

Metabolic health, the engine for life



Better health, less meds

Dr Campbell Murdoch

GP with a special interest in metabolic health

Session Plan

- Metabolic health: the problem and the benefits
- The science of metabolic health
- How to measure it
- How to ruin it
- How to fix it
- Deprescribing diabetes medication
- GLP1s

*“I’m struggling
in the morning
with my back
pain, I need a
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- 52 years old
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- OA of left knee diagnosed 5 years ago
- Back pain (paracetamol and ibuprofen)
- Want to lose weight but back and knee are too painful
- Tired all the time

We have a
global health
crisis.





New nutritional approaches to prevent and treat diseases like type 2 diabetes are needed, because the status quo has so far failed to change our metabolic health trajectory.




Julien Descombes
Chief Underwriting Officer L&H Re






Dr John Schoonbee
Swiss Re Global Chief Medical Officer

Dr Debbie Smith
Swiss Re Chief Medical Officer UK,
Europe, Middle East, Africa







Reinsurance > Insights

Metabolic Health: Tackling wellbeing from the inside out

By **John Schoonbee**, Global Chief Medical Officer & **Christopher Dauser**, Former Life & Health Research Associate & **Benjamin T. Bikman**, Professor, Department of Cell Biology, Brigham Young University

03 Oct 2023



Poor metabolic health is linked to many health conditions and most NCDs, including:

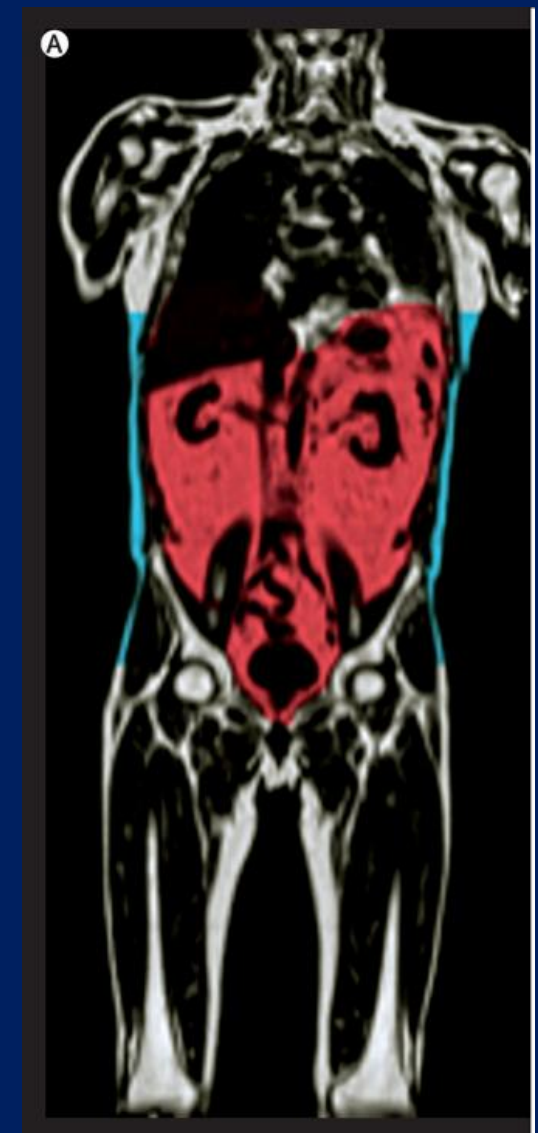
- Prediabetes and type 2 diabetes
- Hypertension
- Fatty liver
- Heart disease
- Stroke
- Dementia
- Many musculoskeletal conditions
- Parkinson's disease
- Chronic kidney disease
- Skin conditions (e.g. psoriasis)
- Some cancers
- Sleep apnoea
- Polycystic ovary syndrome
- Most mental health disorders
- And many more...

...diseases that shouldn't exist.



Might I have a metabolic health problem?

- Tired all the time
- Energy dips through the day
- Fed up and low mood
- General aches and pains
- Struggling to lose weight
- Waist circumference more than half height
- Raised blood pressure
- Skin tags and acanthosis nigricans
- Frequent infections
- Any of the non-communicable diseases



Neeland IJ, Ross R, Després JP, et al. Visceral and ectopic fat, atherosclerosis, and cardiometabolic disease: a position statement. *Lancet Diabetes Endocrinol.* 2019;7(9):715-725

Skin tags



NHS.uk

Acanthosis nigricans



DermNet NZ

What is possible?

“My mood and confidence have gone through the roof. My **weight has remained stable** for over a year, my **skin** has improved and is **looking so much healthier**. It’s such an easy way of life and I will never go back to my old ways.”

“I now have a **very noticeable waist** and it feels great.”

