0;
       title3 "Frequency table of the MMF subjects to generate the output to check the Table 3 Frequencies";

       *** Outputing the frequency table data to the level_sec_mmf_freq dataset using ODS;
       ods output OneWayFreqs = level_sec_mmf_freq;

run;

*** Creating renamed and rounded variables to be used for the DSIC;
data level_sec_mmf_freq (keep = level_sec_num mmf_Frequency mmf_percent mmf_CumFrequency mmf_CumPercent);
       set level_sec_mmf_freq;
        mmf_Frequency    = Frequency;
   mmf_percent      = round(Percent, 0.1);
   mmf_CumFrequency = CumFrequency;
   mmf_CumPercent   = round(CumPercent, 0.1);

proc freq data = level_sec_mmf_freq;
       table mmf_Frequency    * Frequency
             mmf_percent      * Percent
             mmf_CumFrequency * CumFrequency
             mmf_CumPercent   * CumPercent / list missing;
       title3 "Checking the level_sec_mmf_freq dataset to make sure the varaibles were created correctly";


proc freq data = FSGS_PRIMARY_anl;
       table level_sec_num / list missing;
       where trt = 1;
       title3 "Frequency table of the CSA subjects to generate the output to check the Table 3 Frequencies";
       *** Outputing the frequency table data to the level_sec_csa_freq dataset using ODS;
       ods output OneWayFreqs = level_sec_csa_freq;

run;

data level_sec_csa_freq (keep = level_sec_num csa_Frequency csa_percent csa_CumFrequency csa_CumPercent);
       set level_sec_csa_freq;
        csa_Frequency    = Frequency;
   csa_percent      = round(Percent, 0.1);
   csa_CumFrequency = CumFrequency;
   csa_CumPercent   = round(CumPercent, 0.1);
```

```
proc freq data = level_sec_csa_freq;
       table csa_Frequency    * Frequency
             csa_percent      * Percent
             csa_CumFrequency * CumFrequency
             csa_CumPercent   * CumPercent / list missing;
       title3 "Checking the level_sec_csa_freq dataset to make sure the varaibles were created correctly";

*** Merging the two frequency datasets together;

data combined_level_sec_freq;
       merge level_sec_mmf_freq (in = in1 keep = level_sec_num mmf_Frequency mmf_percent mmf_CumFrequency mmf_CumPercent)
             level_sec_csa_freq (in = in2 keep = level_sec_num csa_Frequency csa_percent csa_CumFrequency csa_CumPercent);
       by level_sec_num;
       if in1 and in2 then output combined_level_sec_freq;
       else abort;

*** Merging the DSIC Table 3 data and the Table 3 data from the manuscript;
*** Creating variables to calculate the difference between the datasets;

data check_level_sec_freq;
       merge table3_data             (in = in1 keep = level_sec_num mmf_dex_freq_man mmf_dex_perc_man csa_freq_man

csa_perc_man mmf_dex_cum_freq_man mmf_dex_cum_perc_man
                                                          csa_cum_freq_man csa_cum_perc_man)
                combined_level_sec_freq (in = in2 keep = level_sec_num mmf_Frequency mmf_percent mmf_CumFrequency mmf_CumPercent

csa_Frequency csa_percent csa_CumFrequency csa_CumPercent);
       by level_sec_num;
       if in1 and in2 then do;

              mmf_dex_freq_diff     = mmf_dex_freq_man - mmf_Frequency;
              mmf_dex_perc_diff     = mmf_dex_perc_man - mmf_percent;
              mmf_dex_cum_freq_diff = mmf_dex_cum_freq_man - mmf_CumFrequency;
              mmf_dex_cum_perc_diff = mmf_dex_cum_perc_man - mmf_CumPercent;

              csa_freq_diff     = csa_freq_man - csa_Frequency;
              csa_perc_diff     = csa_perc_man - csa_percent;
              csa_cum_freq_diff = csa_cum_freq_man - csa_CumFrequency;
              csa_cum_perc_diff = csa_cum_perc_man - csa_CumPercent;

              output check_level_sec_freq;
       end;

       else abort;


proc freq data = check_level_sec_freq;
       table mmf_dex_freq_diff     * mmf_dex_freq_man * mmf_Frequency
                       mmf_dex_perc_diff     * mmf_dex_perc_man * mmf_percent
                       mmf_dex_cum_freq_diff * mmf_dex_cum_freq_man * mmf_CumFrequency
```

