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A Manifesto 4 longevity as a Biomedical Paradigm Shift Challenging Entrenched Wisdoms in Healthcare

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ABSTRACT

Health should be regarded as an is an asset and value dimension and not a liability or burden as it is often supposed to be. This article argues in favor of a paradigm shift towards the longevity framework taking on added significance step by step not only due to demographic changes, but also because transformed mind maps of aging societies. Paradoxically, our hospital and welfare systems incorporate the features of 'sickcare´, while neglecting or ignoring the value of healthcare and lifecare. Longevity resonates with the idea of a 360-degree One-Health-Concept (OHC). Instead of expanding the market for sickcare, we must invest in healthcare and lifecare as strategic assets from the micro-, meso- and macro-level to overcome the obstacles and constraints of sick caring institutions.

Abbreviations: OHC: One-Health-Concept; HITT: High Intensity Interval Training; RRP: Rationing; Rationalization and Prioritization; EID: Entrepreneurship, Innovation and Digitalization; LCF: Longevity Challenge Framework

Sick Welfare Systems and Hospital Landscapes: The Self-Created Market for Sickness

Highly industrialized and advanced societies capitalize on skills, competences and human assets. Put bluntly, the heralded and acclaimed war for talent reflects the increasing dominance of peopleware, brainware and software as opposed to sheer hardware in the sense of crude natural resources. For sure, the latter are important if they are in fixed supply, but oil, gas or minerals will only unfold their usefulness if they are transformed into problem solutions by the human factor (Rasche [1]). And even the new species of artificial intelligence is the outcome of bright minds, acumen and astute knowledge application. The pandemic evidences that natural resources and physical value chains are anything but devaluated assets, because they are the ingredients and bedrock factors of products, problem solutions and benefit bundles. Moreover, physical assets, irrespective of their constitution, only contribute to value creation if aligned with the human factor end ensuing competences, skills or the merits of talent. In the long run free-wheeling meritocracies will outperform command and order autocracies because of reaching the critical mass of creativity, competence, capital and coordination by means of entrepreneurial markets.

People and their health fuel the power post-modern economies facing severe socio-demographic shifts towards an aging society. The latter challenges the financial resilience of many welfare systems premising on a generation deal (Porter [2]). Many young employees adopt the responsibility to fund and finance the pensions and retirement burdens of a few old people with a 75 years average of life. Thanks to medical progress, safe labor conditions and better compliance with healthcare recommendations people expected timespan of life will increase, dramatically up to the age of 100 hundred years. But how to cope with such disruptive demographic shift from the medical, managerial and moral point of view? Longevity on the one hand is a gift, and asset and value point, but it also can be a burden for our entrenched welfare systems stemming from an era of short and harmful lives (Porter [3]) on the other hand.

The old era was driven by the industrialization of labor and employed workforces as input factors for the sake of value creation on behalf of stockholders and target groups. Minimum labor safety and poor labor conditions led to a philosophy of sickness avoidance and work ability maintenance to assure that labor is available, productive and disposable. Hospital and healthcare institutions placed special emphasis on interventions, therapies and medications to recreate decompensated human resources to be used in industrial workflows. They are the epitomes of interventional repair institutions when it comes to shock rooms, acute areas or chronic diseases. Recurring to Red Ocean and Blue Ocean framework of strategy contrasting selective red alert markets with prospective future markets (Kim [4]), red medicine resembles the old normal of healing, helping and handling needy patients.

We must pay a substantial tribute to evidence medicine because of fencing off the risks of dying, suffering from severs injuries. But we should like to make the point that longevity extends red medicine insofar as it incorporates the seeds of blue ocean healthcare as opposed to sickcare (Sinclair & Attia [5,6]). Ironically, the latter is a highly political issue, a huge business model and shortsighted mindset of handling states of decompensation. Red medicine is struck by the notion of fixing the problem while not coming up with fundamental solutions to cause root problems of patient-centered and value-driven healthcare (Porter [2]). Red ocean care is provided by top-down driven expert organizations adopting an inside-out position making patients enduring preordained medication. In a similar vein, compliance is deduced to the acceptance of prescribed medication for the sake of evidence-based outcomes.

Medical consultants capitalize on their expert status causing information and competence asymmetries between sickness professionals on the one hand and sickness amateurs on the other hand. Professionals are often reluctant to jeopardize their competence monopoly by means of information disclosure, communication and education. Moreover, medical experts are inclined to create an aseptic atmosphere of professionalism lacking empathy and co-value creation through committed and trained patients (Rasche [1]). The latter shy away from paternalistic sickcare when challenging entrenched wisdoms of service delivery according to the red medicine doctrine.

