Longevity & Chronic Disease

Research Brief 2026

Prepared by the Salsano Institute | As of 5 October 2026

Executive summary

- **Medicine is shifting from treating single diseases to slowing several at once.** GLP-1 drugs now cut heart, kidney and liver risk, and the first GLP-1 pill without food restrictions was approved in April 2026.
- **A personalised cancer vaccine passed its first phase 3 test** in August 2026, cutting melanoma recurrence when added to immunotherapy.
- **Life expectancy ranges from about 55 to 86 years** across countries, a gap of roughly 32 years. The world average is about 73.
- **Heart disease is the top killer worldwide** (13% of all deaths). Chronic, non-communicable diseases cause nearly three in four deaths.
- **The proven longevity levers are still behavioural and clinical:** not smoking, physical activity, a healthy diet, good sleep, and control of blood pressure, cholesterol, glucose and weight.
- **No drug is approved to slow ageing.** Metformin's landmark TAME trial has no results yet; rapamycin has the strongest animal evidence; GLP-1s are the leading real-world candidate.
- **Optimism is linked to an 11–15% longer lifespan** in large cohorts, and it may be modifiable.

1. Latest breakthroughs in chronic disease

The defining trend of 2025–2026 is drugs that act on several organ systems, plus personalised immunotherapy reaching late-stage proof.

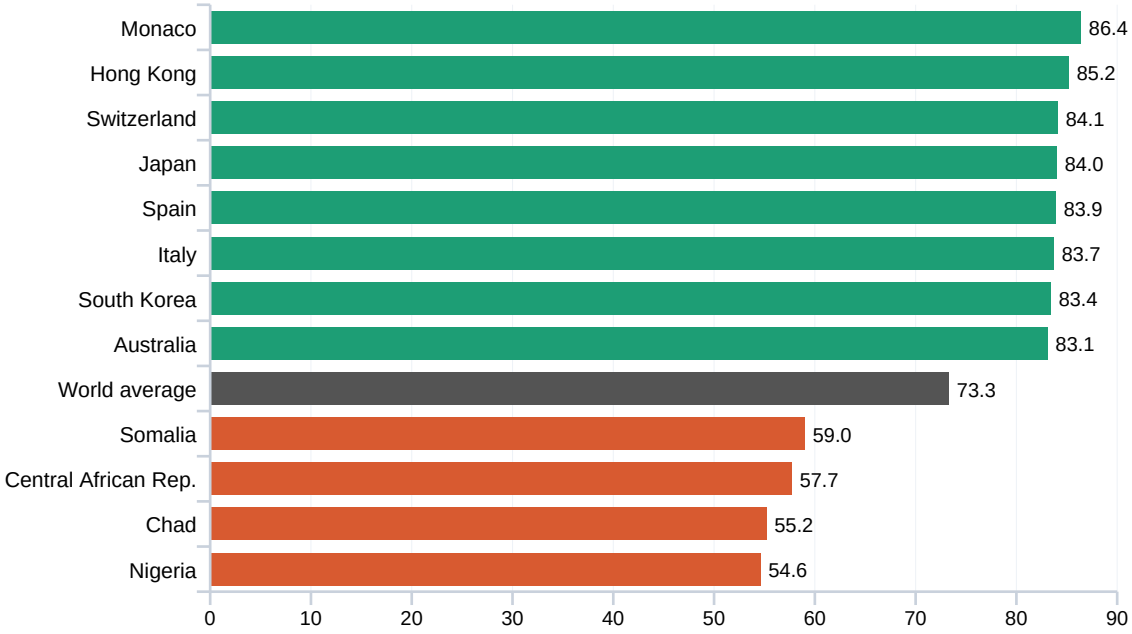
Breakthrough	Disease	Status (Oct 2026)	Key result
Intismeran autogene (mRNA-4157) + Keytruda	Melanoma, resected stage IIB–IV	Phase 3 positive (Aug 2026); regulatory filings planned	Improved recurrence-free and metastasis-free survival vs Keytruda alone in 1,137 patients. 5-year phase 2b data: 49% lower risk of recurrence or death.
Foundayo (orforglipron)	Obesity	FDA-approved 1 Apr 2026	First small-molecule GLP-1 pill, taken any time. 11.1% average weight loss vs 2.1% on placebo over 72 weeks.
Semaglutide (FLOW trial)	Kidney and heart disease in type 2 diabetes	Approved use	24% lower risk of kidney disease progression and cardiovascular death.
Retatrutide	Obesity, diabetes	Phase 3	Acts on three hormone receptors; more potent than current GLP-1s.
Lecanemab, donanemab	Early Alzheimer's	Approved 2023/2024	First drugs to change the course of the disease. Tau-targeting drugs now in late trials.
Pancreatic cancer vaccines	Pancreatic cancer	Early trials	7 of 8 responders alive 4–6 years after surgery; preventive vaccines being tested in high-risk people.

