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Burden of Cardiorenal Complications (CRCs) in T2D: Take Care of Me Programme

Map (epsMap.cfm?id=1020)

Epidemiology - Diabetes Complications
Presented on Saturday, June 4, 2022 11:30 AM

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Rationale: CRCs are known to be key determinants of patient outcomes in T2D; however, the burden of undiagnosed CRCs in unselected T2D population remains unclear, particularly in low-to-middle income countries (LMICs). 'Take CaRe of Me' (TCOM) programme aims to determine the global burden and treatment patterns of CRCs in people with T2D without prior history of cardiovascular (CV) and renal disease.
Methods: TCOM programme records data in a cloud based repository after being reported by primary care physicians on albuminuria, eGFR, CV risk, echocardiography and treatment patterns in adults with T2D and no CRCs at index visit for early identification of CRCs. We present a descriptive analysis (up to 10 Dec 2021) of baseline cardiorenal factors from 6 LMICs.
Results: We recruited 11335 adults (mean [±SD] age, 54.8±11.4 yrs; 57.9% women, mean T2D duration, 9.8±8.0 yrs). Mean HbA1c was 8.3±2.2% (65.8% with HbA1c >7%). Individuals with moderate-to-high renal risk (per urine albumin-creatinine ratio) ranged from 24.8% (Mexico) to 45.1% (Philippines) and with high/very high CV risk (per ESC 2019) ranged from 31.6% (Philippines) to 45.0% (Egypt) (Table).

Table. Clinical Characteristics and Cardiorenal Complications in People with T2D

	Overall (N=11335)	Argentina (N=910)	Egypt (N=2690)	India (N=3303)	Malaysia (N=262)	Mexico (N=2760)	Philippines (N=1410)
Age (yrs)*	54.8±11.4	58.1±11.7	53.9±10.0	54.8±12.0	52.8±13.6	54.2±11.4	56.2±11.8
Females, n (%)	6558 (57.9)	535 (58.8)	1939 (72.1)	1541 (46.7)	116 (44.3)	1530 (55.4)	897 (63.6)
T2D duration (yrs)*	9.8±8.0	9.1±7.7	12.9±7.8	9.0±7.2	13.7±13.9	8.4±7.5	8.0±7.9
T2D duration strata (yrs), n (%)							
<5	4045 (35.9)	328 (36.1)	439 (16.3)	1239 (37.7)	110 (43.0)	1244 (45.3)	685 (49.5)
5.1–10	2674 (23.7)	267 (29.4)	652 (24.2)	841 (25.6)	28 (10.9)	601 (21.9)	285 (20.6)
>10	4554 (40.4)	314 (34.5)	1599 (59.4)	1209 (36.8)	118 (46.1)	901 (32.8)	413 (29.9)
HbA1c (%)*	8.3±2.2	7.7±1.9	8.6±2.1	8.1±2.0	6.7±1.7	8.7±2.4	8.3±2.4
HbA1c control, n (%)							
<7%	3622 (34.3)	349 (44.3)	601 (25.1)	1201 (36.6)	184 (70.2)	842 (31.1)	445 (39.1)
7-10%	4656 (44.1)	341 (43.3)	1198 (50.0)	1511 (46.1)	61 (23.3)	1109 (41)	436 (38.3)
>10%	2290 (21.7)	97 (12.3)	596 (24.9)	566 (17.3)	17 (6.5)	757 (28)	257 (22.6)
UACR (mg/g), n(%)**							
Normal-to-mildly Elevated, A1 (<30)	5966 (64.7)	396 (73.3)	1219 (55.4)	1911 (62.3)	133 (63.9)	2013 (75.3)	294 (55)
Moderately increased, A2 (30-300)	2809 (30.5)	131 (24.3)	845 (38.4)	998 (32.6)	62 (29.8)	564 (21.1)	209 (39.1)
Severely increased, A3 (>300)	447 (4.8)	13 (2.4)	135 (6.1)	156 (5.1)	13 (6.2)	98 (3.7)	32 (6.0)
eGFR*(mL/min/1.73m^2)	92.9±26.4	98.7±9.3	NA	150.1±133.9	NA	NA	89.4±29.9
CV risk†, n(%)							
Moderate	752 (6.6)	24 (2.6)	77 (2.9)	373 (11.3)	35 (13.4)	175 (6.3)	68 (4.8)
High	349 (3.1)	20 (2.2)	153 (5.7)	50 (1.5)	2 (0.8)	34 (1.2)	90 (6.4)
Very high	4020 (35.5)	383 (42.1)	1057 (39.3)	1235 (37.4)	84 (32.1)	906 (32.8)	355 (25.2)
Echocardiograph findings, n (%)							
Echo available	1380	0	556	250	7	499	68
LVH	233 (16.9)	0	74 (13.3)	30 (12.0)	2 (28.6)	105 (21.0)	22 (32.4)
LAE	230 (16.7)	0	81 (14.6)	21 (8.4)	1 (14.3)	121 (24.2)	6 (8.8)
DD	62 (4.5)	0	17 (3.1)	6 (2.4)	1 (14.3)	34 (6.8)	4 (5.9)
PH	56 (4.1)	0	24 (4.3)	2 (0.8)	0	27 (5.4)	3 (4.4)
VHD	56(4.1)	0	18(3.2)	11(4.4)	0	24 (4.8)	3 (4.4)

