

SUPPLEMENTARY DATA

Supplementary Table 1. Base Case Cost Assessment- Health System Costs for Screening and Treatment of 1573 Participants for Dysglycemia¹¹⁰.

Screen test	Screen	Cost per screen	Screen cost total	# pos	OGTT costs	Total cost of testing	Testing costs per TP	#TP	TP costs	#FN	Costs 10%FN	Average cost per FN	Total HS costs	Costs per TP
					\$17.99				\$518					
GCT-pl	1573	\$7.77	\$12,222	650	\$11,694	\$23,916	\$83	288	\$149,184	78	\$42,908	\$550	\$216,007	\$750
GCT-cap	1573	\$6.75	\$10,618	604	\$10,866	\$21,484	\$87	247	\$127,946	119	\$67,358	\$566	\$216,788	\$878
RPG	1573	\$5.48	\$8,620	576	\$10,362	\$18,982	\$84	227	\$117,586	139	\$81,113	\$584	\$217,681	\$959
RCG	1573	\$3.27	\$5,144	529	\$9,517	\$14,660	\$80	183	\$94,794	183	\$110,479	\$604	\$219,934	\$1,202
A1c	1573	\$13.56	\$21,330	503	\$9,049	\$30,379	\$147	207	\$107,226	159	\$92,674	\$583	\$230,278	\$1,112

Supplementary Table 2. Generalized equation describing relationship between cost of screening tests and prevalence of disease.

Savings in Screening Cost = Cost_{RCG} – Cost_{GCTpl}

Where: Cost_{RCG} = (1-prevalence)₂*specificity₂* Cost_{Screening2}
 +(1-prevalence)₂*(1- specificity₂)*(Cost_{Screening2}+Cost_{OGTT})
 +prevalence₂*(1-sensitivity₂)*(Cost_{Screening2}+Cost_{Undetected Disease})
 +prevalence₂*sensitivity₂*(Cost_{Screening2}+Cost_{OGTT}+Cost_{care}-Cost_{Savings from Detection})

Cost_{GCTpl} = (1-prevalence)₁*specificity₁* Cost_{Screening1}
 +(1-prevalence)₁*(1- specificity₁)*(Cost_{Screening1}+Cost_{OGTT})
 +prevalence₁*(1-sensitivity₁)*(Cost_{Screening1}+ Cost_{Undetected Disease})
 +prevalence₁*sensitivity₁*(Cost_{Screening1}+Cost_{OGTT}+Cost_{care}-Cost_{Savings from Detection})

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Supplementary Table 3. Testing costs per True Positive with GCTpl/OGTT and Prevalence of Dysglycemia₁₁₀ and Diabetes by Risk.

Testing costs per true positive for dysglycemia₁₁₀

	BMI < 25 kg/m ²	BMI 25-35 kg/m ²	BMI > 35 kg/m ²	Age < 40 years	Age 40-55 years	Age > 55 years
GCT-pl	\$153	\$83	\$61	\$218	\$85	\$61
GCT-cap	\$162	\$87	\$62	\$211	\$92	\$62
RPG	\$172	\$85	\$58	\$165	\$85	\$63
RCG	\$166	\$84	\$51	\$146	\$87	\$57
A1c	\$361	\$160	\$90	\$455	\$152	\$98

Testing costs per true positive for diabetes

	BMI < 25 kg/m ²	BMI 25-35 kg/m ²	BMI > 35 kg/m ²	Age < 40 years	Age 40-55 years	Age > 55 years
GCT-pl	\$809	\$440	\$176	\$784	\$411	\$227
GCT-cap	\$677	\$415	\$178	\$718	\$411	\$223
RPG	\$667	\$382	\$172	\$569	\$421	\$191
RCG	\$584	\$375	\$151	\$425	\$480	\$164
A1c	\$1,444	\$813	\$251	\$1,274	\$656	\$342

Supplementary Table 4. Health system costs for screening and treatment of dysglycemia₁₁₀ by risk group with VA costs*.

