Scenes

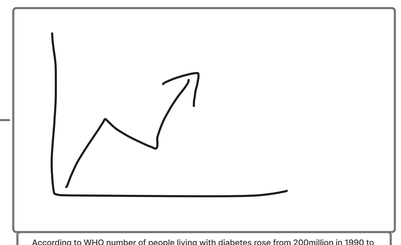
This is Theodore, he is a hard worker, a father, and a proud kiwi. He's also one of 350,000 new zealanders living with type 2 diabetes, a number projected to increase by almost 90% in the next two decades

This is Theodre, he is a working class citizen in New Zealand

Describe scale of problem
Annual cost $2.1 Billion, 63% projected increase to 3.5 Billion in 20 years.

Talk about main cost coming from treating complications. (Get % of total diabetes cost spent on complications)

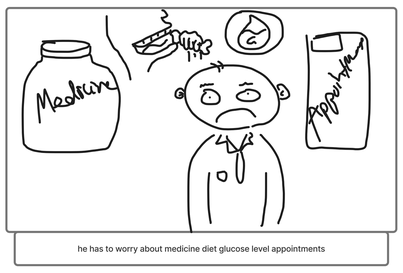
Hook with how much money can be saved from each type of prevention



According to WHO number of people living with diabetes rose from 200million in 1990 to 830million 2022 and is still on the risehttps://www.who.int/news-room/fact-sheets/detail/di...

Diabetes cases are also rising in NZ from 36.6 per 1000 in 2013 to 47 per 1000 in 2024 according to https://www.tewhatuora.govt.nz/for-health-professionals/data-and-statistics/...

For Theodore, managing his health has become almost a second unpaid job. On top of the mortgage, the bills, and the chaos of family life, there's a constant checklist running in the back of his mind: 'Did i take my meds?' , 'Is my blood sugar okay?', 'when was my last checkup?'

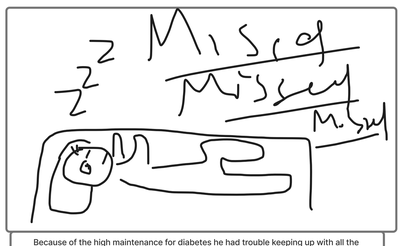


he has to worry about medicine diet glucose level appointments

When life gets busy, its easy for things to slip, a missed appointment here, a forgotten prescription there.

For diabetes, these small slips are how life altering complications can arise.

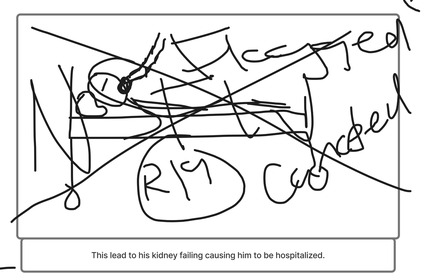
~~When life gets busy, especially with no personalized diabetes management system available~~



Because of the high maintenance for diabetes he had trouble keeping up with all the medications diet tracking glucose tracking and doctos appointments

Shock

These slip ups can



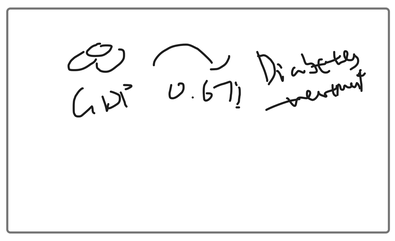
This lead to his kidney failing causing him to be hospitalized.

Slipu

These complications are where the real cost of diabetes comes from. And with effective intervention, they are largely avoidable.

Kidney failure is one of those complications. According to Kidney Health New Zealand, treating a single patient with dialysis costs $115,000 a year. This, along with other complications, adds up to a national bill of $2.1 Billion annually. Draining 0.67% of our GDP.