Target groups such as the LOHAS-customers (Lifestyle of Health and Sustainability) spearhead the longevity movement because they command a return on health instead discount on sickness. While the return on health equation stands for emancipated and empowered patients actively contributing to their well-being, the discount on sickness resembles a state of pain and agony alleviation by means of straightforward intervention (Friebe [7]). The motto: Treat first, what kills first! Irrespective of the undisputable merits of high-end emergency medicine and intensive care, blue ocean healthcare adds the value of longetivity healthcare and lifecare.

Longevity: Blue Ocean Healthcare and Lifecare Instead of Red Ocean Sickcare

Longevity is about quality of life and not about procrastination of death. For sure, most of us are eager to enjoy a long and healthy life that is a function of endogenous and exogenous factors to be managed in a self-conscious fashion. Evidence based medicine adopts the role of a healthcare companion with respect to AI options providing us with personalized, individualized and localized information under real-time conditions (Rasche [8]). The quantified-self movement makes passive patients erupt as active healthcare experts being accompanied by remote AI solutions as well as hands-on medication. The longevity framework is anything but disruptive because it serves as a complementary asset and contributes substantial value to the red medicine doctrine which is still valid in many instances. Nevertheless, red medicine should be levelled-up by means of the longevity approach. The following cornerstones foreshadow the future of longevity healthcare (Sinclair & Attia [5,6]).

Training and Physical Activity

One of the most effective and cost-efficient anti-aging programs implies regular exercising. A mixture of cardio, muscle, mobility and coordination training is far more effective than pure cardio fitness as favored by many elderly people when moderately cycling or nordic walking. As body strength and muscle mass decrease by 5 percent per decade when reaching the age of 30, holistic muscle training (and not bodybuilding) may contribute substantially to physical and mental health. Disciplines such CrossFit or High Intensity Interval Training (HITT) incorporate the best of all worlds because cardio, coordination and muscle power are trained in parallel due to complex body movements. Bodyweight training for instance can be practiced whenever you want with minimum equipment such as elastic bands or TRX-trainers. It is worth mentioning that the battle against age cannot be won of soft fitness such as aqua fitness of walking, alone. Body challenges and stretch goals make you leave your comfort zone often causing a fitness and health stalemate. But for motivational reasons a tiny fraction of fitness and exercising is better than degenerating in the comfort zone. Physical progress hinges in the principles of stressing the organism to provoke adaptation und super-compensation. Balancing physical stress and relaxation is core to sustainable health and fitness.

Nutrition and Healthy Food Access

Chronic diseases, obesity and the metabolic syndrome are often a function of bad food and nutrition habits. In other worlds, the effects of hard training can be destroyed by idle calory consumption, drug abuse or non-sustainable products in a biological way. In a broader sense, feeding the world in a sustainable way makes us enter a world of circularity avoiding waste of fast-moving consumer goods, fostering animal well-being and replacing animal-based products by vegan alternatives. In a nutshell, the food industry witnesses substantial

changes with respect to compliance with ESG standards. The latter are a call for ecological, social and governmental issues when it comes to the new design of the food value chain reflecting not only the position of the end consumer but also the labor conditions of all involved parties. Holistic longevity on the macro-level shares many common ideas with the Club of Rome, the World Health Organization or the United Nations when placing special emphasis on three-dimensional health: Health of mankind, health of animals and health of nature.

Stress resilience, robustness and mental agility: Longevity is also about coping strategies because physical and mental burdens sometimes cannot be anticipated of avoided. People often lack the constitution and coping strategies for managing stressful and unpleasant constellations, professionally. In some cases, pattern recognition capabilities support a valid forecasting critical incidents to be managed in a predictive and preventive way. But VUCA-constellations being volatile, uncertain, complex and ambiguous imply the only constant is change. For this reason, we are forced to think the unthinkable an being prepared risks, options and imponderables of any kind. This may inflict stress, pain and unease on you, if not endowed with resilience, agility smart decision making in face of fuzzy information and perceived states of routine disruption. Many studies evidence that physical and mental stamina represent a self-enforcing system to be established as stress protection shield.

Social Bonding and Emotional Capital

The pandemic caused states of sickness not only because of serious infections. Moreover, it the pandemic disrupted social bonding by means of regulation forbidding or inhibiting physical face 2 face contacts. As a consequence, digitalization had to fill the social gap in a rather aseptic way. The pitfalls of digitalization and remote work can be seen in soaring psychological diseases ranging from digital dementia to digital addiction and depressive moods. Mental health hinges on stable social landscapes of empathy, courtesy and real-life affections going beyond emojis. Real-life social bonding contributes to the establishment of emotional capital serving as the glue for affective networking among peer groups and friends. Loneliness or hazardous social bonds with sinister milieus and criminal minds may lead to pathologic social structures. The latter are harmful in a physical and/or psychological way when disbalancing people and patients. Poor social, infrastructural and emotional living conditions are closely related to disease, disbalance and discomfort.