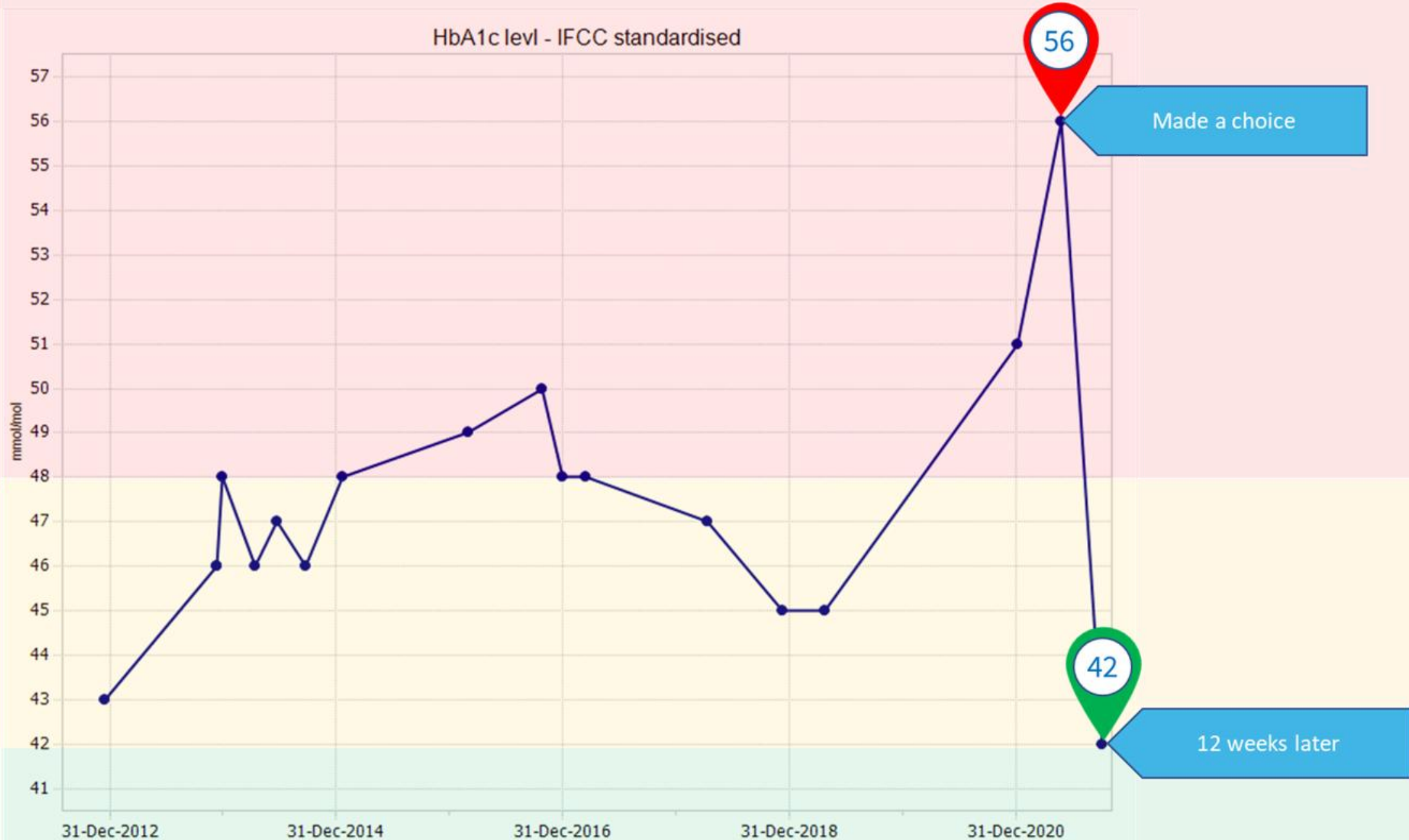
“My god it has made such a difference because I **can function now**. To go from feeling so sluggish to how I feel now, **the difference is amazing**.”



Type 2
Diabetes

Prediabetes

Normal



Teams message from the practice health coach Megan on 9 September

“Amazing results! Since mid May this year she has lost 27kg.... feeling better! She says it’s a lifestyle change, not a diet!”

What is metabolic health?

- Able to store, release and use fuel whilst maintaining stability and thriving. It's the engine for life.
- All measures of metabolic health are in the normal healthy range.
- The foundation of physical and mental health.





Metabolic health...

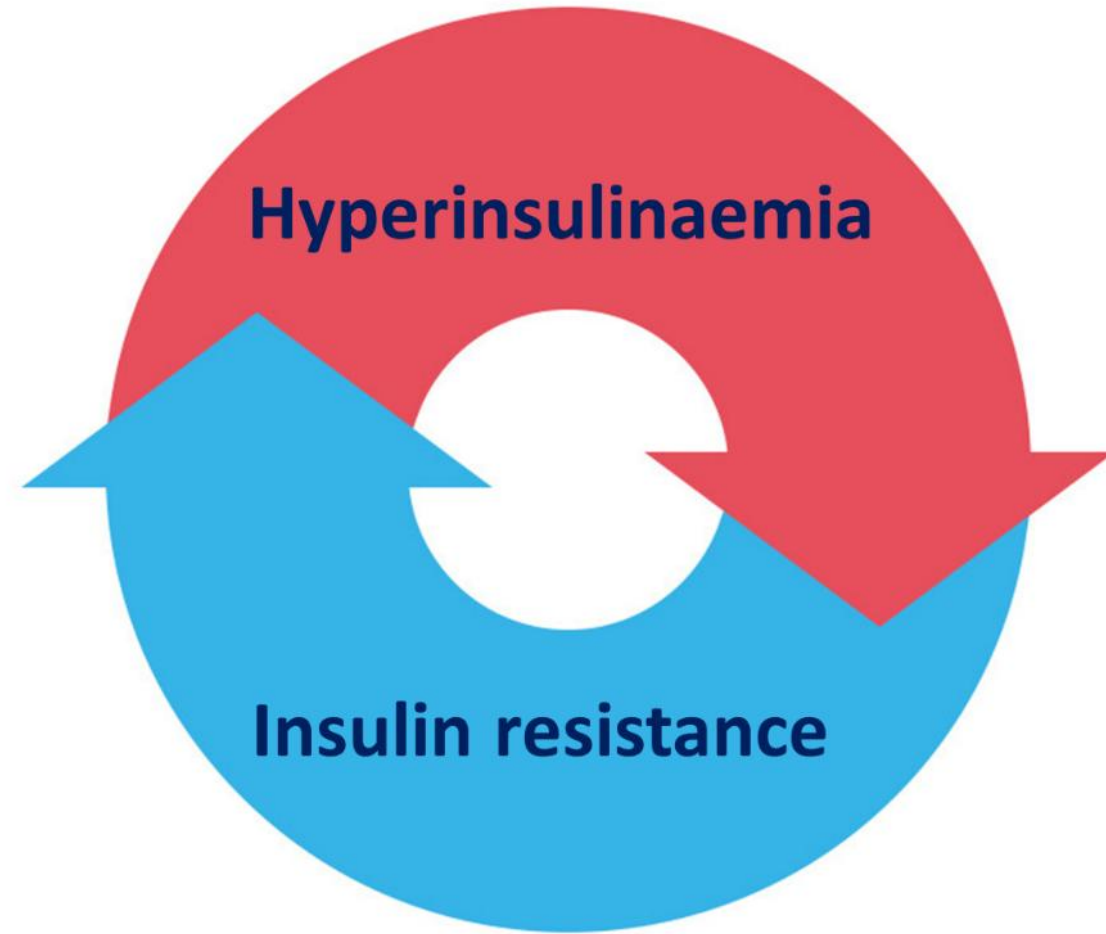
- affects us all.
- is measurable.
- can always be improved.

