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TRANSHUMANISM
in insurance medicine

Mental health: the invisible risk that is redefining health insurance in the 21st century

TRANSHUMANISM IN INSURANCE MEDICINE

Transhumanism is not a distant utopia or a whim of eccentric millionaires; it is the frontier where human biology merges with engineering, rewriting the limits of what it means to be alive. A world where the heart does not fail at 70 because an intelligent chip regulates it beat by beat, where an amputee not only walks but runs marathons with a titanium leg that learns their steps, or where a brain paralysed by Parkinson's sends commands directly to a computer without muscular intermediaries. This is not 1950s science fiction, it is the reality of 2026, with millions of people wearing implants that prolong lives, restore functions and, in some cases, surpass the original individual.

Transhumanism, the philosophical and technological movement that advocates transcending the human condition through science, has moved from theoretical essays to everyday operating theatres, challenging not only medicine but the very essence of our mortality.

Its roots go back to the 20th century, with pioneers such as Julian Huxley, who in 1957 coined the term to describe evolution directed by humanity. But the real take-off came with miniaturisation and artificial intelligence.

Medical insurance is entering an era where the human body is no longer just biology, but a hybrid of flesh, metal and code. Prostheses that obey mental commands, pacemakers that predict heart attacks with artificial intelligence, brain implants that restore movement to paraplegics: transhumanism is no longer a science fiction dream, but a surgical reality that saves lives, yet completely disrupts actuarial rules.

For those of us who calculate premiums and manage risks, this technological revolution promises to extend life expectancy to 120 years, but it requires us to rethink what 'normality' means, how to price the unpredictable, and who bears the costs of a heart that beats thanks to a chip.

MORE AND BETTER

It all started with discreet steps that today seem commonplace. Let us remember the pacemaker, which was first implanted in 1958 in a Swedish patient and consisted basically of a crude electric cable. Over the decades, it has evolved into models such as Medtronic's Micra, a tiny device the size of a grain of rice that is inserted into a vein without an open scalpel. This little guardian not only regulates erratic heartbeats, but also uses sensors to detect arrhythmias before they turn into strokes, adjusting impulses with machine learning algorithms that learn from each patient's unique rhythm. Today, more than 1.5 million people worldwide owe their stable pulse to these implants, with batteries that last up to 15 years and are connected to mobile apps that send real-time alerts to cardiologists.

But pacemakers are just the appetiser. Bionic prostheses represent the real transhuman leap. Forget about 19th-century wooden legs or pirate hooks: now, arms like Open Bionics' Hero Arm or Össur's legs read electrical signals directly from residual muscles using electrodes implanted in or under the skin. An amputee can thus hold a cup of coffee, type on a mobile phone or even climb a mountain, because the system learns movement patterns over time and adapts like a natural limb.

In 2025, more than two million people worldwide used these robotic limbs made of materials such as lightweight titanium and carbon, which make them almost indistinguishable from flesh in weight and flexibility. The price, however, is daunting: between £45,000 and £135,000 per unit, plus £4,500 to £9,000 per year for calibrations, batteries and adjustments.

Let us now move on to the most daring, cochlear implants that restore hearing to 700,000 people who are congenitally or acquired deaf, converting sound waves into electrical impulses that the auditory nerve interprets as music or voices. Or bionic retinas such

as Argus II, which restore partial vision to people blinded by retinitis pigmentosa, allowing them to recognise shapes and read large letters.

In diabetes, closed insulin pumps such as the MiniMed 780G form an automatic loop: they measure blood glucose every five minutes via a subcutaneous sensor and release the exact dose, reducing severe hypoglycaemia by 80%. And let's not forget exoskeletons such as ReWalk or Ekso, robotic suits that lift paraplegics out of their wheelchairs so they can walk during rehabilitation or even at work.

Transhumanism is accelerating with brain-machine interfaces. Companies such as Elon Musk's Neuralink and Synchron are already implanting ultra-thin wires in the cerebral cortex: in 2024, the first patient with ALS controlled a computer cursor with only their thoughts while playing chess mentally. By 2030, they promise to treat Parkinson's, epilepsy and resistant depression by connecting the brain directly to the cloud.