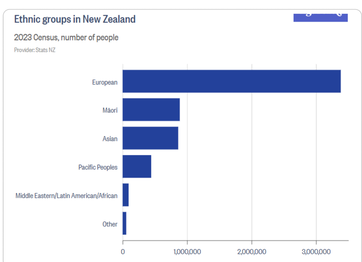
Suffering any of these complications would be a catastrophic outcome for Theodore, and a financially unsustainable one for our country. All from a crisis that was preventable.



The cost of managing diabetes is $2.1 billion annually, or 0.67% of GDP. By 2040, this will rise to over $3.5B. Chronic long-term conditions—and diabetes in particular—is a ticking time bomb for the health system. Without effective intervention, largely avoidable costs of treating those with diabetes and diabetes-related comorbidities will increasingly crowd out other health priorities.

https://static1.squarespace.com/static/5a1b16b6957daf4c4f3b326/t/6319337a6f7b7e7927099015/1662595966235/0637-DiabetesNZ+2022+Policy+Stat...

Publically funded 1billion rest is from pocket or



https://www.sciencedirect.com/science/article/pii/S0741521416300039

Count of people aged between 15-74 on the Virtual Diabetes Register 2024, by district and ethnicity

District	Māori	Pacific people	Indian	Europeans/ Other	VDR total (age 15-74)	VDR total (all ages)	Percentage of people in the 15-74 age group
Auckland	2,626	7,582	5,163	11,768	29,149	36,343	80.2%
Bay of Plenty	3,939	411	678	6,045	11,073	15,120	73.2%
Canterbury	2,614	1,505	1,225	18,709	24,053	31,795	75.7%
Capital and Coast	1,912	2,603	1,360	7,729	13,604	17,988	78.3%
Counties Manukau	6,916	20,511	8,223	16,289	51,939	61,886	83.9%
Hawkes Bay	3,137	632	304	4,733	8,846	11,561	76.5%
Hutt	1,615	1,397	718	4,601	8,331	10,517	79.2%
Lakes	2,834	306	224	2,790	6,154	7,797	78.9%
MidCentral	2,119	568	310	6,186	9,183	12,092	75.9%
Nelson Marlborough	764	208	122	4,395	5,489	7,812	70.3%
Northland	5,281	329	218	4,840	10,668	13,819	77.2%
South Canterbury	243	104	64	2,293	2,704	3,790	71.3%
Southern	1,569	739	409	11,559	14,267	19,488	73.2%
Tairawhiti	1,820	139	42	898	2,899	3,733	77.7%
Taranaki	1,524	143	198	4,559	6,424	8,815	72.9%
Waikato	7,314	1,581	1,843	13,968	24,706	31,555	78.3%
Wairarapa	485	89	65	1,523	2,162	3,052	70.8%
Waitemata	3,379	5,631	3,977	21,479	34,466	43,941	78.4%
West Coast	181	33	27	1,248	1,489	1,950	76.4%
Whanganui	1,286	161	86	2,199	3,732	4,904	76.1%
Unknown/Unassigned	20	12	4	37	73	91	80.2%
Total	**51,898**	**44,084**	**25,260**	**149,859**	**271,411**	**347,429**	**78.1%**

These types of problems do not affect everyone equally. Based on the 2023 census, maori and pacific people make up just over a quarter of our population. The national diabetes register shows that this group makes up over one third of working age diabetes cases in new zealand. Extremely disproportionate to the size of this group.

Tie into targeted users?

Transforming lives and saving money
In 2020/2021, 4,440 New Zealanders used some form of dialysis.
nzier.org.nz

These crises can be prevented through good management. Staying on top of doctor's appointments, medications, lifestyle choices and constant monitoring of lab results.

If Theodore didn't miss his regular eye checkups, his risk of severe eye complications would have dropped 90%. With support for his diet and lifestyle, his overall complication chances would have fallen by 31% and tracking his BP and BMI would lead to a 32% reduction in heart complications.

One of the biggest causes of these crises is a high non attendance rate for regular checkups.

Evidence shows that proactive warnings are effective at solving this. A study published in the journal BMC Ophthalmology, found that a simple patient alert for regular health issues resulted in a 38% reduction in non attendance.