Setback to note: the phase 3 EVOKE trials found semaglutide did not slow Alzheimer's progression (IQVIA), so GLP-1s are not a dementia treatment. GLP-1s also now reduce heart attacks, reverse fatty liver disease, slow kidney disease and treat sleep apnoea (Reason).

2. Life expectancy by country and age

A newborn in Monaco can expect to live about 86 years; in Nigeria, about 55. The world average is 73.3 years.

Life expectancy at birth, both sexes, years



Sources: World Bank via PopulationPyramid.net (2023 data); lowest countries WorldStats; world average UN WPP 2024.

By age. Total expected lifespan rises once the risky early years are survived. Globally, a 15-year-old can expect about 61.5 more years; in Monaco 72.2 and in Japan 70.4 (MeasuredWorld). Across OECD countries, people who reached 65 in 2022 could expect to live to about 83.0 (men) and 86.2 (women); men in Australia, Canada, France, Italy, Japan, New Zealand and Switzerland reach 85 or more (OECD).

Sex and trend. Women outlive men in every country; Russia has the largest gap, at about 11.6 years (StatisticsTimes). US life expectancy fell from 78.9 (2014) to about 76 (2021), the only major rich country with a sustained pre-COVID decline (PopulationPyramids). Infant mortality is the single biggest lever: the top 10 countries lose under 2 per 1,000 births; the bottom 10 lose 40–80.

3. Main causes of death by age and country

Ischaemic heart disease is the world's leading killer, causing 13% of all deaths (9.0 million in 2021).

COVID-19 killed 8.7 million people directly in 2021 and briefly pushed stroke to third place; lower respiratory infections remain the deadliest communicable diseases besides COVID (WHO, GBD 2021). The long-run age-standardised ranking is heart disease, stroke, COPD, then lower respiratory infections.

Leading causes by age group

Age	High-income countries	Low-income countries
Under 1	Prematurity and birth complications, congenital anomalies	Neonatal conditions, pneumonia, diarrhoea, malaria
1–14	Cancers (e.g. 32% of deaths at 1–14 in Spain), injuries	Pneumonia, malaria, diarrhoea, malnutrition
15–44	Road injuries, suicide, drug overdose (notably in the US), violence	Road injuries, HIV, tuberculosis, maternal causes, violence
45–64	Cancers (lung, colorectal, breast), heart disease, liver disease	Heart disease, stroke, HIV, tuberculosis
65+	Heart disease, cancer, stroke, dementia, COPD	Heart disease, stroke, COPD, pneumonia

Age-group patterns are a synthesis of WHO and GBD estimates; Spain figure from INE. Treat cell entries as indicative, not ranked counts.

Country snapshots. In India, heart disease causes nearly one-third of deaths; across South America, cardiovascular disease leads, followed by cancer and respiratory disease; road injuries rank among the top killers of young adults in India and China (IPS / WHO). Sub-Saharan Africa still carries the heaviest infectious burden

and had the world's highest COVID death rate in 2021 (GBD 2021).

4. How to improve longevity

Most of the gap between average and exceptional lifespan comes from modifiable risks. Ranked roughly by strength of evidence:

Lever	What the evidence supports	Practical target
Do not smoke	Largest single modifiable cause of early death; quitting before 40 recovers most of the lost years	Zero tobacco; nicotine replacement or varenicline to quit
Control blood pressure, LDL cholesterol, glucose	Directly lowers heart attack and stroke, the top killers	Regular checks; treat to guideline targets
Physical activity and fitness	Higher cardiorespiratory fitness tracks with lower all-cause mortality at every age	150–300 min moderate activity/week plus 2 strength sessions
Diet	Mediterranean-style eating reduces cardiovascular events	Vegetables, legumes, fish, olive oil, whole grains; limit processed meat and sugar
Healthy weight	Obesity drives diabetes, heart, kidney and liver disease; GLP-1s now cut outcomes in high-risk people	Lifestyle first; medication where clinically indicated
Sleep, alcohol, social ties	Short sleep, heavy drinking and isolation each raise mortality	7–9 hours; little or no alcohol; strong relationships
Screening and vaccination	Catches cancers early; prevents flu, pneumonia, shingles, HPV-linked cancers	Age-appropriate screening and vaccine schedule

Summary of established public-health guidance (WHO, cardiology and cancer society guidelines), stated from expert knowledge rather than a single cited source. Large cohort studies suggest adults following five core habits gain roughly a decade of life expectancy at 50 (approximate).