	GCT-plasma	GCT-cap	RPG	RCG	A1c	no screening
Everyone	\$194,471	\$194,923	\$199,106	\$204,795	\$208,168	\$242,737
BMI <25	\$22,673	\$21,867	\$22,748	\$22,350	\$25,059	\$25,400
BMI 25-35	\$110,802	\$110,301	\$112,863	\$115,700	\$121,270	\$132,273
BMI >35	\$60,996	\$62,755	\$63,494	\$66,744	\$61,839	\$85,064
AGE <40	\$22,539	\$21,620	\$20,879	\$19,636	\$23,459	\$24,430
AGE 40-55	\$91,289	\$91,280	\$94,315	\$99,249	\$97,268	\$110,460
AGE > 55	\$80,643	\$82,023	\$83,912	\$85,909	\$87,441	\$107,847
SBP < 130	\$121,849	\$120,788	\$122,609	\$124,122	\$129,378	\$140,670
SBP ≥ 130	\$72,622	\$74,135	\$76,497	\$80,673	\$78,790	\$102,068
TG < 150	\$158,697	\$159,714	\$160,725	\$164,766	\$170,388	\$195,312
TG ≥ 150	\$35,773	\$35,209	\$38,381	\$40,029	\$37,780	\$47,426
HDL low risk	\$82,535	\$82,362	\$82,891	\$86,276	\$88,457	\$99,385
HDL high risk	\$111,936	\$112,561	\$116,214	\$118,518	\$119,710	\$143,352
Waist low risk	\$68,725	\$66,047	\$70,961	\$69,449	\$75,591	\$80,546
Waist high risk	\$125,746	\$128,876	\$128,145	\$135,346	\$132,577	\$162,191
Fam hx Negative	\$88,661	\$89,233	\$90,965	\$92,842	\$96,625	\$105,102
Fam hx Positive	\$105,810	\$105,690	\$108,141	\$111,953	\$111,542	\$137,636*

higher-risk groups are high-lighted in gray; least expensive cost for each risk group is in bold

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Supplementary Table 5. Health system costs for screening and treatment of diabetes by risk group with VA costs*

	GCT-plasma	GCT-cap	RPG	RCG	A1c	no screening
Everyone	\$54,697	\$54,157	\$56,072	\$60,760	\$64,618	\$95,710
BMI <25	\$7,343	\$5,780	\$6,581	\$6,251	\$8,985	\$9,305
BMI 25-35	\$26,716	\$25,296	\$26,248	\$29,257	\$34,789	\$43,867
BMI >35	\$20,638	\$23,081	\$23,242	\$25,252	\$20,844	\$42,538
AGE <40	\$7,357	\$6,450	\$5,786	\$4,587	\$8,434	\$9,305
AGE 40-55	\$22,856	\$22,691	\$25,329	\$29,395	\$27,260	\$38,550
AGE > 55	\$24,484	\$25,016	\$24,956	\$26,779	\$28,924	\$47,855
SBP < 130	\$32,649	\$29,869	\$30,080	\$32,001	\$37,434	\$46,526
SBP ≥ 130	\$22,048	\$24,288	\$25,991	\$28,760	\$27,184	\$49,184
TG < 150	\$43,631	\$42,842	\$42,190	\$46,374	\$52,367	\$74,441
TG ≥ 150	\$11,066	\$11,315	\$13,881	\$14,386	\$12,251	\$21,269
HDL low risk	\$22,032	\$22,568	\$21,784	\$25,786	\$27,405	\$37,220
HDL high risk	\$32,665	\$31,589	\$34,287	\$34,975	\$37,213	\$58,489
Waist low risk	\$20,286	\$15,916	\$20,143	\$18,498	\$24,964	\$29,245
Waist high risk	\$34,411	\$38,241	\$35,929	\$42,262	\$39,654	\$66,465
Fam hx Negative	\$21,536	\$21,944	\$23,856	\$25,326	\$28,716	\$35,891
Fam hx Positive	\$33,161	\$32,213	\$32,215	\$35,435	\$35,903	\$59,819

*higher-risk groups are high-lighted in gray; least expensive cost for each risk group is in bold

Supplementary Table 6. Health system costs for screening and treatment of diabetes assuming lower (5%) false negative costs for highest risk groups.

