

## **SUPPLEMENTARY MATERIALS**

### **Descriptive study of the economic burden among patients with type 2 diabetes, chronic kidney disease, and chronic kidney disease and type 2 diabetes in a large US commercially insured population**

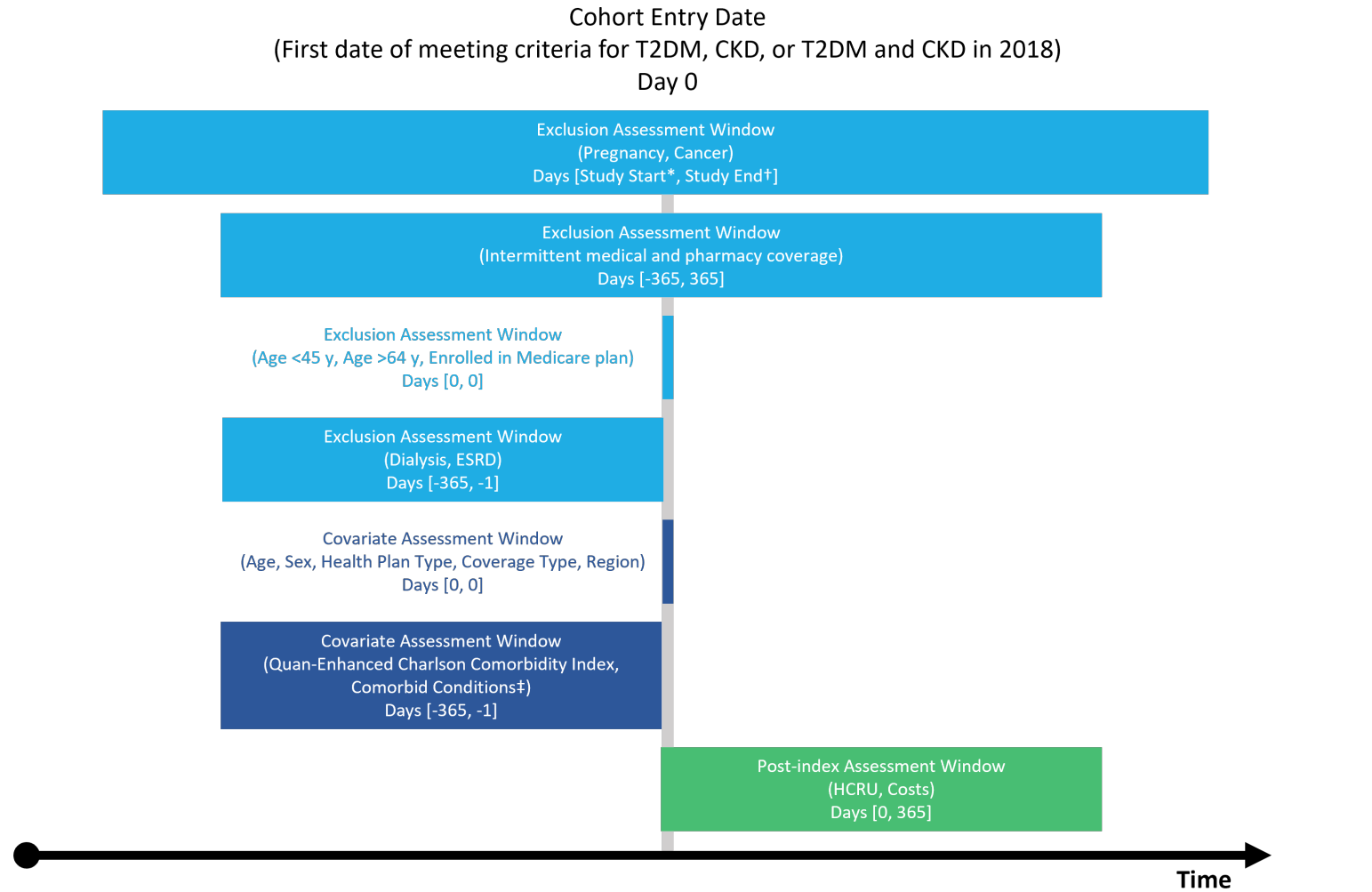
Haechung Chung, MPH; Christopher L Crowe, MPH; Sheldon X Kong, PhD; Rakesh Singh, PhD; Ryan Farej, BS; Jay Elliott, PhD; Todd Williamson, PhD; Vincent J Willey, PharmD