The basic science of metabolic health



What is going on
behind the scenes?

**The warzone of
poor metabolic
health**





We are human.

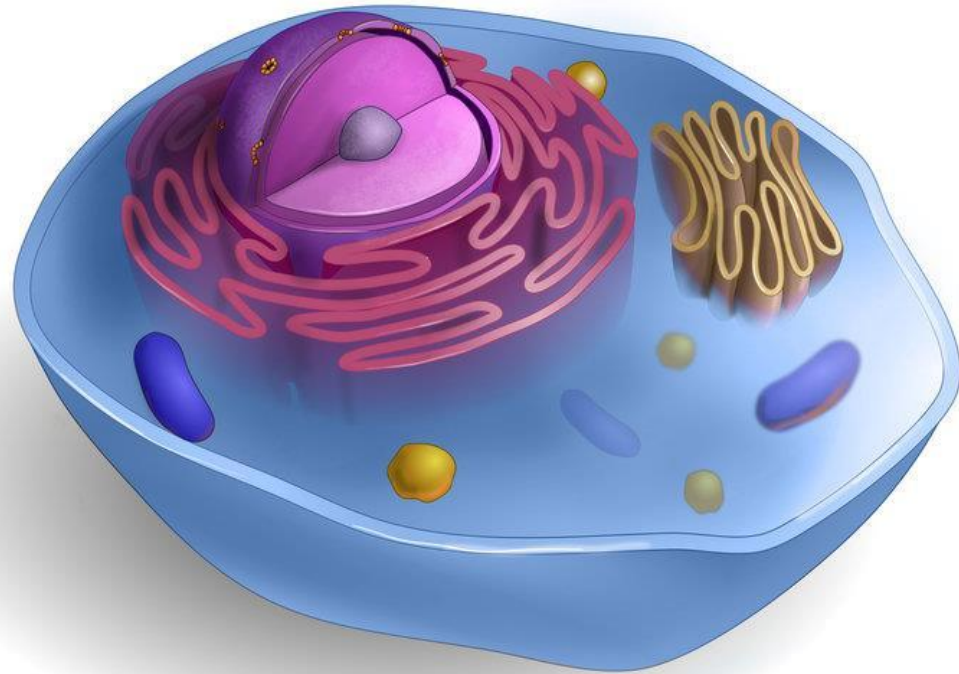


We live on Earth.

We eat, move,
sleep, and think.



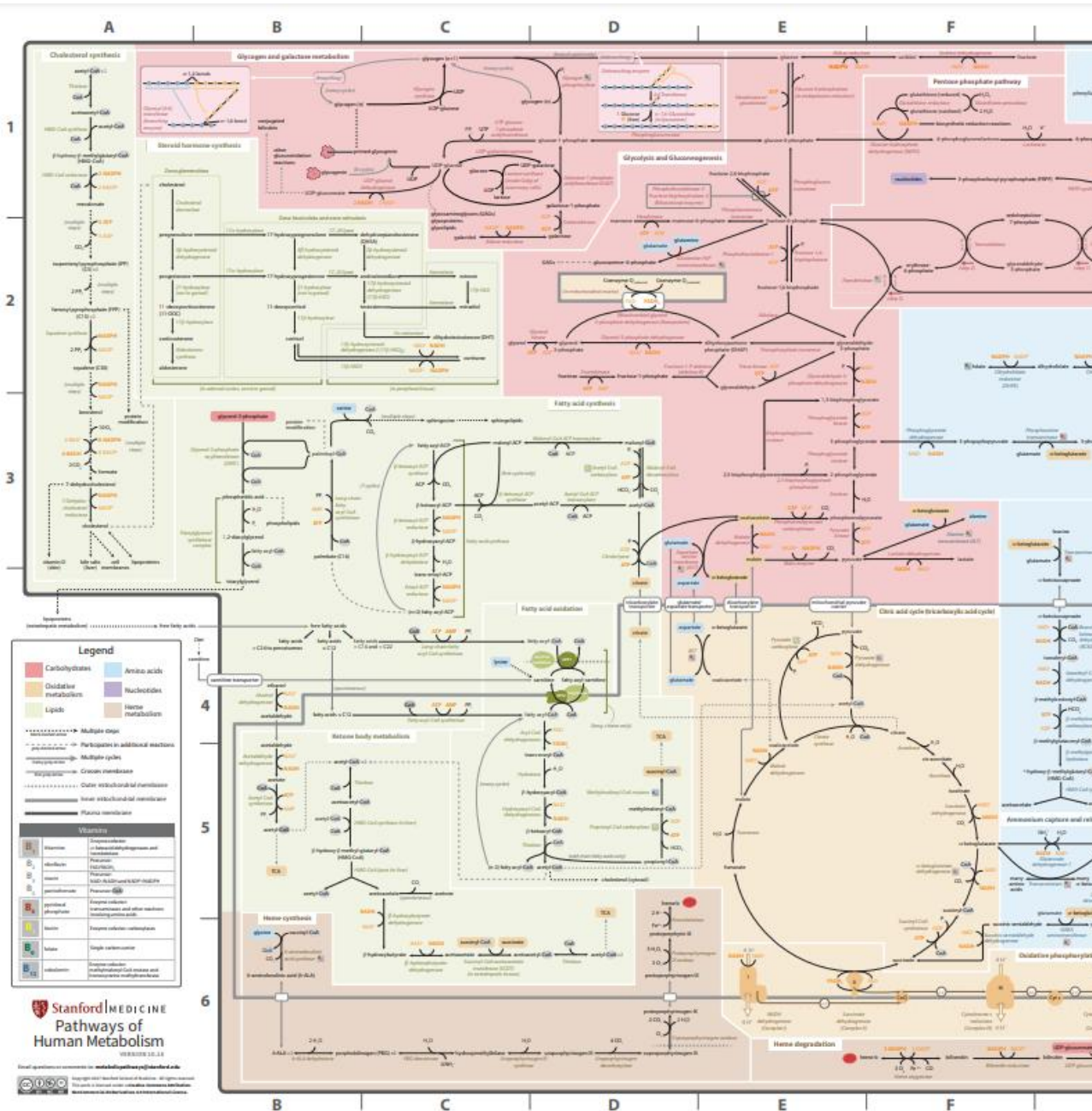
We are made of
organs...