CRISPR gene therapies edit defective DNA in muscular dystrophies, while 3D-printed organs—modified pig hearts or bioengineered kidneys—await final trials. Injectable nanorobots could repair damaged DNA or destroy tumours with atomic precision. This is not cosmetic enhancement, it is the rewriting of human limits.

A CHALLENGE IN INSURANCE MEDICINE

Desde la perspectiva actuarial, cada avance es un doble filo. Por un lado, reduce mortalidad prematura: un marcapasos extiende la vida 10-15 años en insuficiencia cardíaca, bajando el riesgo de fallecimiento en un 40% y las prótesis biónicas acortan las bajas por incapacidad temporal en un 60%. La longevidad general sube, hasta el punto de que las tablas de esperanza de vida podrían ajustarse en más 5-8 años para pacientes con cardiopatía que han sido implantados.

But unprecedented risks also emerge. For example, batteries fail at a rate of 1-2% per year, causing cardiac arrests that trigger claims. And connected implants are vulnerable to cyberattacks—there are already 500 reported cases worldwide of hackers interfering with pacemakers—which requires additional cyber insurance policies. Likewise, chronic immune rejections increase the use of healthcare services by 25%, with constant check-ups and the intake of anti-inflammatory drugs.

CHALLENGES OF TRANSHUMANISM

40%

REDUCTION IN premature mortality through pacemaker implantation.

60%

DECREASE in sick leave due to work disability thanks to bionic prostheses.

8 años

LIFE EXPECTANCY increases in patients with heart disease who have implants.

Now let's go to the extreme. Patients with multiple implants—let's call them polyimplants—consume 50% more resources: remote visits, software updates, or upgrade surgeries.

Real cases illustrate the dilemma. Consider Juan, a 65-year-old executive with a Micra pacemaker implanted in 2024: he avoids annual hospitalisations that cost €30,000, but his private health insurance policy increases by 25% due to the 'connected technology' clause, which includes cyber protection and mandatory upgrades. Or Maria, who had an amputation after an accident: her €80,000 myoelectric prosthesis allows her to return to her job as an accountant, but sick leave for recalibrations adds up to 20 days a year, and the insurer applies a 20% surcharge for risk of breakdown.

Ethical and regulatory challenges further complicate the picture. Is an exoskeleton a restorative prosthesis or a competitive enhancement that gives a work advantage? Private insurers limit it to 'lost function', excluding optimisations such as premium intraocular lenses for super vision. The European Union, with its 2021 Medical Devices Regulation, classifies these as class III risk, requiring 5-7 years of testing and full traceability. In life insurance, the debate arises: should there be extra premiums for 'transhuman optimisation', such as anti-ageing gene therapies? Or discounts for wearables that predict failures with 90% accuracy?

The roadmap is clear: hybrid pricing must be adopted (a base premium plus optional modules per implant), artificial intelligence must be incorporated to model real risks based on telematic data, with dynamic clauses that exclude cyberattacks but require annual updates.

In short, transhumanism turns health insurance from mere bill payers into partners in human evolution. With five million implants globally each year and life expectancy extended by 10-20 years, ignoring this equates to professional obsolescence. Bodies are no longer just fragile, they are perfectible hybrids, and their premiums are the compass that will guide insurers towards a future where death is postponed, but risks multiply. The time has come to calculate not only years lived, but years improved.

MENTAL HEALTH: THE INVISIBLE RISK THAT IS REDEFINING HEALTH INSURANCE IN THE 21ST CENTURY

We live in an era of ‘global burnout’. The WHO estimates that more than 1 billion people suffer from mental disorders, one in eight on the planet, with anxiety and depression topping the list. In Spain, the AXA 2025 Study reveals that 34% of the population — some 16 million people — suffer from some form of mental health problem, a figure that rises to 35.6% according to the SNS 2024. Young people aged 15-29 account for almost 49%, with mental health hospitalisations tripling in the last two decades.

The pandemic, social media and job insecurity have accelerated this process or disorder. Chronic stress does not discriminate: it affects people who work from home as well as healthcare workers on the front line. For actuaries, the message is clear: these are not ‘emotional whims’, but epidemics with exponential curves that alter mortality and morbidity tables. In 2025, Spain will consume more psychotropic drugs than ever before, despite their affordability, a sign of overdiagnosis and dependence.

Giving visibility to this data is not philanthropy, it is actuarial survival. Hiding mental health issues perpetuates stigma, but it also underestimates risks and inflates future accident rates.