Health system costs						
	GCT-plasma	GCT-cap	RPG	RCG	A1c	
Everyone	\$60,232	\$59,070	\$57,203	\$54,936	\$70,168	
BMI > 35	\$22,109	\$22,047	\$21,890	\$21,372	\$24,394	
Age > 55	\$26,507	\$26,213	\$25,261	\$24,396	\$29,404	
SBP ≥ 130	\$25,854	\$25,617	\$25,238	\$24,720	\$28,555	
TG ≥ 150	\$11,831	\$11,472	\$11,645	\$11,143	\$12,663	
HDL high-risk	\$34,174	\$33,296	\$32,868	\$31,472	\$39,150	
Waist high-risk	\$38,280	\$37,969	\$36,791	\$35,719	\$42,972	
Fam hx Positive	\$34,819	\$34,192	\$32,930	\$31,938	\$39,212	

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Supplementary Table 7. Health system costs for screening and treatment of dysglycemia¹¹⁰ with lifestyle changes by risk group*

	GCT-plasma	GCT-cap	RPG	RCG	A1c	no screening
Everyone	\$216,146	\$216,906	\$217,790	\$220,022	\$230,378	\$242,737
BMI <25	\$25,851	\$25,521	\$25,483	\$24,773	\$28,332	\$25,400
BMI 25-35	\$123,454	\$122,696	\$123,437	\$124,011	\$133,417	\$132,273
BMI >35	\$66,841	\$68,689	\$68,871	\$71,237	\$68,628	\$85,064
AGE <40	\$25,159	\$24,760	\$23,645	\$22,204	\$26,962	\$24,430
AGE 40-55	\$101,537	\$101,522	\$103,236	\$106,230	\$107,706	\$110,460
AGE > 55	\$89,449	\$90,625	\$90,910	\$91,588	\$95,709	\$107,847
SBP < 130	\$135,784	\$135,064	\$134,865	\$134,382	\$144,319	\$140,670
SBP ≥ 130	\$80,361	\$81,842	\$82,925	\$85,639	\$86,059	\$102,068
TG < 150	\$176,630	\$178,076	\$176,384	\$177,715	\$189,449	\$195,312
TG ≥ 150	\$39,515	\$38,830	\$41,407	\$42,307	\$40,929	\$47,426
HDL low risk	\$92,691	\$92,847	\$91,802	\$93,583	\$98,698	\$99,385
HDL high risk	\$123,455	\$124,060	\$125,988	\$126,438	\$131,680	\$143,352
Waist low risk	\$77,422	\$75,197	\$77,937	\$75,856	\$84,796	\$80,546
Waist high risk	\$138,724	\$141,710	\$139,854	\$144,166	\$145,582	\$162,191
Fam hx Negative	\$99,122	\$99,792	\$100,127	\$100,109	\$107,208	\$105,102
Fam hx Positive	\$117,024	\$117,114	\$117,664	\$119,913	\$123,170	\$137,636

*higher-risk groups are high-lighted in gray; least expensive cost for each risk group is in bold

Supplementary Table 8. Health system costs for screening and treatment of diabetes with lifestyle changes by risk group*

	GCT-plasma	GCT-cap	RPG	RCG	A1c	no screening
Everyone	\$66,908	\$68,403	\$67,865	\$70,911	\$81,493	\$95,710
BMI <25	\$9,294	\$8,505	\$8,585	\$8,173	\$11,838	\$9,305
BMI 25-35	\$33,497	\$33,186	\$32,725	\$34,709	\$43,918	\$43,867
BMI >35	\$24,117	\$26,712	\$26,555	\$28,029	\$25,738	\$42,538
AGE <40	\$9,170	\$8,839	\$7,855	\$6,607	\$11,622	\$9,305
AGE 40-55	\$28,558	\$29,348	\$30,746	\$33,913	\$35,136	\$38,550
AGE > 55	\$29,181	\$30,215	\$29,263	\$30,391	\$34,735	\$47,855
SBP < 130	\$40,372	\$39,447	\$37,960	\$38,867	\$48,935	\$46,526
SBP ≥ 130	\$26,536	\$28,956	\$29,905	\$32,044	\$32,558	\$49,184
TG < 150	\$53,741	\$54,930	\$52,227	\$55,111	\$66,830	\$74,441
TG ≥ 150	\$13,167	\$13,472	\$15,638	\$15,800	\$14,663	\$21,269
HDL low risk	\$28,064	\$29,772	\$27,670	\$30,784	\$35,680	\$37,220
HDL high risk	\$38,844	\$38,630	\$40,195	\$40,127	\$45,813	\$58,489
Waist low risk	\$25,283	\$22,440	\$25,072	\$23,213	\$32,520	\$29,245
Waist high risk	\$41,625	\$45,963	\$42,793	\$47,698	\$48,974	\$66,465
Fam hx Negative	\$27,418	\$28,876	\$29,600	\$30,318	\$36,946	\$35,891
Fam hx Positive	\$39,490	\$39,526	\$38,265	\$40,593	\$44,547	\$59,819