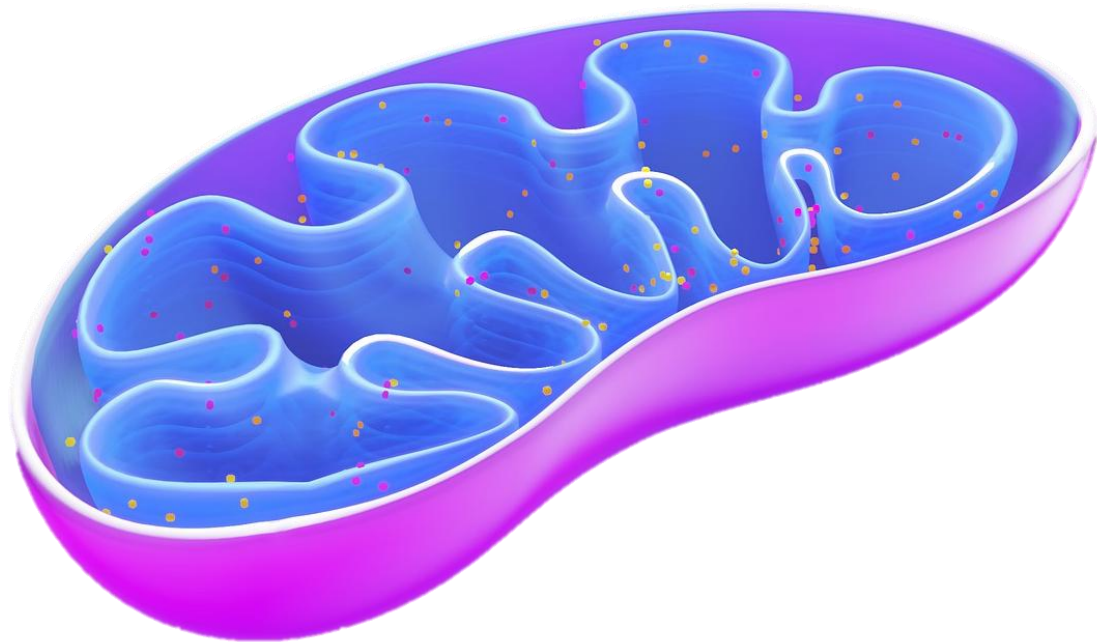


...and trillions of
cells,

constantly metabolising food...

(metabolism: the chemical processes within
the body required for life)





...and extracting
the energy needed
for life.



Whilst we maintain
internal stability.

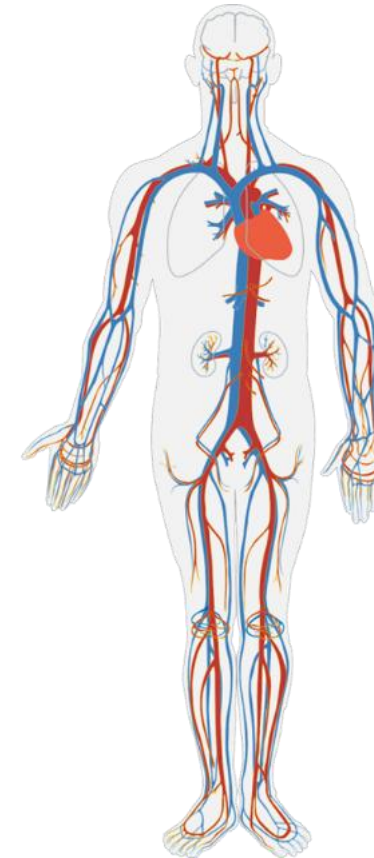
(homeostasis)

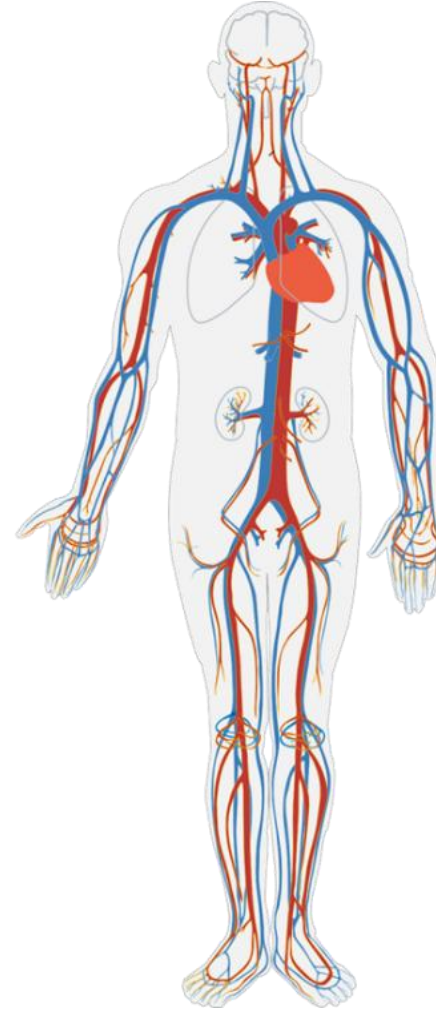
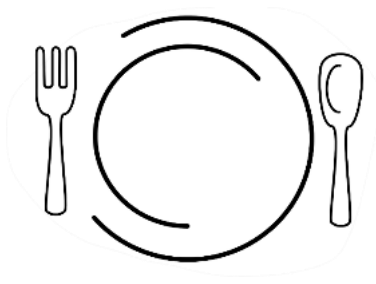
If homeostasis is successful, life continues; **if unsuccessful, disaster or death ensues.**

Britannica, The Editors of Encyclopaedia. "homeostasis". Encyclopedia Britannica, 8 Apr. 2022, <https://www.britannica.com/science/homeostasis>. Accessed 13 May 2022.