Avoidance of Drugs and Harmful Substances

Longevity is severely hampered by false medication, drug abuse and the over-consumption of harmful substances such as salt sugar or fat. On the one hand, public health makes it a point of its honor to prevent citizens and societies from becoming addictive to harmful substances. One the other hand, sustainable therapies must be employed as means to make substance junkies either completely clean or support a conscious consumption of drugs, pharmaceuticals or other potentially harmful substances. Beyond public campaigning and strict control of drug availability people must gain the insight that a drug-free life outweighs the short-term gains of substance-induced fun and stress relief. Drug-free societies are desirable but hard to accomplish by means as sanctions and incentives, alone.

Self-Empowerment and Health Motivation

The value of longevity cannot be imposed on people of patients in a clear-cut command and order fashion. Intrinsic motivation in accordance with self-empowerment, self-efficacy and self-consciousness are the core ingredients of the longevity degustation. Personal traits, intelligence and smartness decisively contribute long and healthy high-quality because of permanent self-reflections and a wide-range capability set of doing the right things right in a highly professional way. The knowing-doing-gap is all-pervading causing a state of action paralysis despite knowing everything about health, fitness and longevity. The missing link is motivation, self-empowerment and commitment to health and life. Without compliance, commitment and control healthcare ambitions become suffocated and run dry. Frustration tolerance is no burden or obstacle. It represents the capacity to endure harmful and inconvenient instances without losing control of life.

Genetic and Epigenetic Factors

The fate of genetic endowment cannot be neglected as an endemic health factor. But genetic heritage is not everything since individual lifestyle and commitment to health may have strong bearing on genetics. Epigenetic factors reflect our habits, routines and behavioral traits with respect to health and correspond with genetic constituencies that are – as opposed to former assumptions – transmutable and anything but a stable system of ingrained body features. If lifestyles are translated into healthstyles genetic deficits may be partly compensated by epigenetic merits of high health compliance, commitment and control. The relevance of epigenetics for health and well-weing deserves more research and competence building.

Access to and Benefit from Healthcare

Having the possibility of direct and straight healthcare access of great benefit for patients suffering from acute or chronic diseases. Rationing, rationalization and prioritization are omni-present in healthcare systems having to manage many constraints in face of scarce resources in fixed supply. The four asset categories hardware, software, brainware and peopleweare are crucial to service delivery in healthcare and must disposable and available with respect quality, cost and time aspects. Healthcare readiness is not given in many countries excluding the vast majority from qualified healthcare access and sanitation resources.

Socioeconomic Status and Competence Level

Referring to the aforementioned healthcare assets peopleware and brainware may extend the value of sheer hardware and software, because the three C competence, commitment and (self)-control go in line with personal qualifications and the socioeconomic status as reflected by academic status or degree of professionalism. The socio-economic status and the educational level are often highly correlated giving rise to the assumption that longevity is a matter of advanced factors having been accumulated by long-term trajectories of learning, competence building and on the job experiences. Healthcare alertness and smartness are no inherited assets, they must be gained and sustained by means of personal investments in knowledge and competence. Poor, less educated and no committed people die earlier and sicker even in the case of non-discriminatory healthcare access, lacking the complementary capabilities to take full advantages of well-established welfare systems.

Precision Medicine and AI

Last but not least, artificial intelligence turns out as a truly disruptive technology causing a paradigm shift in many industries. In sharp contrast to the analog age AI provides us with the opportunity to send and receive individualized, personalized and localized information generated by deep-learning machines such as MedBots to arrive at conclusions and (autonomous) decisions outperforming healthcare professionals. We cannot fully rely on AI in healthcare at the moment and hand over a good proportion of decision making to autonomous systems and algorithms but in predictable times IT induced support solutions evolve from augmenting and adjuvant second options to options of first choice. Machines replace manmade service in healthcare pertaining standard operation procedures and even non-routine challenges. AI-imbued patients and healthcare customers can benefit from real-time high-precision information availability and access to a high degree. Wearables and external diagnostics gadgets will evolve as micro-implantables such as sensors, intelligent pills or chip-supported nano devices (Rasche [8]).

Holistic Longevity: Health of People, Animals and Nature

Longevity in a broader sense encompasses health of people, health of animals and health of nature, because sustainable one-world concepts acknowledge that the three dimensions are closely intertwined. The simple logic: One planet – One Health (Friebe [7]).