```
                        mmf_dex_cum_perc_diff * mmf_dex_cum_perc_man * mmf_CumPercent

                        csa_freq_diff     * csa_freq_man * csa_Frequency
                        csa_perc_diff     * csa_perc_man * csa_percent
                        csa_cum_freq_diff * csa_cum_freq_man * csa_CumFrequency
                        csa_cum_perc_diff * csa_cum_perc_man * csa_CumPercent  / list missing;
        title3 "Checking the variables created in the check_level_sec_freq dataset";

*** Creating the final Table 3 dataset (Frequencies) with character variables in the format of the primary outcome paper for
comparisons;

data final_level_sec_check;
        set check_level_sec_freq;

        length mmf_dex_cmb_freq_man mmf_dex_cmb_freq_dsic mmf_dex_cmb_freq_diff csa_cmb_freq_man csa_cmb_freq_dsic csa_cmb_freq_diff
                                mmf_dex_cmb_cum_freq_man mmf_dex_cmb_cum_freq_dsic mmf_dex_cmb_cum_freq_diff csa_cmb_cum_freq_man
csa_cmb_cum_freq_dsic csa_cmb_cum_freq_diff $10;



  mmf_dex_cmb_freq_man      = strip(mmf_dex_freq_man     ) || " (" || strip(mmf_dex_perc_man     ) || "%)";
  mmf_dex_cmb_freq_dsic     = strip(mmf_Frequency        ) || " (" || strip(mmf_percent          ) || "%)";
  mmf_dex_cmb_freq_diff     = strip(mmf_dex_freq_diff    ) || " (" || strip(mmf_dex_perc_diff    ) || "%)";
  csa_cmb_freq_man          = strip(csa_freq_man         ) || " (" || strip(csa_perc_man         ) || "%)";
  csa_cmb_freq_dsic         = strip(csa_Frequency        ) || " (" || strip(csa_percent          ) || "%)";
  csa_cmb_freq_diff         = strip(csa_freq_diff        ) || " (" || strip(csa_perc_diff        ) || "%)";

  mmf_dex_cmb_cum_freq_man  = strip(mmf_dex_cum_freq_man ) || " (" || strip(mmf_dex_cum_perc_man ) || "%)";
  mmf_dex_cmb_cum_freq_dsic = strip(mmf_CumFrequency     ) || " (" || strip(mmf_CumPercent       ) || "%)";
  mmf_dex_cmb_cum_freq_diff = strip(mmf_dex_cum_freq_diff) || " (" || strip(mmf_dex_cum_perc_diff) || "%)";
  csa_cmb_cum_freq_man      = strip(csa_cum_freq_man     ) || " (" || strip(csa_cum_perc_man     ) || "%)";
  csa_cmb_cum_freq_dsic     = strip(csa_CumFrequency     ) || " (" || strip(csa_CumPercent       ) || "%)";
  csa_cmb_cum_freq_diff     = strip(csa_cum_freq_diff    ) || " (" || strip(csa_cum_perc_diff    ) || "%)";