Blood glucose homeostasis

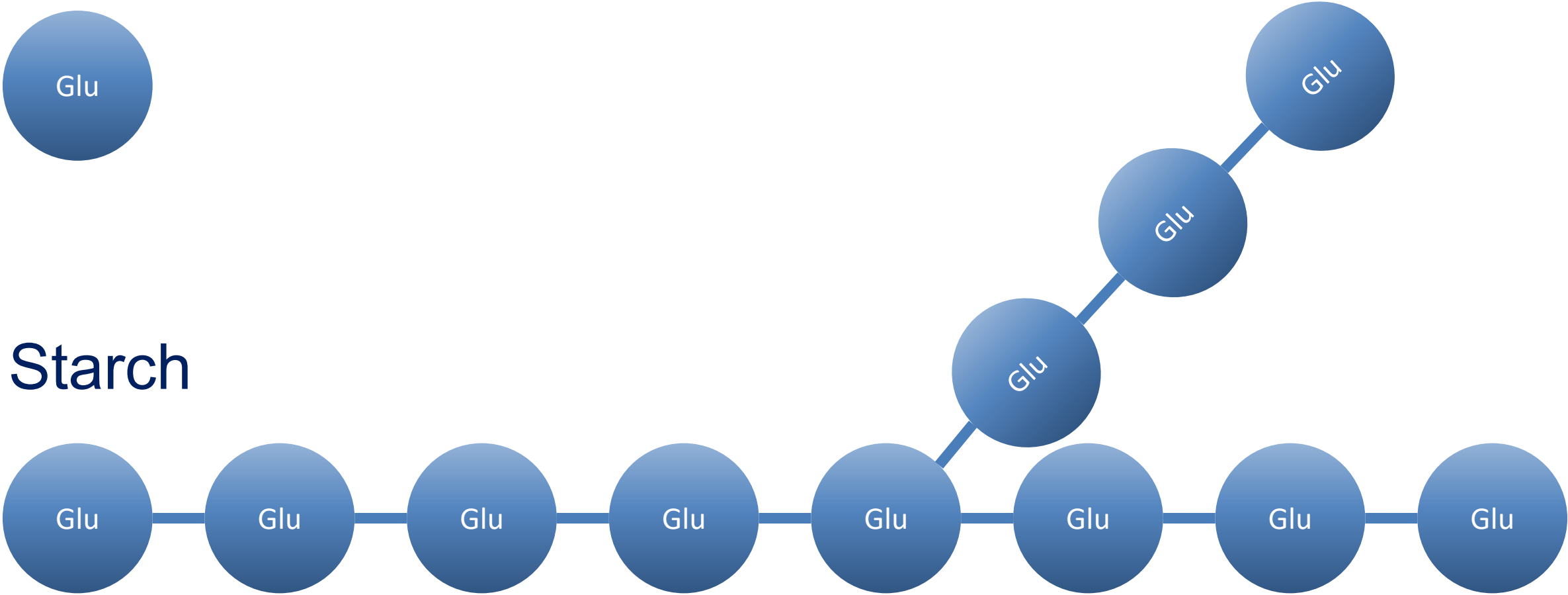


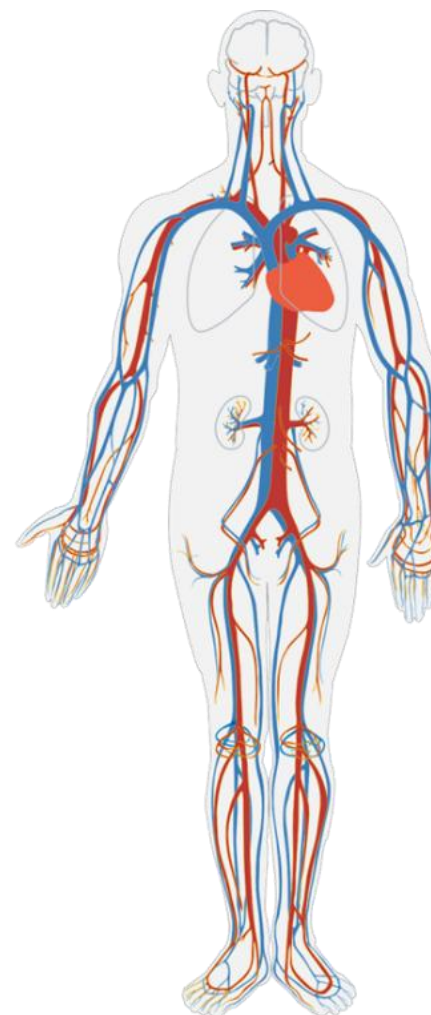
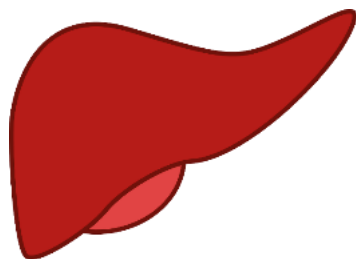
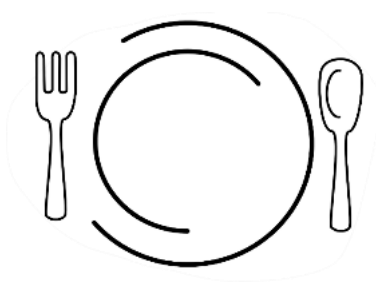


Glucose



Starch





To lower blood glucose.

Insulin



What goes wrong?