*higher-risk groups are high-lighted in gray; least expensive cost for each risk group is in bold

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Supplementary Table 9. Societal costs for screening and treatment of dysglycemia₁₁₀ of 1573 participants by risk group and % cost difference for screening and treatment compared to no screening*

	n	GCT-pl	GCT-cap	RPG	RCG	A1c	Mean (SEM)	No screening
Everyone	1573	\$325,735	\$317,906	\$319,483	\$315,107	\$327,261		\$316,786
% cost difference		2.82	0.35	0.85	-0.53	3.31	1.36 (0.73)	
BMI < 25 kg/m²	349	\$39,212	\$37,952	\$37,418	\$35,840	\$38,808		\$32,642
% cost difference		20.13	16.27	14.63	9.80	18.89	15.94 (1.81)	
BMI 25-35	888	\$186,676	\$178,817	\$180,106	\$175,343	\$187,860		\$169,482
% cost difference		10.15	5.51	6.27	3.46	10.84	7.24 (1.41)	
BMI > 35 kg/m²	336	\$99,847	\$101,138	\$101,959	\$103,923	\$100,593		\$114,662
% cost difference		-12.92	-11.79	-11.08	-9.37	-12.27	-11.49 (0.61)	
Age < 40 years	377	\$36,334	\$35,174	\$34,794	\$32,386	\$36,638		\$31,536
% cost difference		15.21	11.54	10.33	2.70	16.18	11.19 (2.39)	
Age 40-55 years	744	\$152,904	\$147,879	\$151,918	\$152,041	\$152,460		\$142,536
% cost difference		7.27	3.75	6.58	6.67	6.96	6.25 (0.64)	
Age > 55 years	452	\$136,498	\$134,854	\$132,771	\$130,679	\$138,162		\$142,715
% cost difference		-4.36	-5.51	-6.97	-8.43	-3.19	-5.69 (0.93)	
SBP <130 mmHg	1171	\$204,053	\$196,200	\$197,720	\$192,754	\$204,095		\$180,041
% cost difference		13.34	8.98	9.82	7.06	13.36	10.51 (1.24)	
SBP ≥ 130 mmHg	402	\$121,683	\$121,706	\$121,763	\$122,353	\$123,165		\$136,745
% cost difference		-11.02	-11.00	-10.96	-10.53	-9.93	-10.68 (0.21)	
TG <150 mg/dL	1377	\$265,986	\$260,969	\$258,605	\$254,709	\$270,144		\$253,849
% cost difference		4.78	2.81	1.87	0.34	6.42	3.24 (1.07)	
TG ≥ 150 mg/dL	196	\$59,749	\$56,937	\$60,878	\$60,398	\$57,117		\$62,938
% cost difference		-5.07	-9.53	-3.27	-4.04	-9.25	-6.23 (1.32)	
HDL low-risk	833	\$140,664	\$136,541	\$135,779	\$135,255	\$138,356		\$128,767
% cost difference		9.24	6.04	5.45	5.04	7.45	6.64 (0.77)	
HDL high-risk	740	\$185,072	\$181,365	\$183,703	\$179,851	\$188,905		\$188,019
% cost difference		-1.57	-3.54	-2.30	-4.34	0.47	-2.25 (0.84)	
Waist low-risk	808	\$117,250	\$109,456	\$112,739	\$109,021	\$118,934		\$103,762
% cost difference		13.00	5.49	8.65	5.07	14.62	9.37 (1.93)	
Waist high-risk	765	\$208,485	\$208,450	\$206,744	\$206,085	\$208,327		\$213,024
% cost difference		-2.13	-2.15	-2.95	-3.26	-2.20	-2.54 (0.24)	
Negative fam hx	849	\$149,740	\$145,642	\$147,278	\$142,579	\$150,622		\$134,924
% cost difference		10.98	7.94	9.16	5.67	11.64	9.08 (1.07)	
Positive fam hx	724	\$175,995	\$172,264	\$172,205	\$172,528	\$176,638		\$181,863
% cost difference		-3.23	-5.28	-5.31	-5.13	-2.87	-4.36 (0.54)	