  label mmf_dex_cmb_freq_man      = "MMF/DEX Frequencies [Manuscript]"
                  mmf_dex_cmb_freq_dsic     = "MMF/DEX Frequencies [DSIC]"
                  mmf_dex_cmb_freq_diff     = "MMF/DEX Frequencies [Difference]"
                  csa_cmb_freq_man          = "CSA Frequencies [Manuscript]"
                  csa_cmb_freq_dsic         = "CSA Frequencies [DSIC]"
                  csa_cmb_freq_diff         = "CSA Frequencies [Difference]"
                  mmf_dex_cmb_cum_freq_man  = "MMF/DEX Cumulative Frequencies [Manuscript]"
                  mmf_dex_cmb_cum_freq_dsic = "MMF/DEX Cumulative Frequencies [DSIC]"
                  mmf_dex_cmb_cum_freq_diff = "MMF/DEX Cumulative Frequencies [Difference]"
                  csa_cmb_cum_freq_man      = "CSA Cumulative Frequencies [Manuscript]"
                  csa_cmb_cum_freq_dsic     = "CSA Cumulative Frequencies [DSIC]"
                  csa_cmb_cum_freq_diff     = "CSA Cumulative Frequencies [Difference]"
                  level_sec_num             = "Main secondary outcome";


proc freq data =      final_level_sec_check;
        table mmf_dex_cmb_freq_man      * mmf_dex_freq_man      * mmf_dex_perc_man
```

```
              mmf_dex_cmb_freq_dsic     * mmf_Frequency         * mmf_percent
              mmf_dex_cmb_freq_diff     * mmf_dex_freq_diff     * mmf_dex_perc_diff
              csa_cmb_freq_man          * csa_freq_man          * csa_perc_man
              csa_cmb_freq_dsic         * csa_Frequency         * csa_percent
              csa_cmb_freq_diff         * csa_freq_diff         * csa_perc_diff
              mmf_dex_cmb_cum_freq_man  * mmf_dex_cum_freq_man  * mmf_dex_cum_perc_man
              mmf_dex_cmb_cum_freq_dsic * mmf_CumFrequency      * mmf_CumPercent
              mmf_dex_cmb_cum_freq_diff * mmf_dex_cum_freq_diff * mmf_dex_cum_perc_diff
              csa_cmb_cum_freq_man      * csa_cum_freq_man      * csa_cum_perc_man
              csa_cmb_cum_freq_dsic     * csa_CumFrequency      * csa_CumPercent
              csa_cmb_cum_freq_diff     * csa_cum_freq_diff     * csa_cum_perc_diff    / list missing;
        title3 "Checking the newly created variables in the final_level_sec_check dataset";

run;

*** Outputting the dataset in .csv format to be added to the DSIC;

ods csv file = out_t3fr;

run;

proc print data = final_level_sec_check NOOBS label;
       var level_sec_num mmf_dex_cmb_freq_man mmf_dex_cmb_freq_dsic mmf_dex_cmb_freq_diff csa_cmb_freq_man csa_cmb_freq_dsic
csa_cmb_freq_diff mmf_dex_cmb_cum_freq_man mmf_dex_cmb_cum_freq_dsic
                      mmf_dex_cmb_cum_freq_diff csa_cmb_cum_freq_man csa_cmb_cum_freq_dsic csa_cmb_cum_freq_diff;
                      title3 "DSIC Check of Table 3 (Frequencies): FSGS CT main secondary analysis comparing sustainable proteinuria
remission from study weeks 52-78 between the randomized treatment arms";

run;

ods csv close;
run;

*** Calculating the Odds Ratio and CIs for the Secondary Outcome 1 against 2, 3, 3.5, 4, 5;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_sec_comb1 trt;
  model  level_sec_comb1 = trt;
       title3 "Logistic regression of the model level_sec_comb1 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Secondary Outcome 1 to the level_comb1_OddsRatios dataset;
       ods output OddsRatios = level_sec_comb1_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Secondary 1 and 2 against 3, 3.5, 4, 5;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_sec_comb2 trt;
  model  level_sec_comb2 = trt;
  title3 "Logistic regression of the model level_sec_comb2 = trt in the FSGS_PRIMARY_anl dataset";
```