This proves that a simple warning is one of the easiest and effective ways to deal with these issues.

https://www.researchgate.net/publication/5338427_Effectiveness_of_Mobile-Phone_Short_Message_S...

https://pmc.ncbi.nlm.nih.gov/articles/PMC3188816/

https://diabetesjournals.org/care/article/25/suppl_1/s28/23531/Implications-of-the-United-Kingdom-Prospective

https://en.wikipedia.org/wiki/Complications_of_diabetes

https://en.wikipedia.org/wiki/Diabetic_retinopathy

~~The issue lies in a high non attendance rate for regular checkups and measurements, leading to preventable, life threatening and expensive complications. One potential solution to this issue can be addressed through a simple SMS warning system.~~

~~** reword~~
~~Studies show a simple SMS alert resulted in a 38% reduction in non attendance. The study concluded that these alerts are not only effective but a cost effective alternative, requiring less labor than other alert methods.~~

~~Because of the high maintenance required to manage diabetes, Theodore had trouble keeping up. The constant demands of tracking medications, diet, and blood glucose, on top of scheduling regular doctors appointments became an overwhelming burden.~~

~~This isn't a failure on Theodore's behalf, its a failure of our current system. The complexity of managing an illness like this has led to slips in his care.~~

Draft

Meet GlucoCare, our system goes further than just a simple reminder, it integrates directly with New Zealand's national EHR to provide a dedicated and personalized user experience.

Showcase solution

Provides personalzed data driven care plan.

Unlike traditional diabetes trackers that solely rely on user input GlucoCare enables better monitoring and the early detection of complications before they become a crisis. Our system analyzes months of official health records, and connects the dots that humans can miss. It finds potential danger points and provides a specific warning well beforehand.

OUR APP FIXES THIS BETTER THAN JUST A WARNING, LINKED INTO EHR

Patients can see their lab results.

It also provides personalized education. It provides users relevant information based on their EHR data, delivering the right knowledge at the right time to support their self management.

OTHER FEATURES

Daily management and tracking made easy with trackers for key measurements.

EHR predictive preemptive warnings

GlucoCare

Personalized Tiaki Huka

Unlike traditional App
EHR based application can have personalized and data-driven care plan

Impoved communication and patient engagement

Better monitoring and early detection of complications

Meet our solution, GlucoCare! A solution that goes much further than most publicly available health management apps.

[Opening app screen (arrow pointing at EDR?)]
GlucoCare, is an app that can be downloaded to any smart phone or device and connects directly with New Zealand's national Electronic Health Records to provide a more personalized and empowering user experience.

[Insulin and Blood Sugar Tracker]
Users can input, view and monitor their own biometric information such as blood sugar levels. While also having direct access to their prescribed care plans including monitoring of medications, appointments and lab reports.

[Warning Prediction page????]
GlucoCare enables better monitoring and the early detection of complications before they become a crisis. Our system analyzes months of official health records to find potentially dangerous trends and provides a specific warning well beforehand.

[Education page]
Helpful resources on nutrition, health, exercise and wellbeing are also made directly available to the user through the app to provide a more holistic experience.

Connect Solution to Gov Dataset

[Flow Chart]
Here is the flow of the system we propose. We get data from the national Electronic Health Record to show a patients prescribed care plan, as well as data provided directly by Te Whatu Ora and other public health organization's for targeted education plans. Users can also input their own data to further personalize the care plan and other resources they receive.

[Show dataset table]
By integrating regional diabetes distribution datasets like those provided by Te Whatu Ora, we can focus our efforts and resources on the areas where we can prevent the most complications and generate the greatest return on our healthcare investments.

Areas such as Manukau make up one sixth of the total number of diabetes cases on the register. If our system prevents a complication for just a tiny fraction of these regions, the potential savings are in the tens of millions of dollars, Annually, In just one district.