*higher-risk groups are high-lighted in gray; least expensive cost for each risk group is in bold

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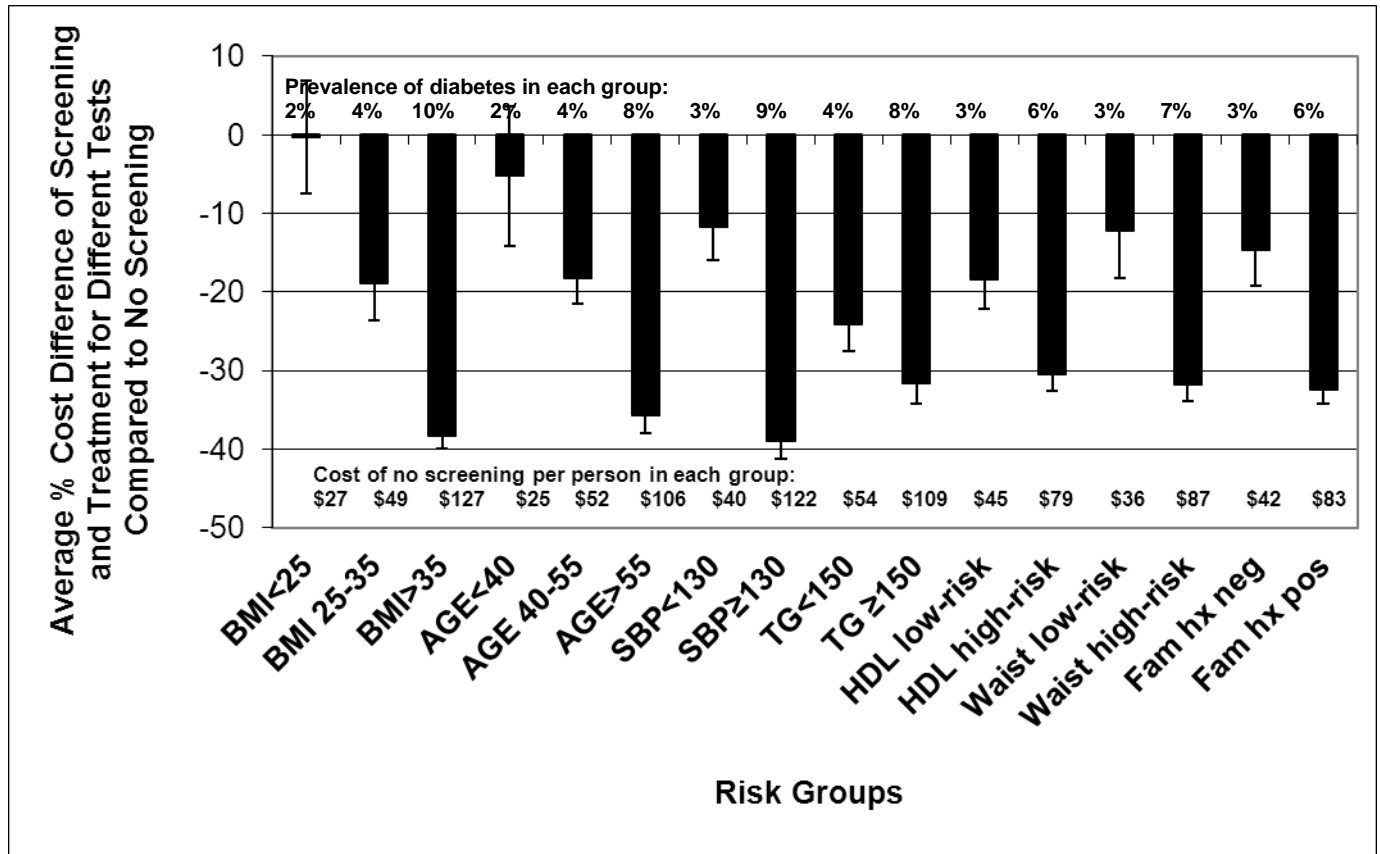
Supplementary Table 10. Societal costs for screening and treatment of diabetes of 1573 participants by risk group and % cost difference for screening and treatment compared to no screening*