*presented as mean ±SD, **Risk stratification as per UACR, †Risk stratification as per European Society of Cardiology, 2019

CV, cardiovascular; DD, diastolic dysfunction; eGFR, estimated glomerular filtration rate; HbA1c, glycated haemoglobin; LAE, left atrial enlargement; LVH, left ventricular hypertrophy; NA, not available; PH, pulmonary hypertension SD, standard deviation; T2D, type 2 diabetes; UACR, urine albumin-creatinine ratio; VHD, valvular heart disease (defined as presence of moderate or severe, stenotic or regurgitant disease of aortic or mitral valve).

Discussion: There is high burden of unrecognized CRCs in T2D in real-world setting, with >35% having moderate-to-high renal and high/very high CV risks. Our results point at the unmet need for early diagnosis, risk factor management and use of cardiorenoprotective glucose lowering drugs.

Disclosure: **K.Khunti:** Consultant; ; Abbott, Amgen Inc., AstraZeneca, Bayer AG, Berlin-Chemie AG, Boehringer Ingelheim International GmbH, Lilly, Merck Sharp & Dohme Corp., Napp Pharmaceuticals Limited, Novartis AG, Novo Nordisk, Roche Diabetes Care, Sanofi-Aventis Deutschland GmbH, Servier Laboratories, Research Support; ; AstraZeneca, Boehringer Ingelheim International GmbH, Lilly, Merck Sharp & Dohme Corp., Novartis AG, Novo Nordisk, Sanofi-Aventis Deutschland GmbH. **A.I.Silva:** Employee; ; AstraZeneca. **F.Surmont:** Employee; ; AstraZeneca. **H.Vasnawala:** None. **E.Vazquez-mendez:** None. **P.Fenici:** Employee; ; AstraZeneca. **S.Goncalves:** None. **H.L.Heerspink:** Consultant; ; AstraZeneca, Bayer AG, Boehringer Ingelheim International GmbH, Chinook Therapeutics Inc., CSL Behring, Gilead Sciences, Inc., Goldfinch Bio, Inc., Janssen Research & Development, LLC, Mitsubishi Tanabe Pharma Corporation, Mundipharma, Traveere Pharmaceuticals, Research Support; ; AstraZeneca, Boehringer Ingelheim International GmbH, Novo Nordisk A/S. **S.Joshi:** Advisory Panel; ; Abbott, Boehringer Ingelheim International GmbH, Dr. Reddy's Laboratories Ltd., Eli Lilly and Company, Novo Nordisk, Roche Diabetes Care, Consultant; ; Biocon, Glenmark Pharmaceuticals, Sanofi, USV Private Limited. **M.N.Kosiborod:** Advisory Panel; ; Amgen Inc., Applied Therapeutics, Bayer AG, Eli Lilly and Company, ESPERION Therapeutics, Inc., Janssen Pharmaceuticals, Inc., Merck Sharp & Dohme Corp., Pharmacosmos A/S, Sanofi, Vifor Pharma Management Ltd., Consultant; ; Alnylam Pharmaceuticals, Inc., Other Relationship; ; AstraZeneca, Boehringer Ingelheim International GmbH, Novo Nordisk. **C.S.Lam:** Other Relationship; ; Prosciento Inc, Radcliffe Group Ltd., Roche Diagnostics, Sanofi, Siemens Healthcare Diagnostics, Abbott, Actelion, Amgen, AnaCardio , Applied Therapeutics, AstraZeneca, Bayer, Boehringer, Boston Scientific, Cytokinetics, Darma., EchoNous, Impulse Dynamics, Ionis Pharma, Janssen R&D, Medscape/WebM, Us2.ai. **A.Nicolucci:** Board Member; ; AstraZeneca, Research Support; ; Novo Nordisk, PIKDARE S.p.A., Sanofi, Shionogi & Co., Ltd., Swedish Orphan Biovitrum AB, Speaker's Bureau; ; Eli Lilly and Company. **L.Ramirez:** Employee; ; AstraZeneca.