```
       *** Outputting the Odds ratio and CI for Secondary Outcome 2 to the level_comb2_OddsRatios dataset;
       ods output OddsRatios = level_sec_comb2_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Secondary 1, 2, and 3 against 3.5, 4, 5;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_sec_comb3 trt;
  model  level_sec_comb3 = trt;
       title3 "Logistic regression of the model level_sec_comb3 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Secondary Outcome 3 to the level_comb3_OddsRatios dataset;
       ods output OddsRatios = level_sec_comb3_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Secondary 1, 2, 3, and 3.5 against 4, 5;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_sec_comb3_5 trt;
  model  level_sec_comb3_5 = trt;
  title3 "Logistic regression of the model level_sec_comb3_5 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Secondary Outcome 3.5 to the level_comb3_5_OddsRatios dataset;
       ods output OddsRatios = level_sec_comb3_5_OddsRatios;

run;

*** Calculating the Odds Ratio and CIs for the Secondary 1, 2, 3, 3.5 and 4 against 5;

proc logistic data=FSGS_PRIMARY_anl descending;
  class level_sec_comb4 trt;
  model  level_sec_comb4 = trt;
  title3 "Logistic regression of the model level_sec_comb4 = trt in the FSGS_PRIMARY_anl dataset";

       *** Outputting the Odds ratio and CI for Secondary Outcome 4 to the level_comb4_OddsRatios dataset;
       ods output OddsRatios = level_sec_comb4_OddsRatios;

run;

*** Setting the odds ratio data into one combined dataset and creating a key so that the datasets can be merged;

data all_level_sec_odds_ratios;
       set level_sec_comb1_OddsRatios   (in = in1)
                      level_sec_comb2_OddsRatios   (in = in2)
                      level_sec_comb3_OddsRatios   (in = in3)
                      level_sec_comb3_5_OddsRatios (in = in4)
                      level_sec_comb4_OddsRatios   (in = in5);
       if in1 then level_sec_num = 1;
```

```
        else if in2 then level_sec_num = 2;
        else if in3 then level_sec_num = 3;
        else if in4 then level_sec_num = 3.5;
        else if in5 then level_sec_num = 4;
        else abort;

        odds_ratio_anl = round(OddsRatioEst, 0.01);
        LowerCL_anl    = round(LowerCL, 0.01);
        UpperCL_anl    = round(UpperCL, 0.01);


proc sort data = all_level_sec_odds_ratios;
       by level_sec_num;

*** Merging the DSIC data with the Table 3 Odds ratio data from the primary outcome paper;
*** Variables that contain the differences between the two datasets are created;

data check_level_sec_odds_ratio;
       merge table3_data               (in = in1 keep = level_sec_num odds_ratio_man ci_min_man ci_max_man)
                 all_level_sec_odds_ratios (in = in2 keep = level_sec_num odds_ratio_anl LowerCL_anl UpperCL_anl);
       by level_sec_num;
       if in1 and in2 then do;

              odds_ratio_diff = odds_ratio_man - odds_ratio_anl;
              ci_min_diff = ci_min_man - LowerCL_anl;
              ci_max_diff = ci_max_man - UpperCL_anl;

              output check_level_sec_odds_ratio;
       end;

       else if level_sec_num NE 5 then abort;

proc freq data = check_level_sec_odds_ratio;
       table  odds_ratio_diff * odds_ratio_man * odds_ratio_anl
                              ci_min_diff     * ci_min_man     * LowerCL_anl
                              ci_max_diff     * ci_max_man     * UpperCL_anl     / list missing;
       title3 "Checking that the new variables created in the check_level_sec_odds_ratio are correct";