**SUPPLEMENTARY FIGURE 1** Study Design Diagram

**SUPPLEMENTARY TABLE 1** Diagnosis and Procedure Codes for Patient Selection

**SUPPLEMENTARY TABLE 2** 12-Month Post-Index Health Care Resource Utilization

## Supplemental Figure 1. Study Design Diagram



T2DM = Type 2 diabetes mellitus; CKD = Chronic kidney disease; ESRD = End-stage renal disease; HCRU = Health care resource utilization

\* Study Start: January 1, 2017

† Study End = December 31, 2019

‡ Comorbid Conditions = Coronary artery disease, heart failure, hypertension, peripheral vascular disease, depression, dyslipidemia, obesity, diabetic neuropathy, chronic obstructive pulmonary disease, sleep apnea

**Supplemental Table 1. Diagnosis and procedure codes for patient selection**

Condition	ICD-9 code	ICD-10 code	CPT code	HCPCS code
Cancer		C00.% - C96.% excluding C44.%1%		
Chronic Kidney Disease	403, 403.1, 403.9, 404, 404.01, 404.1, 404.11, 404.9, 404.91, 581, 581.1, 581.2, 581.3, 581.81, 581.89, 581.9, 582, 582.1, 582.2, 582.4, 582.8, 582.81, 582.89, 582.9, 585, 585.1, 585.2, 585.3, 585.4, 585.9, 587, 274.1, 274.19	I12.9, I13.0, I13.10, N02.2, N04.0, N04.3, N04.4, N04.8, N04.9, N08, N18.1, N18.2, N18.3, N18.4, N18.9, N25.89, R80.9, D63.1, M10.30, M10.311, M10.312, M10.319, M10.321, M10.322, M10.329, M10.331, M10.332, M10.339, M10.341, M10.342, M10.349, M10.351, M10.352, M10.359, M10.361, M10.362, M10.369, M10.371, M10.372, M10.379, M10.38, M10.39		
Chronic Kidney Disease in Type 2 Diabetes Mellitus		E08.22, E11.22, E08.21, E08.29, E11.21, E11.29, E13.21, E13.22, E13.29		

Dialysis	Z99.2	3066F, 36147, 36148, 36800, 36810, 36815, 4052F, 4053F, 4054F, 4055F, 90935, 90937, 90940, 90945, 90947, 90951, 90952, 90953, 90954, 90955, 90956, 90957, 90958, 90959, 90960, 90961, 90962, 90963, 90964, 90965, 90966, 90967, 90968, 90969, 90970, 99512, 0507F	G8714, G8715, G8716, G8717, G8718, G8720, S9339, S9335, G8075, G8076, G8077, G8078, G8079, G8080, G8081, G8082, G8085
End Stage Renal Disease		I12.0, I13.11, I13.2, N18.6, N18.5	
Insulin Pump		Z46.81	E0784, J1817

Kidney Transplantation		Z94.0, T86.1, T86.10, T86.11, T86.12, T86.13, T86.19		
Pregnancy		O00.% - O9A.%		
Type 1 Diabetes Mellitus		E10.%		