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Prevention and Health Promotion

PREVALENCE OF STRUCTURAL ECHOCARDIOGRAPHIC ABNORMALITIES IN PATIENTS WITH TYPE 2 DIABETES IN PRIMARY CARE: INSIGHTS FROM THE TAKE CARE OF ME PROGRAMME IN 4 EMERGING COUNTRIES

Poster Contributions
For exact presentation time, refer to the online ACC.22 Program Planner at https://www.abstractsonline.com/pp8/#!/10461

Session Title: Prevention and Health Promotion Flatboard Poster Selections: Diabetes and Cardiometabolic Disease
Abstract Category: 37. Prevention and Health Promotion: Diabetes and Cardiometabolic Disease

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Background: To determine prevalence and related clinical manifestations of early echocardiographic (echo) abnormalities in type 2 diabetes (T2D) in primary care.

Methods: Take CaRe of Me program (NCT03549754) is an ongoing international, prospective, observational study focused on diagnosis and management of early cardiorenal (CR) disease in T2D. Cohort enrolled 5996 T2D subjects (Dec 2020 to Aug 2021) with no CR disease per records at index visit. Systematic Coronary Risk Evaluation-ESC 2019 identified high risk patients who were referred for echo per routine care. We present analysis of documented echo (696) from Egypt- 41, India- 155, Mexico- 432 and Philippines- 68.

Results: Mean age was 56.2±10.9 years; 53.7% were females. 33.5% had echo abnormalities — left ventricular hypertrophy (61%), left atrial enlargement (54%), diastolic dysfunction (15%), pulmonary hypertension (12%) and valvular disease (15%). People with echo abnormalities were older, had longer T2D duration, high/very high cardiovascular risk and albuminuria. Per symptoms and echo, 231 had likely diagnosis of pre-heart failure (HF) (stage B: 190, stage C: 41); 32 had HF with preserved ejection fraction (EF) and 9 had HF with mid-range EF.