*** Creating the final Table 3 dataset (Odds Ratios) with character variables noting the differences between the two datasets;

data final_level_sec_odds_ratio;
       set check_level_sec_odds_ratio;
       ci_man  = "(" || strip(ci_min_man)  || "-" || strip(ci_max_man)  || ")";
       ci_anl  = "(" || strip(LowerCL_anl) || "-" || strip(UpperCL_anl) || ")";
       ci_diff = "(" || strip(ci_min_diff) || "-" || strip(ci_max_diff) || ")";
       label  odds_ratio_man  = "Odds ratio [Manuscript]"
              odds_ratio_anl  = "Odds ratio [DSIC]"
              odds_ratio_diff = "Odds ratio [Difference]"
              ci_man          = "95% CI [Manuscript]"
              ci_anl          = "95% CI [DSIC]"
              ci_diff         = "95% CI [Difference]"
```

```
              level_sec_num   = "Main secondary outcome";

run;

*** Outputting the data to a csv format to be added to the DSIC;

ods csv file = out_t3or;

run;

proc print data = final_level_sec_odds_ratio NOOBS label;
        var level_sec_num odds_ratio_man odds_ratio_anl odds_ratio_diff ci_man ci_anl ci_diff;
        title3 "DSIC Check of Table 3 (Odds Ratios): FSGS CT main secondary analysis comparing sustainable proteinuria remission from
study weeks 52-78 between the randomized treatment arms";
run;

ods csv close;
```

```
/*************************************************************************************************************************
***Program: /prj/niddk/ims_analysis/FSGS/prog_initial_analysis/fsgs_integrity_check_table4.sas;
***Programmer: Jane Wang
***Date Created: 10/22/2013
***Purpose: To perform a Dataset Integrity Check (DSIC) between the FSGS data and the primary outcome paper:
***                          Gipson DS, Trachtman H, Kaskel FJ, Greene TH, Radeva MK, Gassman JJ, Moxey-Mims MM, Hogg RJ, Watkins SL,
**          Fine RN, Hogan SL, Middleton JP, Vehaskari VM, Flynn PA, Powell LM, Vento SM, McMahan JL, Siegel N,
**          D'Agati VD, Friedman AL. Clinical trial of focal segmental glomerulosclerosis in children and young
**          adults. Kidney Int. 2011 Oct; 80(8):868-78. Epub 2011 Jul 6.
***
***        The numbers in Tables 4 of the primary outcome paper will compared to the FSGS data received;
*************************************************************************************************************************/;

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

options nofmterr linesize=180;

*** Location of the FSGS SAS dataset;

libname sas_data "/prj/niddk/ims_analysis/FSGS/private_orig_data/20130913/";

%include '/prj/niddk/ims_analysis/FSGS/private_orig_data/20130913/AEformats_1.sas';
%include '/prj/niddk/ims_analysis/sas_macros/redaction_data_summary.sas';


data ae_w00_w26_arch       ; set sas_data.ae_w00_w26_arch     ;
data ae_w00_w52_arch       ; set sas_data.ae_w00_w52_arch    ;


*** Data from the Primary outcome paper that was converted to .csv format so that the DSIC data could be easily compared;
FILENAME table4  '/prj/niddk/ims_analysis/FSGS/private_created_data/table_4_output_from_pdf_paper_edit1.csv';

*** Output CSV files that will be converted to .xls before being added to the DSIC document;
FILENAME out_t4  '/prj/niddk/ims_analysis/FSGS/private_created_data/fsgs_table4_dsic.csv';


data table4_data;
  infile table4 delimiter = ',' MISSOVER DSD  firstobs=1 ls=1080;
  length event $100;
  input event $ col1 col2  col3  col4 col5 col6 col7 col8 $;
  if lengthn(event) NE 0 then output table4_data;

data table4_data;
  set table4_data;
  event= upcase(event);
  sort_order = _n_;
  if col8 in ('0D'x,'0A'x) then col8 = '';
  else if substr(col8,length(col8),1) in ('0D'x,'0A'x) then col8 = substr(col8,1,length(col8) - 1);   *** REMOVE CARRIAGE RETURN AT
END OF DATA LINE ***;
  paper_pts_pert_csa_w52 = input(col8,4.);
```