<p>Type 2 Diabetes Mellitus</p>	<p>250, 250.02, 250.1, 250.12, 250.2, 250.22, 250.3, 250.32, 250.5, 250.52, 250.6, 250.62, 250.7, 250.72, 250.8, 250.82, 250.9, 250.92</p>	<p>E11.0, E11.00, E11.01, E11.1, E11.10, E11.11, E11.3, E11.31, E11.311, E11.319, E11.32, E11.321, E11.3211, E11.3212, E11.3213, E11.3219, E11.329, E11.3291, E11.3292, E11.3293, E11.3299, E11.33, E11.331, E11.3311, E11.3312, E11.3313, E11.3319, E11.339, E11.3391, E11.3392, E11.3393, E11.3399, E11.34, E11.341, E11.3411, E11.3412, E11.3413, E11.3419, E11.349, E11.3491, E11.3492, E11.3493, E11.3499, E11.35, E11.351, E11.3511, E11.3512, E11.3513, E11.3519, E11.352, E11.3521, E11.3522, E11.3523, E11.3529, E11.353, E33.3531, E33.3523, E33.3533, E33.3539, E11.354, E11.3541, E11.3542, E11.3543, E11.3549, E11.355, E11.3551, E11.3552, E11.3553, E11.3559,</p>		
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		E11.359, E11.3591, E11.3592, E11.3593, E11.3599, E11.36, E11.37, E11.37X1, E11.37X2, E11.37X3, E11.37X9, E11.39, E11.4, E11.40, E11.41, E11.42, E11.43, E11.44, E11.49, E11.5, E11.51, E11.52, E11.59, E11.6, E11.61, E11.610, E11.618, E11.62, E11.620, E11.621, E11.622, E11.628, E11.63, E11.630, E11.638, E11.64, E11.641, E11.649, E11.65, E11.69, E11.8, E11.9		
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**Supplemental Table 2. 12-Month Post-index Health Care Resource Utilization**

	<b>T2DM only (n=120,364)</b>		<b>CKD only (n=7,876)</b>		<b>CKD and T2DM (n=13,052)</b>	
<b>All-Cause</b>						
<b>Inpatient Hospitalization</b>						
≥ 1 visit, n (%)	10,230	8.5%	1,048	13.3%	2,533	19.4%
Number of visits, mean (SD)	0.1	0.4	0.2	0.7	0.3	0.9
<b>Emergency Room Visits</b>						
≥ 1 visit, n (%)	22,429	18.6%	1,497	19.0%	3,171	24.3%
Number of visits, mean (SD)	0.3	0.7	0.3	0.9	0.4	1.0
<b>Outpatient Encounters</b>						
≥ 1 visit, n (%)	120,314	100.0%	7,876	100.0%	13,052	100.0%
Number of encounters, mean (SD)	19.9	18.8	27.0	27.6	32.1	32.3
<b>Physician Office Visits</b>						
≥ 1 visit, n (%)	119,572	99.3%	7,855	99.7%	13,027	99.8%
Number of visits, mean (SD)	7.5	5.8	9.3	7.4	10.9	8.2
<b>Durable Medical Equipment</b>						
≥ 1 visit, n (%)	26,444	22.0%	1,816	23.1%	4,435	34.0%
Number of visits, mean (SD)	0.9	3.4	1.1	4.2	2.0	6.3
<b>Imaging</b>						
≥ 1 visit, n (%)	57,966	48.2%	5,029	63.9%	8,140	62.4%
Number of visits, mean (SD)	1.6	2.6	2.5	3.2	2.6	3.5
<b>Medication and Related Services</b>						
≥ 1 visit, n (%)	68,672	57.1%	4,734	60.1%	8,746	67.0%
Number of visits, mean (SD)	1.4	3.1	2.0	7.5	2.6	7.2
<b>Physician Other Services</b>						
≥ 1 visit, n (%)	56,383	46.8%	3,172	40.3%	7,620	58.4%
Number of visits, mean (SD)	1.5	4.8	1.9	6.3	2.3	5.4
<b>Procedures</b>						
≥ 1 visit, n (%)	56,750	47.1%	4,291	54.5%	7,493	57.4%