	n	GCT-pl	GCT-cap	RPG	RCG	A1c	Mean (SEM)	No screening
Everyone	1573	\$109,946	\$110,476	\$113,007	\$117,146	\$127,257		\$146,426
% cost difference		-24.91	-24.55	-22.82	-20.00	-13.09	-21.08 (2.18)	
BMI < 25 kg/m²	349	\$15,126	\$13,995	\$14,570	\$14,223	\$17,618		\$14,236
% cost difference		6.26	-1.69	2.35	-0.09	23.76	6.12 (4.61)	
BMI 25-35	888	\$55,833	\$54,198	\$55,324	\$57,917	\$68,643		\$67,112
% cost difference		-16.81	-19.24	-17.57	-13.70	2.28	-13.01 (3.93)	
BMI > 35 kg/m²	336	\$38,987	\$42,284	\$43,114	\$45,005	\$40,996		\$65,078
% cost difference		-40.09	-35.03	-33.75	-30.84	-37.00	-35.34 (1.55)	
Age < 40 years	377	\$14,486	\$13,656	\$13,347	\$11,743	\$17,398		\$14,236
% cost difference		1.76	-4.07	-6.24	-17.51	22.22	-0.77 (6.54)	
Age 40-55 years	744	\$47,457	\$47,832	\$51,557	\$56,090	\$55,072		\$58,977
% cost difference		-19.53	-18.90	-12.58	-4.90	-6.62	-12.51 (3.02)	
Age > 55 years	452	\$48,003	\$48,989	\$48,103	\$49,314	\$54,787		\$73,213
% cost difference		-34.43	-33.09	-34.30	-32.64	-25.17	-31.93 (1.72)	
SBP <130 mmHg	1171	\$66,333	\$64,029	\$64,381	\$65,628	\$76,047		\$71,180
% cost difference		-6.81	-10.05	-9.55	-7.80	6.84	-5.47 (3.13)	
SBP ≥ 130 mmHg	402	\$43,613	\$46,447	\$48,627	\$51,518	\$51,210		\$75,247
% cost difference		-42.04	-38.27	-35.38	-31.54	-31.94	-35.83 (1.98)	
TG <150 mg/dL	1377	\$88,232	\$88,848	\$87,624	\$91,838	\$104,376		\$113,887
% cost difference		-22.53	-21.99	-23.06	-19.36	-8.35	-19.06 (2.75)	
TG ≥ 150 mg/dL	196	\$21,714	\$21,628	\$25,383	\$25,308	\$22,882		\$32,539
% cost difference		-33.27	-33.53	-21.99	-22.22	-29.68	-28.14 (2.56)	
HDL low-risk	833	\$46,713	\$48,641	\$47,011	\$51,596	\$55,315		\$56,944
% cost difference		-17.97	-14.58	-17.44	-9.39	-2.86	-12.45 (2.84)	
HDL high-risk	740	\$63,232	\$61,835	\$65,997	\$65,550	\$71,943		\$89,483
% cost difference		-29.34	-30.90	-26.25	-26.75	-19.60	-26.57 (1.94)	
Waist low-risk	808	\$41,280	\$36,560	\$41,975	\$39,665	\$50,044		\$44,741
% cost difference		-7.74	-18.29	-6.18	-11.35	11.85	-6.34 (5.00)	
Waist high-risk	765	\$68,666	\$73,916	\$71,033	\$77,481	\$77,214		\$101,685
% cost difference		-32.47	-27.31	-30.14	-23.80	-24.07	-27.56 (1.69)	
Negative fam hx	849	\$45,410	\$46,664	\$49,902	\$50,875	\$57,135		\$54,910
% cost difference		-17.30	-15.02	-9.12	-7.35	4.05	-8.95 (3.73)	
Positive fam hx	724	\$64,536	\$63,812	\$63,106	\$66,271	\$70,122		\$91,517
% cost difference		-29.48	-30.27	-31.04	-27.59	-23.38	-28.35 (1.37)	