```
  rename col1 = paper_count_mmf_w26
         col2 = paper_pts_pert_mmf_w26
         col3 = paper_count_csa_w26
         col4 = paper_pts_pert_csa_w26
         col5 = paper_count_mmf_w52
         col6 = paper_pts_pert_mmf_w52
         col7 = paper_count_csa_w52
         ;

proc sort data = ae_w00_w26_arch out=ae_w00_w26_arch_freq nodupkey; by pt Category;

proc freq data = ae_w00_w26_arch_freq noprint;
  tables Category * trt/list missing out = ae_w00_w26_arch_count;
*  format Category AECAT.;

data ae_w00_w26_mmf ae_w00_w26_csa;
  set ae_w00_w26_arch_count;
  if trt = 0 then output ae_w00_w26_mmf;
  else if trt = 1 then output ae_w00_w26_csa;


proc sort data = ae_w00_w26_mmf (keep = category COUNT  rename = (count=count_mmf_w26));
  by  category;
proc sort data = ae_w00_w26_csa (keep = category COUNT  rename = (count=count_csa_w26));
  by  category;

data ae_w00_w26;
  merge ae_w00_w26_mmf ae_w00_w26_csa  ;
  by   category;

proc sort data = ae_w00_w52_arch out=ae_w00_w52_arch_freq nodupkey; by pt Category;

proc freq data = ae_w00_w52_arch_freq noprint;
  tables Category * trt/list missing out = ae_w00_w52_arch_count;
*  format Category AECAT.;

data ae_w00_w52_mmf ae_w00_w52_csa;
  set ae_w00_w52_arch_count;
  if trt = 0 then output ae_w00_w52_mmf;
  else if trt = 1 then output ae_w00_w52_csa;

proc sort data = ae_w00_w52_mmf (keep = category COUNT  rename = (count=count_mmf_w52));
  by  category;
proc sort data = ae_w00_w52_csa (keep = category COUNT  rename = (count=count_csa_w52));
  by  category;

data ae_w00_w52;
  merge ae_w00_w52_mmf ae_w00_w52_csa  ;
  by   category;

data ae_all;
```

```
  merge ae_w00_w26 ae_w00_w52  ;
  by   category;

data ae_all;
  set ae_all;
  length event $ 100.;
       if category =  1  then event = "Infection"                                    ;
  else if category =  2  then event = "Hypertension"                                 ;
  else if category =  3  then event = "Hypotension / Orthostasis / Dizziness"        ;
  else if category =  4  then event = "Hyperglycemia"                                ;
  else if category =  5  then event = "Declining eGFR"                               ;
  else if category =  6  then event = "Hyperlipidemia"                               ;
  else if category =  7  then event = "GASTROINTESTINAL"                                          ;
  else if category =  8  then event = "Edema"                                        ;
  else if category =  9  then event = "Neuropsych Condition"                         ;
  else if category =  10 then event = "Hyperkalemia"                                 ;
  else if category =  11 then event = "Integument"                                   ;
  else if category =  12 then event = "Anemia"                                       ;
  else if category =  13 then event = "Cough"                                        ;
  else if category =  14 then event = "Serious Infection (with hospitalization)"     ;
  else if category =  20 then event = "Other: General"                               ;
  else if category =  21 then event = "SERIOUS CV"               ;
  else if category =  22 then event = "Other: Pain"                                  ;
  else if category =  23 then event = "Other: AngioEdema"                            ;
  else if category =  24 then event = "Other: Adrenal Insufficiency"                 ;
  else if category =  25 then event = "Other: Trauma"                                ;
  else if category =  26 then event = "Other: Asthma"                                ;
  else if category =  27 then event = "Other: AVN"                                   ;
  else if category =  28 then event = "Other: Cataract"                              ;
  else if category =  29 then event = "Other: Thromboembolism"                       ;
  else if category =  30 then event = "Other: Respiratory"                           ;
  else if category =  31 then event = "Other: Malignancy"                            ;
  else if category =  32 then event = "Other: Alopecia"                              ;
  else if category =  33 then event = "Other: Hypertricosis"                         ;
  else if category =  34 then event = "Other: Pregnancy"                             ;
  else if category =  35 then event = "Other: NON-SERIOUS CV"  ;
  else if category =  36 then event = "Other: Abdominal Cramps"                      ;
  else if category =  37 then event = "Other: Decreased ANC"                         ;
  else if category =  38 then event = "Other: Decreased Muscle Strength"             ;
  else if category =  39 then event = "Other: Generalized Tonic-Clonic Seizure"      ;
  else if category =  40 then event = "Other: Gingival Hyperplasia"                  ;
  else if category =  41 then event = "Other: Intracardiac Thrombus"                 ;
  else if category =  50 then event = "Do Not Include"                               ;
  else if category =  .  then event = "Not Classified";