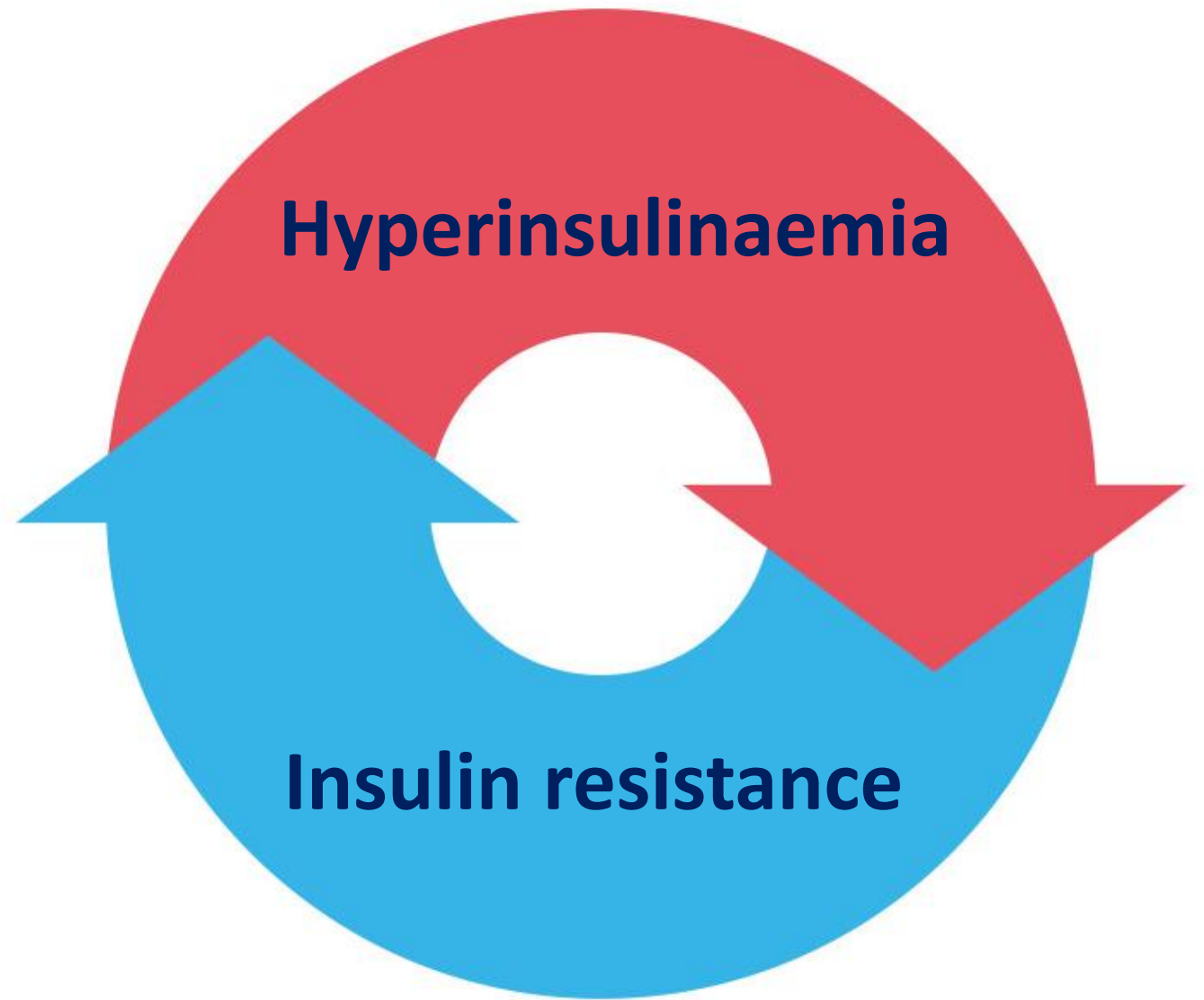
Insulin resistance



*“I’m struggling
in the morning
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well.”*

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What is going
on behind the
scenes?



Actions of insulin



Action of insulin

Includes:

- Lower blood glucose
- Make and store fat
- Prevent fat release and stop fat burning
- Prevent release of glucose from liver
- Promote cell growth
- Retain water and salt (kidneys)
- If regularly raised, causes insulin resistance



Dr Gerald Reaven

(28 July 1928 – 12 February 2018)

Després, JP. The Reaven syndrome: a tribute to a giant. *Nat Rev Endocrinol* 14, 319–320 (2018). <https://doi.org/10.1038/s41574-018-0013-5>

Insulin resistance syndrome (metabolic syndrome)

How to use the IR Health Check measurements

There is no single measure of insulin resistance (IR). Use all the IR Health Check measures to get an indication of your body's level of insulin resistance.

More measures in the green indicates insulin resistance is less likely.

More measures in amber or red indicates insulin resistance is more likely.

Date

Name

Fasted? Y / N

Insulin resistance indicator



Waist (cm)

Height (cm)

Waist : Height 0.4 0.49 0.5 0.59 0.6 1.0

Glucose (mmol/L) 3.5 5.5 5.6 6.9 7.0 >11.0

Known diabetes Y / N

If not known to have diabetes:
Glucose of >7 then see GP (routinely)
Glucose of >11 then see GP (urgently)

Triglycerides (mmol/L) Ideal <1.3 1.3 1.69 1.7 2.19 2.2 5.6 >5.6

If >5.6 then see GP (routinely)

HDL-C (mmol/L) 3.0 1.0 0.99 0 (Male)

3.0 1.3 1.29 0 (Female)

Trig : HDL-C Ideal <0.9 0.9 1.29 1.3 1.69 1.7 2.6 >2.6 Very high

BP sys (mmHg) Ideal <120 120 129 130 139 140 159 V high 160 180 Urgent

If >180 then seek urgent medical review

BP dia (mmHg) Ideal <80 80 84 85 89 90 V high 99 100 120 Urgent

If >120 then seek urgent medical review

Taking BP medication Y / N No Yes

- Waist circumference
- Glucose
- Triglycerides
- HDL-cholesterol
- Blood pressure

How do you ruin
metabolic
health?