* higher-risk groups are high-lighted in gray; least expensive cost for each risk group is in bold

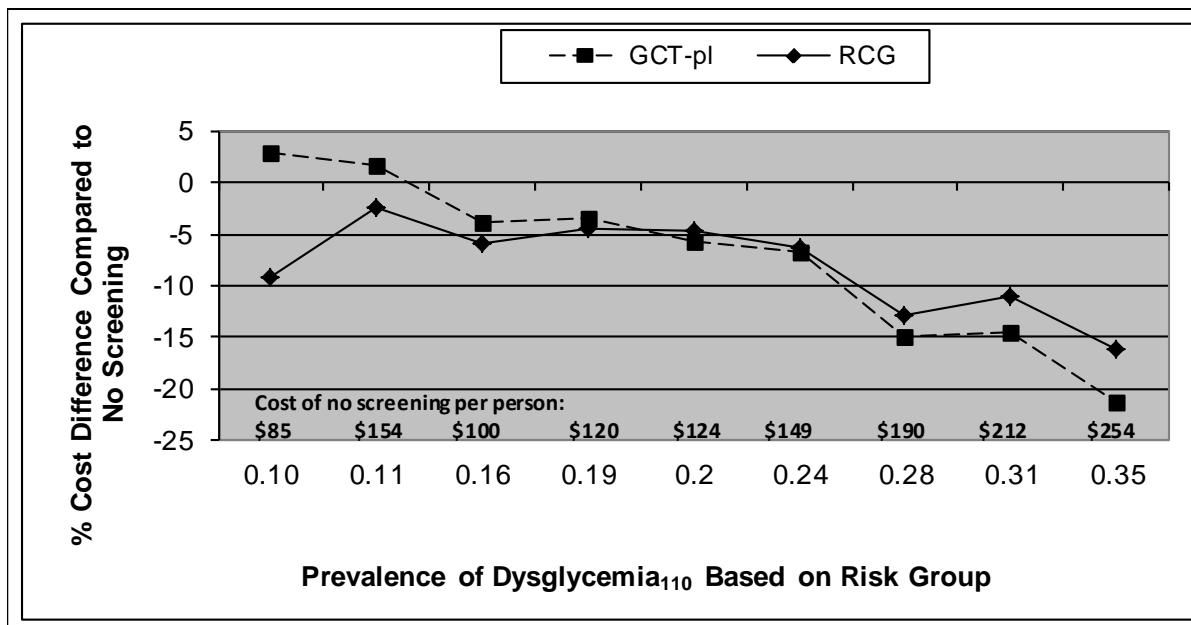
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Supplementary Figure 1. The average % cost differences between health system costs for screening and treatment of diabetes by risk group compared to no screening. Shown are the average % differences in cost for screening with the five different screens and management of diabetes compared to no screening for different risk groups. 95% confidence intervals (CI) are depicted by the upper and/or lower lines. For each risk group, the prevalence of diabetes is shown along the top of the chart, and the costs of no screening per person along the bottom of the chart. The prevalence of diabetes and the cost of no screening per person increased with higher-risk characteristics among the risk groups.