data ae_all(drop = category);
  set ae_all;
  if substr(event,1,7) = 'Other: ' then event= substr(event,8,length(event)-7);
  event= upcase(event);

proc sort data = ae_all;
```

```
  by event;
proc sort data = table4_data;
  by event;

data table4_dataonly ae_allonly inboth ae_table;
  merge table4_data(in = in1) ae_all(in = in2);
  by event;
  if in1 and in2 then output inboth;
  else if in1 and not in2 then output table4_dataonly;
  else if not in1 and in2 then output ae_allonly;
  if in1 then output ae_table;

data fsgs_primary      ;
  set sas_data.fsgs_primary    ;
  weeks= (death_d-w00_dt)/7;
  if ind_dth = 1;

proc print data =    fsgs_primary (keep = pt trt w00_dt ind_dth  weeks death_d);
  format death_d  w00_dt mmddyy10.;
  title3 'death count by weeks to w00';

* add death count based on data from fsgs_primary;
data ae_table;
  set ae_table;
  if event = 'DEATH' then do;
    count_mmf_w26 = 1;
    count_mmf_w52 = 2;
  end;
  if event not in ('DERMATOLOGIC CONDITION','GASTROINTESTINAL','HOSPITALIZATIONA','SERIOUS INFECTION REQUIRING HOSPITALIZATION') then
do;
    if count_mmf_w26 = . then count_mmf_w26 = 0;
    if count_mmf_w52 = . then count_mmf_w52 = 0;
    pts_pert_mmf_w26 = round(count_mmf_w26/66 * 100,0.1);
    pts_pert_mmf_w52 = round(count_mmf_w52/66 * 100,0.1);
    if count_csa_w26 = . then count_csa_w26 = 0;
    if count_csa_w52 = . then count_csa_w52 = 0;
    pts_pert_csa_w26 = round(count_csa_w26/72 * 100,0.1);
    pts_pert_csa_w52 = round(count_csa_w52/72 * 100,0.1);
  end;
  diff_count_mmf_w26    = round((paper_count_mmf_w26    - count_mmf_w26    ), 0.1);
  diff_pts_pert_mmf_w26 = round((paper_pts_pert_mmf_w26 - pts_pert_mmf_w26 ), 0.1);
  diff_count_csa_w26    = round((paper_count_csa_w26    - count_csa_w26    ), 0.1);
  diff_pts_pert_csa_w26 = round((paper_pts_pert_csa_w26 - pts_pert_csa_w26 ), 0.1);
  diff_count_mmf_w52    = round((paper_count_mmf_w52    - count_mmf_w52    ), 0.1);
  diff_pts_pert_mmf_w52 = round((paper_pts_pert_mmf_w52 - pts_pert_mmf_w52 ), 0.1);
  diff_count_csa_w52    = round((paper_count_csa_w52    - count_csa_w52    ), 0.1);
  diff_pts_pert_csa_w52 = round((paper_pts_pert_csa_w52 - pts_pert_csa_w52 ), 0.1);