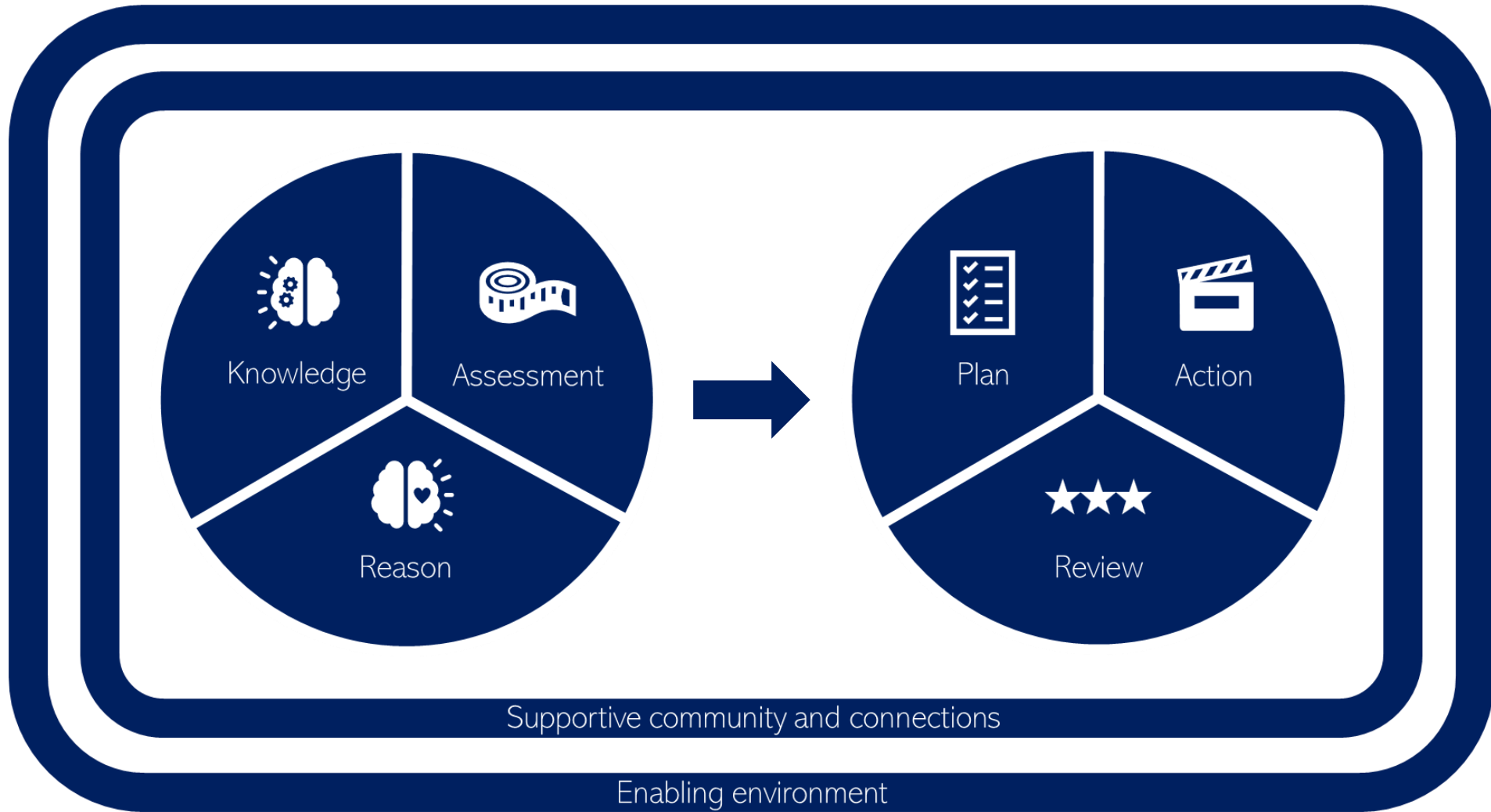


THE TROUBLE IS THEY TASTE TOO GOOD.

How to fix metabolic health



What is needed for metabolic health success?



METABOLIC HEALTH TOOLBOX





Health Foundations

- Nutrition
- Movement
- Sleep
- Mindset
- Environment



Nutrition

- Eat real food
- Prioritise protein
- Personalise carbohydrate
- Personalise fat
- Timing
- Adequate water

Personalise carbohydrate

Go low or high?

LOW



HIGH



*Move
because it
makes today
better.*

Physical activity for adults and older adults

Benefits health	Type II Diabetes	-40%
Improves sleep	Cardiovascular disease	-35%
Maintains healthy weight	Falls, depression etc.	-30%
Manages stress	Joint and back pain	-25%
Improves quality of life	Cancers (colon and breast)	-20%

Reduces your chance of

Some is good,
more is better

Make a start today:
it's never too late

Every minute
counts

Be active

at least
150
minutes
moderate intensity
per week
increased breathing
able to talk

OR

or a combination of both

at least
75
minutes
vigorous intensity
per week
breathing fast
difficulty talking



**Minimise
sedentary time**
Break up periods of inactivity



Improve balance
2 days a week
For older adults, to reduce the
chance of frailty and falls



28 Day Metabolic Health Plan

DAY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
REAL FOOD HIGH PROTEIN	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16 : 8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2L WATER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
0 ALCOHOL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20 PRESS UPS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20 SQUATS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20 MINS CV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MAGNESIUM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7 HOURS SLEEP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTICE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DAILY SCORE																												

Magnesium the unsung hero



Piuri et al. Magnesium in Obesity, Metabolic Syndrome, and Type 2 Diabetes. *Nutrients*. 2021 Jan 22;13(2):320. doi: 10.3390/nu13020320

DiNicolantonio JJ, O'Keefe JH, Wilson W. Subclinical magnesium deficiency: a principal driver of cardiovascular disease and a public health crisis. *Open Heart*. 2018 Jan 13;5(1):e000668. doi: 10.1136/openhrt-2017-000668

- Many people have a chronic subclinical magnesium deficiency.
- Chronically low magnesium contributes to poor metabolic health.
- Magnesium supplementation can help muscle cramps and constipation.

Recommendation

Buy a reliable looking over-the-counter supplement (e.g. magnesium citrate or magnesium bisglycinate) and take the amount it advises on the container.

“I was struggling with knee pain and back pain, and I didn’t feel well.”

“I now feel the best I have in years. I’ve got more energy and I’m back in the jeans I wore 20 years ago.”