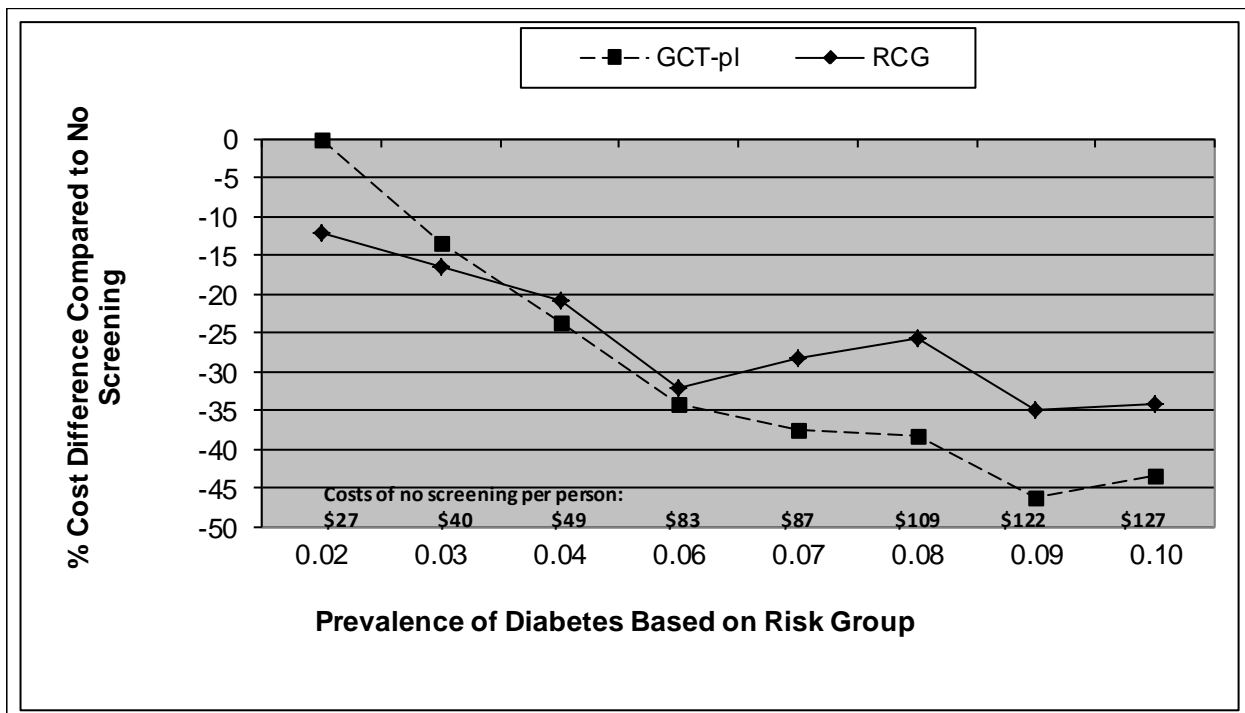
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Supplementary Figure 2.(upper panel) The differences between health system costs for screening and treatment of dysglycemia₁₁₀ with GCTpl and RCG compared to no screening according to prevalence of dysglycemia₁₁₀ in different risk groups. The cost differences for screening for dysglycemia₁₁₀ with GCTpl compared to no screening are depicted with the dashed line and square icons. The cost differences for screening for dysglycemia₁₁₀ with RCG compared to no screening are depicted with the solid line and diamond icons. These cost differences are plotted according to the different prevalence of disease in each risk group. Use of GCTpl would provide more cost-savings for characteristics with a prevalence of dysglycemia₁₁₀ \geq 20%, while RCG would provide more cost-savings for characteristics with a prevalence of dysglycemia₁₁₀ $<$ 20%. The costs of no screening per person for each prevalence group are shown along the bottom of the figure, and generally increased as the prevalence of disease increased.



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Supplementary Figure 3. (lower panel) The differences between health system costs for screening and treatment of diabetes with GCTpl and RCG compared to no screening according to prevalence of diabetes in different risk group. As in Figure A2a. The cost differences for screening for diabetes with GCTpl compared to no screening are depicted with the dashed line and square icons. The cost differences for screening for diabetes with RCG compared to no screening are depicted with the solid line and diamond icons. These cost differences are plotted by the different prevalence of disease in each risk group. Use of GCTpl would provide more cost-savings for characteristics with a prevalence of diabetes of $\geq 4\%$, while RCG would provide more cost-savings for characteristics with a prevalence of diabetes $< 4\%$.



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Supplementary Figure 4. The impact of different population conditions on projected cost savings with one vs. another screening test, here illustrated for diabetes screening with GCTpl compared to RCG, under conditions of different prevalences of disease and different costs of undetected disease.