Number of visits, mean (SD)	1.8	4.1	2.8	11.5	3.9	13.0
<b>Physiotherapy/Occupational Therapy/Speech</b>						
≥ 1 visit, n (%)	20,004	16.6%	1,590	20.2%	2,697	20.7%
Number of visits, mean (SD)	1.8	6.3	2.4	7.1	2.6	7.7
<b>Tests (Lab)</b>						
≥ 1 visit, n (%)	117,454	97.6%	7,760	98.5%	12,936	99.1%
Number of visits, mean (SD)	5.8	4.5	7.7	7.2	9.1	7.9
<b>Tests (Other)</b>						
≥ 1 visit, n (%)	50,362	41.8%	3,603	45.7%	7,210	55.2%
Number of visits, mean (SD)	1.0	1.9	1.3	2.4	1.8	3.0
<b>Other</b>						
≥ 1 visit, n (%)	76,940	63.9%	5,521	70.1%	9,211	70.6%
Number of visits, mean (SD)	2.8	5.4	3.5	6.1	4.0	8.5
<b>Prescription Use</b>						
≥ 1 prescription fills, n (%)	117,242	97.4%	7,593	96.4%	12,740	97.6%
Number of prescription fills, mean (SD)	24.1	16.6	21.9	16.9	32.2	20.3
<b>Disease-specific (CKD or T2DM)</b>						
<b>Inpatient Hospitalization</b>						
≥ 1 visit, n (%)	2,050	1.7%	209	2.7%	1,027	7.9%
Number of visits, mean (SD)	0.0	0.2	0.0	0.2	0.1	0.5
<b>Emergency Room Visits</b>						
≥ 1 visit, n (%)	1,549	1.3%	64	0.8%	401	3.1%
Number of visits, mean (SD)	0.0	0.1	0.0	0.1	0.0	0.2
<b>Outpatient Encounters</b>						
≥ 1 visit, n (%)	119,822	99.5%	7,831	99.4%	13,033	99.9%
Number of encounters, mean (SD)	7.0	5.9	6.2	6.8	12.7	13.9
<b>Physician Office Visits</b>						
≥ 1 visit, n (%)	114,341	95.0%	7,284	92.5%	12,813	98.2%

Number of visits, mean (SD)	3.6	2.6	2.9	2.2	5.7	4.3
<b>Durable Medical Equipment</b>						
≥ 1 visit, n (%)	7,181	6.0%	277	3.5%	1,600	12.3%
Number of visits, mean (SD)	0.1	1.0	0.1	1.3	0.4	2.5
<b>Imaging</b>						
≥ 1 visit, n (%)	12,636	10.5%	1,580	20.1%	3,124	23.9%
Number of visits, mean (SD)	0.1	0.5	0.3	0.8	0.4	0.9
<b>Medication and Related Services</b>						
≥ 1 visit, n (%)	43,858	36.4%	1,932	24.5%	6,075	46.5%
Number of visits, mean (SD)	0.6	1.3	0.5	3.0	1.2	3.7
<b>Physician Other Services</b>						
≥ 1 visit, n (%)	38,771	32.2%	786	10.0%	5,477	42.0%
Number of visits, mean (SD)	0.5	1.1	0.2	0.8	1.0	2.4
<b>Procedures</b>						
≥ 1 visit, n (%)	24,479	20.3%	988	12.5%	4,060	31.1%
Number of visits, mean (SD)	0.5	2.1	0.4	4.1	1.4	6.1
<b>Physiotherapy/Occupational Therapy/Speech</b>						
≥ 1 visit, n (%)	2,055	1.7%	149	1.9%	586	4.5%
Number of visits, mean (SD)	0.1	1.4	0.1	1.3	0.4	2.7
<b>Tests (Lab)</b>						
≥ 1 visit, n (%)	111,786	92.9%	6,872	87.3%	12,613	96.6%
Number of visits, mean (SD)	3.5	2.6	2.9	3.0	5.3	4.2
<b>Tests (Other)</b>						
≥ 1 visit, n (%)	27,442	22.8%	1,059	13.4%	4,308	33.0%
Number of visits, mean (SD)	0.4	0.9	0.2	0.6	0.7	1.6
<b>Other</b>						
≥ 1 visit, n (%)	32,325	26.9%	1,607	20.4%	4,757	36.4%
Number of visits, mean (SD)	0.6	2.2	0.4	1.8	1.3	4.9

*CDHP: Consumer Driven Health Products; CKD: Chronic Kidney Disease; HMO: Health*

*Maintenance Organization; PPO: Provider Preferred Organization; T2DM: Type 2 Diabetes Mellitus*