- 52 years old
- ~~Acid reflux (omeprazole)~~
- ~~High blood pressure (ramipril)~~
- ~~Prediabetes~~
- ~~Depression (citalopram)~~
- ~~Irritable bowel syndrome~~
- OA of left knee diagnosed 5 years ago – Surgery not required
- ~~Back pain (paracetamol and ibuprofen)~~
- ~~Want to lose weight but back and knee are too painful~~
- ~~Tired all the time~~

Clinical Intelligence

Campbell Murdoch, David Unwin, David Cavan, Mark Cucuzzella and Mahendra Patel

Adapting diabetes medication for low carbohydrate management of type 2 diabetes:

a practical guide

Google “BJGP diabetes medication”

Box 1. Summary guidance on adapting diabetes medication for low carbohydrate management of type 2 diabetes

Drug group	Hypo risk?	Clinical suggestion
Sulphonylureas (for example, gliclazide) and meglitinides (for example, repaglinide)	Yes	Reduce/stop (if gradual carbohydrate reduction then wean by halving dose successively)
Insulins	Yes	Reduce/stop. Typically wean by 30–50% successively. Beware insulin insufficiency ^a
SGLT2 inhibitors (flozins)	No	Ketoacidosis risk if insulin insufficiency. Usually stop in community setting
Biguanides (metformin)	No	Optional, consider clinical pros/cons
GLP-1 agonists (-enatide/-glutide)	No	Optional, consider clinical pros/cons
Thiazolidinediones (glitazones)	No	Usually stop, concerns over long-term risks usually outweigh benefit
DPP-4 inhibitors (glipitins)	No	Usually stop, due to lack of benefit
Alpha-glucosidase inhibitors (acarbose)	No	Usually stop, due to no benefit if low starch/sucrose ingestion
Self-monitoring blood glucose	N/A	Ensure adequate testing supplies for patients on drugs that risk hypoglycaemia. Testing can also support behaviour change (for example, paired pre- and post-meal testing)

^aCaution should be taken when reducing insulin if there is clinical suspicion of endogenous insulin insufficiency (Patients with LADA misdiagnosed as T2D; a minority of T2 patients have endogenous insulin deficiency). Consider these possibilities if patient was not overweight at diagnosis. Exogenous insulin should not be completely stopped in these cases. Inappropriate over-reduction of exogenous insulin will lead to marked hyperglycaemia. Hypo = hypoglycaemia. LADA = latent autoimmune diabetes in adults. T2D = type 2 diabetes.

**Don't manage
metabolic disease.
Reverse it.**



Call it what you want. It's metabolic disease.

They'll call it obesity. Diabetes. Fatty liver. High blood pressure. Heart disease. Inflammation. But these aren't separate diagnoses, they're different faces of the same condition: metabolic disease.

Reach & Scale

Outcomes

Cost & Impact

Rx Reduction

Victories

75M

Units Insulin Eliminated

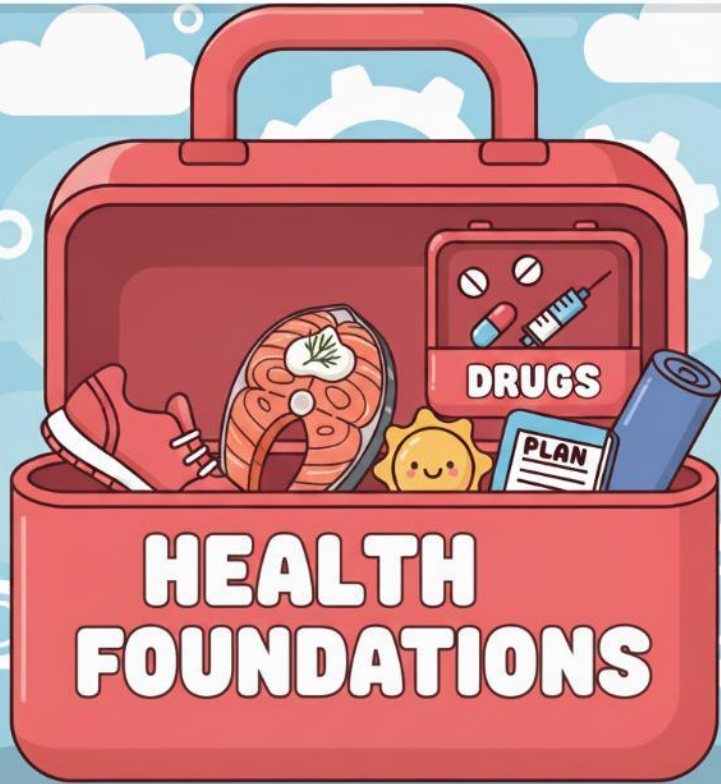
\$20M

In Savings from Insulin Alone

\$118M

GLP-1 Costs Avoided

METABOLIC HEALTH TOOLBOX



How about GLP1s
for weight loss?

The future of metabolic health and weight loss drugs

Projecting mortality reductions in the US and UK populations



- 02 Executive summary
- 03 Metabolic ill-health and mortality
- 07 Metabolic ill-health trends: the US and UK
- 08 GLP-1 drugs and mortality reductions: our modelling approach
- 11 The US and UK 2045 mortality reduction projections
- 14 Risks associated with GLP-1 drugs
- 16 Implications for L&H insurance
- 19 Swiss Re's vision of metabolic health




John Schoonbee  • 1st
Global Chief Medical Officer at Swiss Re
4d • 

GLP-1 drugs are grabbing headlines for good reason: they tackle insulin resistance, the root of poor metabolic health, and can drive major weight loss and even lower mortality.

But here's the crucial part: medicine alone won't solve the problem.

True progress comes when we combine GLP-1s with healthy nutrition, resistance training, and sustained behavioural change.

In our new report, we look at how this combined approach could redefine health and longevity for future generations.

 Watch the full video and read the report here : <https://lnkd.in/de38fCeF>





- GLP1s are a tool, not the solution.
- If someone can change what they eat, they probably don't need a GLP1.
- If someone needs a GLP1 to change what they eat then it is very important they also:
 - Improve the nutritional quality of their food, including a focus on protein.
 - Undertake resistance exercise.
 - Use the GLP1 as a stepping stone, with an off-ramp.



Reading and resources

- www.healthshelf.org
- Why We Get Sick by Ben Bikman (plus his YouTube channel)
- Google "Swiss Re + metabolic health"
- www.metabolicmind.org