ALARMING PREVALENCE: FIGURES THAT DO NOT LIE

Let’s break down the hard numbers. It is estimated that generalised anxiety affects 8-10% of the population annually, with peaks of up to 14% among adolescents. Depression is not far behind, with a prevalence of around 5-7%, affecting 10% of people over 55. Sleep disorders are on the rise and are thought to affect approximately 5-6% of the population in Western countries.

It is estimated that in our country alone, 48.9% of young people suffer from mental health problems, driven by poor emotional literacy, screen abuse and early medicalisation. Globally, the WHO estimates that one billion people are affected, with productivity losses due to depression and anxiety amounting to 12 billion working days per year.

These figures are not static: between 2018 and 2023, sick leave due to mental health issues multiplied, making it the second leading cause nationally. In the insurance sector, these figures translate into insufficient premiums if we do not model this wave.

VULNERABILITY: THE ACHILLES HEEL OF MODERN SOCIETY

Mental health is fragile by design. Factors such as post-pandemic isolation, inflation and addictive algorithms erode it. In Spain, 59% of respondents report suffering from severe stress (AXA 2025), with young people being three times more vulnerable due to a lack of support networks. Gender matters in mental health: women lead in anxiety—twice as much as men—but men top the ranking for suicide (up to four times the female rate).

The greatest vulnerability is found at the extremes: low income (which multiplies the incidence of psychosis by twelve), unemployment, and being a migrant. The WHO warns that insufficient resources exacerbate the cycles. In insurance medicine, all this translates into a ‘silenced risk’: policyholders who hide symptoms due to stigma, activating non-disclosure clauses in life or health insurance.

BREAKING THE STIGMA: WHY VISIBILITY SAVES LIVES

HTalking about mental health is not ‘sentimentality’; it is actuarial intelligence. Stigma has a cost: undertreatment increases chronicity, triggering disabilities and invalidity. In Spain, overdiagnosis coexists with endless waiting lists in the public health system, forcing people to turn to private healthcare.

Raising awareness reduces information asymmetries, which is why health questionnaires are necessary to investigate the existence of depression or anxiety without bias.

Furthermore, mental health is not an island; its effects are devastating on a global level. Depression has been shown to increase cardiovascular risk (60%) and diabetes (40%), while chronic anxiety is a risk factor for high blood pressure.

ANXIETY: THE STUCK ACCELERATOR

We need to think of anxiety as a faulty alarm system in our brain. Normally, this ‘threat detector’ warns us of real danger—a car braking suddenly—by releasing adrenaline so we can run or fight. But in pathological anxiety, that alarm sounds for no reason: the heart beats like a drum, the hands sweat, the chest tightens, and the mind replays imaginary catastrophes.

Physiologically, it is an unbalanced chemical cocktail: excess cortisol (the stress hormone) and glutamate (the neural accelerator gas), with little GABA (the calming brake). It manifests itself in panic attacks—cold sweats, tremors, feelings of imminent death—or as generalised anxiety, a constant buzzing that robs us of concentration and sleep. In Spain, it affects 8-10% of the adult population, with peaks in young women due to social and work pressures.

Why is it so destructive? Chronic anxiety inflames the entire body. Cortisol damages arteries, increasing the risk of heart attacks and strokes by 40-60%. It weakens the immune system, inviting the onset of recurrent infections and accelerating type 2 diabetes.

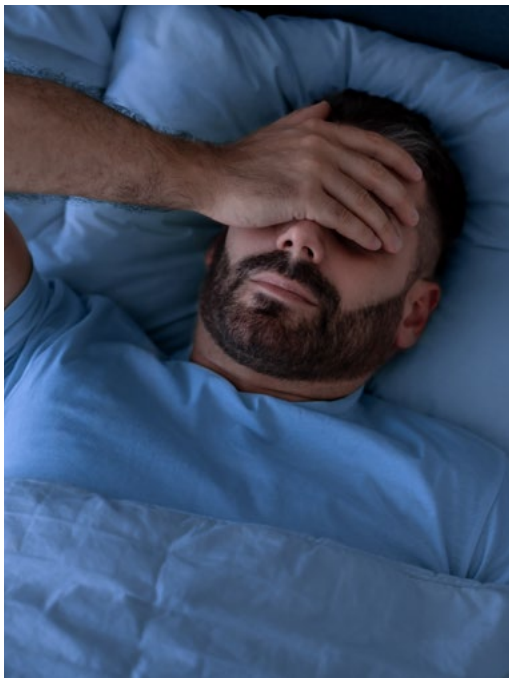
Global studies show that people with anxiety are 50% more likely to suffer from hypertension and gastric ulcers. Worse still, productivity at work is reduced by 30%, mistakes are made more frequently and there is more absenteeism. A mild crisis can cause days of sick leave, while a chronic case can lead to 3-6 months of sick leave. In addition, mortality rises by 15-20%: not only due to suicide (15 times higher in severe anxiety), but also due to ‘death from stress’ —premature ischaemic heart disease.