5. Metformin and other longevity drugs

No drug is approved to slow ageing itself; metformin is the most-tested candidate, but rapamycin has stronger biological evidence.

Metformin is cheap, widely used and generally well tolerated. Its anti-ageing case rests mostly on observational data in which people with diabetes taking it fared better than expected, which cannot prove cause and effect (StackingYears). Animal results are mixed, and reviewers note sizeable methodological concerns in the human mortality evidence (Fight Aging, Aug 2026).

The TAME trial aims to enrol 3,000 non-diabetic adults aged 65–79 for four years, testing whether metformin delays heart disease, cancer, cognitive decline and death together (review). As of early 2026, enrolment is ongoing and no efficacy results exist (status update); funding has long been incomplete (Fight Aging). Its main legacy so far is regulatory: the FDA accepted a design that treats ageing as the target.

Candidate	How it works	Human evidence (2026)	Verdict
Metformin	Lowers liver glucose output, raises insulin sensitivity; touches inflammation and nutrient-sensing pathways	Prevents diabetes in metabolic syndrome (MeMeMe, 1,400 people); TAME pending	Promising, unproven for ageing
Rapamycin / rapalogs	Inhibits mTOR, a central growth and ageing pathway	Strongest lifespan data in animals; a rapalog boosted flu-vaccine response in older people; long-term use suppresses immunity	Best biology, needs trials
GLP-1 agonists	Hormone mimics acting on appetite, metabolism and inflammation	Lower heart attack, stroke, kidney and liver disease and, in some trials, all-cause death	Leading real-world candidate
SGLT2 inhibitors	Kidney glucose excretion; cardiorenal protection	Reduce heart failure and kidney decline (approximate, expert knowledge)	Strong for organ protection

Candidate	How it works	Human evidence (2026)	Verdict
Senolytics, NAD+ boosters	Clear senescent cells / raise NAD+ levels	Small early trials; little clinical benefit shown so far (approximate)	Experimental

6. Optimism and longevity

The most optimistic people lived 11–15% longer and had 50–70% higher odds of reaching 85 than the least optimistic.

The landmark 2019 PNAS study by Lewina Lee and colleagues followed 69,744 women (Nurses' Health Study) and 1,429 men (Veterans Affairs Normative Aging Study), and found a dose-dependent link that held after accounting for other factors (Sci.News). Optimistic people were more physically active and appear to recover from stress faster (CNBC).

Why it matters: the authors note optimism may be modifiable with relatively simple techniques or therapies. **Caveat:** the evidence is observational, so optimism may partly reflect better baseline health. It belongs alongside, not instead of, the clinical levers above.

Sources and caveats

Figures come from the sources linked throughout. Some industry and topline results (e.g. INTerpath-001) are not yet peer reviewed. Entries marked "approximate" are expert-knowledge estimates, not cited data. This brief is for research and strategy purposes and is not medical advice; individuals should consult their physician before starting any drug.

- WHO Global Health Estimates 2021
- GBD 2021 Causes of Death (The Lancet, 2024)
- UN World Population Prospects 2024 / World Bank WDI
- OECD Pensions at a Glance 2023
- INTerpath-001 phase 3 (Merck/Moderna, Aug 2026)
- FDA approval of Foundayo, Apr 2026
- Expert views on emerging therapies, Cell Reports Medicine
- Are GLP-1s the first longevity drugs? Nature Biotechnology
- Metformin as a geroprotector, review (Aug 2026)
- Lee et al., PNAS 2019, optimism and longevity

About the Salsano Institute

The Salsano Institute is an independent think tank advancing research in health and education, with a focus on chronic disease and free access to education. Co-founded by Sandro Salsano and a group of scientists and PhD researchers, it is supported by an initial pledge from the Salsano family and has offices in Washington, D.C. and London.