proc sort data = ae_table;
  by sort_order;
```

```
data final_table4;
  set ae_table;
  label event = "Event"
        paper_count_mmf_w26      = "Weeks 0-26 MMF/DEX (n=66) N pts with events [Manuscript]"
        count_mmf_w26            = "Weeks 0-26 MMF/DEX (n=66) N pts with events [DSIC]"
        diff_count_mmf_w26       = "Weeks 0-26 MMF/DEX (n=66) N pts with events [Difference]"
        paper_pts_pert_mmf_w26   = "Weeks 0-26 MMF/DEX (n=66) % of pts with events [Manuscript]"
        pts_pert_mmf_w26         = "Weeks 0-26 MMF/DEX (n=66) % of pts with events [DSIC]"
        diff_pts_pert_mmf_w26    = "Weeks 0-26 MMF/DEX (n=66) % of pts with events [Difference]"
        paper_count_csa_w26      = "Weeks 0-26 CSA (n=72) N pts with events [Manuscript]"
        count_csa_w26            = "Weeks 0-26 CSA (n=72) N pts with events [DSIC]"
        diff_count_csa_w26       = "Weeks 0-26 CSA (n=72) N pts with events [Difference]"
        paper_pts_pert_csa_w26   = "Weeks 0-26 CSA (n=72) % of pts with events [Manuscript]"
        pts_pert_csa_w26         = "Weeks 0-26 CSA (n=72) % of pts with events [DSIC]"
        diff_pts_pert_csa_w26    = "Weeks 0-26 CSA (n=72) % of pts with events [Difference]"
        paper_count_mmf_w52      = "Weeks 0-52 MMF/DEX (n=66) N pts with events [Manuscript]"
        count_mmf_w52            = "Weeks 0-52 MMF/DEX (n=66) N pts with events [DSIC]"
        diff_count_mmf_w52       = "Weeks 0-52 MMF/DEX (n=66) N pts with events [Difference]"
        paper_pts_pert_mmf_w52   = "Weeks 0-52 MMF/DEX (n=66) % of pts with events [Manuscript]"
        pts_pert_mmf_w52         = "Weeks 0-52 MMF/DEX (n=66) % of pts with events [DSIC]"
        diff_pts_pert_mmf_w52    = "Weeks 0-52 MMF/DEX (n=66) % of pts with events [Difference]"
        paper_count_csa_w52      = "Weeks 0-52 CSA (n=72) N pts with events [Manuscript]"
        count_csa_w52            = "Weeks 0-52 CSA (n=72) N pts with events [DSIC]"
        diff_count_csa_w52       = "Weeks 0-52 CSA (n=72) N pts with events [Difference]"
        paper_pts_pert_csa_w52   = "Weeks 0-52 CSA (n=72) % of pts with events [Manuscript]"
        pts_pert_csa_w52         = "Weeks 0-52 CSA (n=72) % of pts with events [DSIC]"
        diff_pts_pert_csa_w52    = "Weeks 0-52 CSA (n=72) % of pts with events [Difference]"
;
ods csv file = out_t4;

run;

proc print data = final_table4 NOOBS label;
       var event
       paper_count_mmf_w26
count_mmf_w26
diff_count_mmf_w26
paper_pts_pert_mmf_w26
pts_pert_mmf_w26
diff_pts_pert_mmf_w26
paper_count_csa_w26
count_csa_w26
diff_count_csa_w26
paper_pts_pert_csa_w26
pts_pert_csa_w26
diff_pts_pert_csa_w26
paper_count_mmf_w52
count_mmf_w52
diff_count_mmf_w52
paper_pts_pert_mmf_w52
```

```
pts_pert_mmf_w52
diff_pts_pert_mmf_w52
paper_count_csa_w52
count_csa_w52
diff_count_csa_w52
paper_pts_pert_csa_w52
pts_pert_csa_w52
diff_pts_pert_csa_w52
;
        title3 "DSIC Check of Table 4 (N and %): Summary of adverse events comparing the randomized treatment arms";
run;

ods csv close;
```