DEPRESSION: THE FOG THAT DIMS THE LIGHT

ANow let’s imagine depression as a thick fog that invades everything: there is no longer any colour in the sunrise, no taste in food, no desire to get up. This is not temporary sadness due to a break-up, but a persistent emptiness lasting more than two weeks, where pleasure disappears (anhedonia), guilt overwhelms and the body gives up: extreme fatigue, erratic appetite and slow movements. In Spain, depression affects 5-7% of the population annually, reaching 10% in people over 55, with women doubling the rates for men.

In the brain, it is a biochemical blackout: low levels of serotonin (happiness), noradrenaline (energy) and dopamine (motivation). The hyperactive amygdala magnifies the negative aspects, while the hippocampus shrinks, erasing happy memories. Physically, unexplained back pain, heavy digestion and decreased libido appear. Seventy per cent of people with depression report somatic symptoms before emotional ones appear.

Its destructive power lies in the domino effect. It increases cardiovascular risk by approximately 60% because chronic inflammation obstructs the coronary arteries. Type 2 diabetes increases by 40% and obesity by 50% due to increased emotional eating and forced sedentary lifestyles.



Depression is devastating in the workplace: 21% of people with depression work, compared to 80% of the general population, with an average sick leave of 168 days. It has been calculated that productivity in this group of patients falls by 35% and that mortality increases by 20-30%, with a higher number of suicides. Recent studies indicate that life expectancy is shortened by about 7-10 years because they forget to follow treatments, do not attend medical appointments and have more toxic habits (smoking and alcoholism).

IINSOMNIA: THE THIEF OF THE NIGHT

Close your eyes: thoughts spin around like a merry-go-round, the clock strikes 3 a.m. and sleep flees. Insomnia is not 'sleeping little'; it is having non-restorative sleep for more than three months: difficulty falling asleep (>30 min), waking up during the night or early in the morning, resulting in daytime exhaustion. It is estimated to affect 5-10% of the population in its chronic form and up to 30% in its mild form, with menopausal women leading the ranking.

Neurologically, one could say that the 'dream factory' is failing: circadian rhythms disrupted by low melatonin, prefrontal hyperactivity and oxidative stress. There is a lot of mental noise (worries) that blocks restorative slow waves. The consequences are immediate: irritability, poor memory and calorie cravings.

But insomnia is a slow poison. It robs us of deep sleep (stages 3-4), which is essential for the proper functioning of the immune and endocrine systems, triggering a 30% increase in daytime cortisol. The systemic inflammation that appears secondarily invites the onset of hypertension, diabetes, and obesity.

At work, insomnia kills efficiency: the number of errors triples, absenteeism doubles, and temporary work disability leave averages 90-120 days. Patients with insomnia often have accompanying anxiety/depression. It is estimated that mortality in this group of patients is 15-25% higher, mainly due to nocturnal heart attacks, fatal falls in the elderly, or impulsive suicides out of desperation. Overall, chronic insomnia shortens life by 5-7 years.

THE INFERNAL TRIO: HOW THEY FEED AND DEVASTATE

Anxiety starts the cycle, hyperactivity prevents sleep (insomnia), exhaustion causes depression, and the circle closes, starting all over again. Sixty per cent of people with anxiety have depression, and 70% of people with depression are insomniacs. Together, they multiply the damage: immunosuppression triples and cardiovascular risk increases 2.5-fold.

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Zurbano, 8 - 28010 Madrid
www.nacionalre.es - nr@nacionalre.es