Table. Baseline Characteristics

	Normal echo		Abnormal echo	
	HF symptoms			
	No	Yes	No	Yes
Mean±SD	N=403	N=60	N=202	N=31
Female; %	49	67	57	68
Age; year	53.7±10.8	54.7±12	61±9.3	59.6±9.1
T2D duration; year	8.9±7.4	10.8±7.2	11±8.5	13.6±8.4
Glycated hemoglobin; %	8.8±2.3	8.8±1.9	8.6±2.3	8.7±2.5
Systolic blood pressure; mmHg	124.1±16.2	128.3±14.1	129.1±20.1	131.3±19.1
Total cholesterol; mg/dL	147.2±75.1	178.8±60.4	156.3±116.3	181.7±79
*Cardiovascular high/very high risk; n (%)	293 (73)	47 (78)	184 (91)	25 (81)
*Albuminuria A2 and A3; mg/g, n (%)	213 (58)	30 (53)	131 (71)	16 (55)

*Per urine albumin creatinine ratio and ESC 2019

Conclusion: A third of T2D patients referred for echo without prior CR disease had structural heart abnormalities with increased risk of developing symptomatic HF. Early diagnosis of silent structural heart abnormalities in T2D may help targeting HF preventative therapies to those at highest risk.

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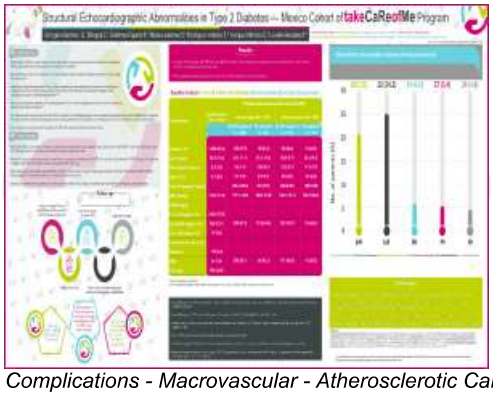
Structural Echocardiographic Abnormalities in T2D: Mexico Cohort of Take Care of Me Program

Map (epsMap.cfm?id=321)



Complications - Macrovascular - Atherosclerotic Cardiovascular Disease and Human Diabetes
Presented on Monday, June 6, 2022 12:00 PM

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Rationale: Due to gaps in detecting subclinical cardiac abnormalities in T2D, we evaluated prevalence and clinical manifestations of early echocardiographic (echo) abnormalities in primary care in Mexico.
Methods: Mexico cohort of the ongoing 'Take CaRe of Me program' enrolled 2760 people with T2D (between 7 Dec 2020 - 10 Dec 2021) and no cardiorenal disease per index visit history. We present descriptive data of documented echo performed by cardiologists as routine clinical care (499) in high-risk T2D identified by Systematic Coronary Risk Evaluation (ESC 2019).
Results: With mean age of 54.2±11.4 years, 55.4% were females and 189 patients (37.9%) had echo abnormalities — left ventricular hypertrophy (21%, 105), left atrial enlargement (24.2%, 121), diastolic dysfunction (6.8%, 34), pulmonary hypertension (5.4%, 27) and valvular disease (4.8%, 24). Substantial proportion of people with echo abnormalities had high or very high CV risk (Table). Overall, 23 people had presumptive diagnosis of pre-HF based on symptoms and echo. Per documented data, 18 people had HF with preserved ejection fraction (EF), 4 had mid-range EF and 1 had reduced EF.
Conclusion: Structural abnormalities are prevalent in 37.9% of people with T2D referred for an echo, even in absence of symptoms. Timely diagnosis of silent structural heart abnormalities in T2D is an opportunity for using novel cardiorenal pharmacotherapy for preventing HF.

Table. Echo abnormalities and clinical characteristics of people with T2D in Mexico cohort

	Normal echo		Abnormal echo	
	Without HF symptoms (N=284)	With HF symptoms (N=26)	Without HF symptoms (N=173)	With HF symptoms (N=16)
Age (year)#	53.6±11.1	58.2±11.4	60.5±9.7	55.9±9.2
T2D duration (year)#	9.6±7.4	10.8±8.1	12.5±8.7	11.5±7.7
HbA1c (%)#	9.1±2.5	8.9±2.1	8.8±2.5	9.4±2.8
Systolic blood pressure (mmHg)#	118.7±14.3	120.5±13.8	125.5±18	125.9±24.6
Total cholesterol (mg/dL)#	166.4±55.4	153±37.1	168.5±57	192.5±83
*CV high/very high risk, n (%)	270 (95.1)	24 (92.3)	171 (98.8)	14 (87.5)
*Albuminuria (A2, A3) (mg/g), n (%)	189 (67)	17 (65.4)	127 (74.7)	10 (62.5)