Transforming lives and saving money
In 2020/2021, 4,440 New Zealanders used some form of dialysis.
nzier.org.nz

In 2020/2021, 4,440 New Zealanders used some form of dialysis. If recent trends continue, the number of people using dialysis will increase to around 5,700 by 2031/32 – an increase of over 30 percent in ten years. Dialysis is a costly intervention at approximately $115,712 per year. The equity impact of dialysis as the default treatment for end-stage kidney disease (ESKD) is particularly concerning: Māori and Pacific New Zealanders represent over 60 percent of dialysis users.

Dialysis = $115,000 pa

Connect Solution to savings

[Show money graphics]
This combination of early detection, prevention and education creates undeniable value. Helping a patient to avoid a single foot lesion treatment saves over $30,000. Preventing a potential amputation saves $42,000.

DRAFT

By prompting for early and consistent check ups, providing (what else we provide), GlucoCare helps Theodore avoid a single foot lesion treatment, saving $30,000. It prevents a potential amputation, saving $42,000. Ultimately, it lowers the risk of kidney failure, saving the health system $115,000 every year.

In high need areas like Manukau, there are over 50,000 people on the diabetes register. If our system prevents a crisis for just a tiny fraction of these regions, the potential savings are in the tens of millions of dollars. Annually, In just one district.

Ending Statement

https://www.sciencedirect.com/science/article/pii/S0741521416300039

We estimate the minimum median cost incurred by our department of vascular surgery in treating a diabetic foot wound to be NZD 30,000 and identify wound treatment modality to be a significant determinant of cost. While readily acknowledging our study's inherent limitations, we believe it provides a real-world representation of the minimum total cost involved in treating diabetic foot lesions in a tertiary center. Given the increasing rate of diabetes, we believe this high cost reinforces the need for the establishment of a multidisciplinary diabetic foot team in our region.

Foot Lesion = $30,000 per treatment minimum.

Description	No.	%	Median cost per wound episode, $	Median length of WE	Healed	%	Died	%	Failed	%
All	265	100.00	29,537	176	185	69.81	51	19.25	2	0.75
Ethnicity										
European/others	179	67.55	28,753	182	127	70.95	35	19.55	2	1.12
Maori	38	14.34	30,131	140	23	60.53	10	26.32	0	0.00
Pacific islanders	33	12.45	36,186	175	24	72.73	3	9.09	0	0.00
Indians	15	5.66	39,852	293	11	73.33	3	20.00	0	0.00
Gender										
Male	174	65.66	28,889	183	124	71.26	31	17.82	1	0.57
Female	90	33.96	33,369	168	61	67.78	20	22.22	1	1.11
Risk factors										
Smokers (including ex)	128	48.30	29,661	185	97	75.78	19	14.84	0	0.00
Ischemic heart disease	124	46.79	30,796	178	86	69.35	28	22.58	2	1.61
Hypercholesterolemia	124	46.79	27,451	171	88	70.97	22	17.74	2	1.61
Hypertension	225	84.91	29,360	179	159	70.67	43	19.11	2	0.89
Chronic kidney disease	106	40.00	30,292	157	68	64.15	29	27.36	2	1.89
Treatment										
Surgical only	99	37.36	22,159	140	69	69.70	18	18.18	0	0.00
Major amputation	71	26.79	42,774	116	38	53.52	23	32.39	0	0.00
Endovascular only	72	27.17	18,463	224	54	75.00	10	13.89	2	2.78
Combination	94	35.47	52,110	180	62	65.96	23	24.47	0	0.00
Outcome										
Healed	185	69.81	28,753	216	185	100.00	0	0.00	0	0.00
Died	51	19.25	35,639	83	0	0.00	51	100.00	0	0.00
Failed	2	0.75	29,655	299	0	0.00	0	0.00	2	100.
Lost	27	10.19	33,336	115	0	0.00	0	0.00	0	0.00

Amputation = $42,000 per treatment.

And preventing the slip into kidney failure therefore avoiding dialysis saves our health system $115,000 every year.