CV = cardiovascular; echo = echocardiography; HbA1c = glycated hemoglobin; HF = heart failure; T2D = type 2 diabetes mellitus
#values are presented as mean ± SD
*Risk per European Society of Cardiology 2019 and urine albumin-to-creatinine ratio (UCAR)
Albuminuria stage A2: UCAR 30-300 mg/g, stage 3 UCAR: >300 mg/g

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Take CaRe of Me Programme: Gaps in early diagnosis of cardiorenal complications in type 2 diabetes from 6 countries

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Background
Gaps exist in early identification and prevention of cardiorenal complications (CRCs) in type 2 diabetes (T2D).

Aim
To investigate global variations in burden and treatment patterns of CRCs, including albuminuria, high cardiovascular (CV) risk, and early echocardiographic findings, among individuals with T2D in primary care settings. This is an ongoing patient-centric program that collects data on early diagnostic tests during disease journey to support critical decision-making.

Method
'Take CaRe of Me', a subset of DISCOVER CaReMe Registry, is a multicountry, prospective, cloud-based data repository on routine care for adults (>18 years) with T2D, without cardiorenal disease history at screening (per medical records). We present preliminary descriptive analysis (until May-2021) from 6 countries.

Results
Among 4686 patients (mean age: 55.7±11.3 years; 46.2% men), average T2D duration was 8.4±7.2 years (N=4534) and mean glycated hemoglobin (HbA1c) was 8.3±3.0% (N=4409). About 32.3% had total cholesterol >180mg/dL (N= 4362); 51.4% had low-density lipoprotein cholesterol >70mg/dL (N=3985). Mean estimated glomerular filtration rate was 94.6±23.2mL/min/1.73m(2) (N=479) and mean urine albumin:creatinine ratio (UACR) was 62.9±181.9mg/g (N=3869). Overall, 66.3% had HbA1c >7%; as per UACR and European Society of Cardiology (ESC) 2019, 32.7% had high renal risk (UACR >30mg/g), and 37.0% had high/very high CV risk (Table 1). On echocardiography (N=417), 8.9% (n=37) had diastolic dysfunction, 20.6% (n=86) had left ventricular hypertrophy, 16.5% (n=69) had left atrial enlargement, and 8.6% (n=36) had valvular diseases. Among high/very high CV risk (N=1861) and high renal risk (N=1390), biguanides were most commonly prescribed antidiabetics in all lines of therapy (n=502, 26.9%; n=346, 24.8%), followed by biguanides+sulfonylureas (n=154, 8.3%; n=126, 9.1%), respectively. As first-line therapy, 42.4% (693/1635) with high/very high CV risk, 44.6% (531/1191) with high renal risk, and 44.2% (518/1172) with both risks received

antidiabetics; around 2% of them received dipeptidyl peptidase-4 inhibitors (DPP-4i), sodium-glucose cotransporter-2 inhibitors (SGLT2i) or DPP4i+SGLT2i. Overall, less than 2% of patients with high/very high CV or renal or both risks received glucagon-like peptide-1 agonists. Other therapies (N=4229) included antilipids (98.4%), antihypertensives (23.2%), and antiplatelets (2.4%).

*Risk defined per UACR and ESC 2019

Discussion
Among patients with T2D without cardiorenal disease, 32.7% and 37.0% had early signs of high renal risk and high/very high CV risk. Thus, channeling attention to early markers like UACR and echocardiography through enhanced screening enables timely diagnosis and adequate treatment with novel antihyperglycemics that also reduce cardiorenal risk at an early stage.

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