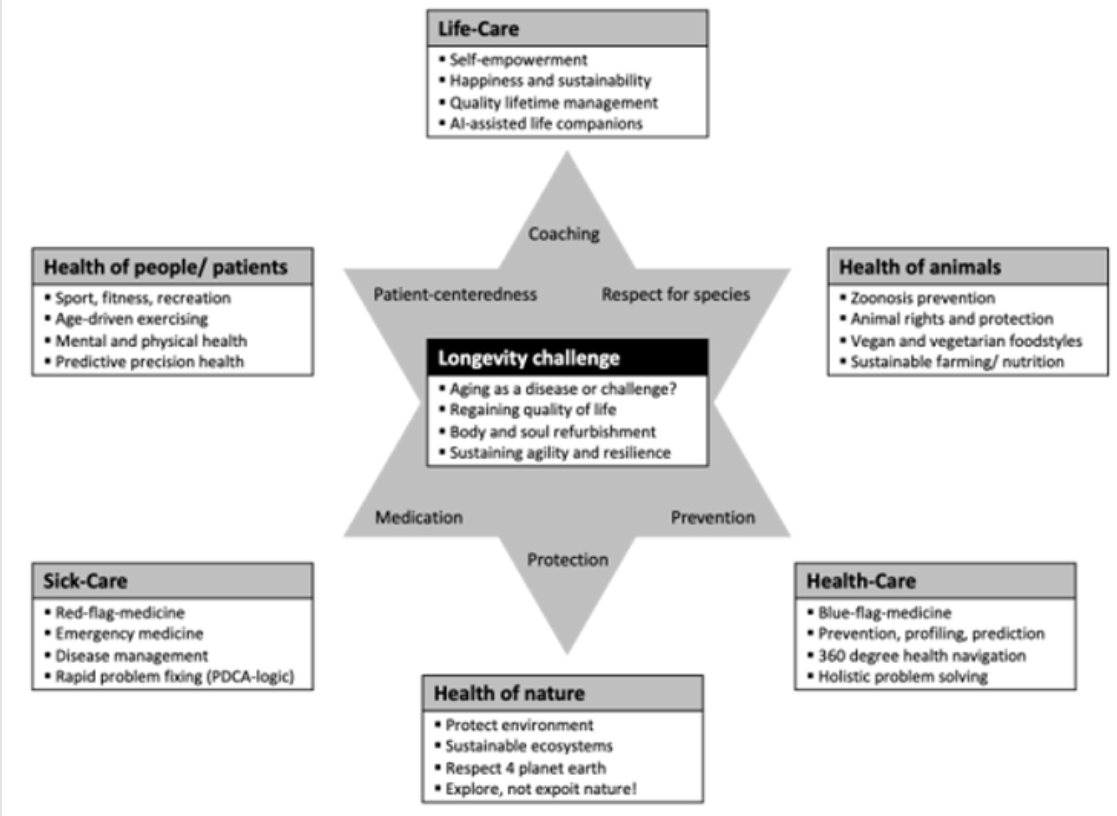

Figure 1: The Longevity Challenge Framework.

Health of People, Patients and Mankind

In a narrow sense longevity sharpens our senses for aging societies, demographic shifts and changed mindsets with respect to health and sickness. Not the sheer absence of sickness is relevant, but also life quality, happiness and conscious consumption with respect to externalization of negative effects and full compliance with ESG standards. The health-happiness-tandem stands for mental, physical, economic, ecological and economic ecosystem of balance. A balanced longevity lifestyle is inspired by the notion that aging is no disease, but an incident of life providing many opportunities and options if people comply with a masterplan of demographic challenges. Many of the baby boomers are eager to win 2 decades of highest life quality and health status by taking full advantage on medical options on the one hand and a commitment to preventive and predictive health on the other hand (Figure 1). Predictive and AI induced precision medicine may provide aging targets groups with tailormade real-time information to delay states of decompensation and assure that the latter can be managed through assisted ambient living and health concepts when benefiting from complementary health-tech-solutions.

Health of Animals

Many pandemic incidents stem from zoonosis because mankind all too often does not respects "animals rights" when invading and exploiting their ecosystems leading to a reduction of bio-diversity, disbalance of species and infectious diseases being transferred from animals to people. Moreover, industrialized meat production not only leads to tremendous carbo-emissions but also to land-grabbing, monocultures and harmful animal medication having severe side-effects in its track such as the frequent (mis-)use of antibiotics, growth hormones or steroids evidence. Additionally, massive meat consumptions are held responsible for many chronic diseases that could be avoided through vegetarian or vegan diets and nutrition concepts. Adopting a legislation standpoint respect for animal rights challenges constitutional regulation having to pay attention to wellbeing of nature and animals for the sake of mankind. The contamination of lakes, rivers and oceans also contributes to harmful food chains in face of the profit boosting doctrine of the fast-moving consumer goods industry. One hand animal, species die out or face extinction and on the hand, eco-systems are endangered by invasive species such a hippos in Columbia, rabbits in Australia or raccoons in Germany (Figure 2).

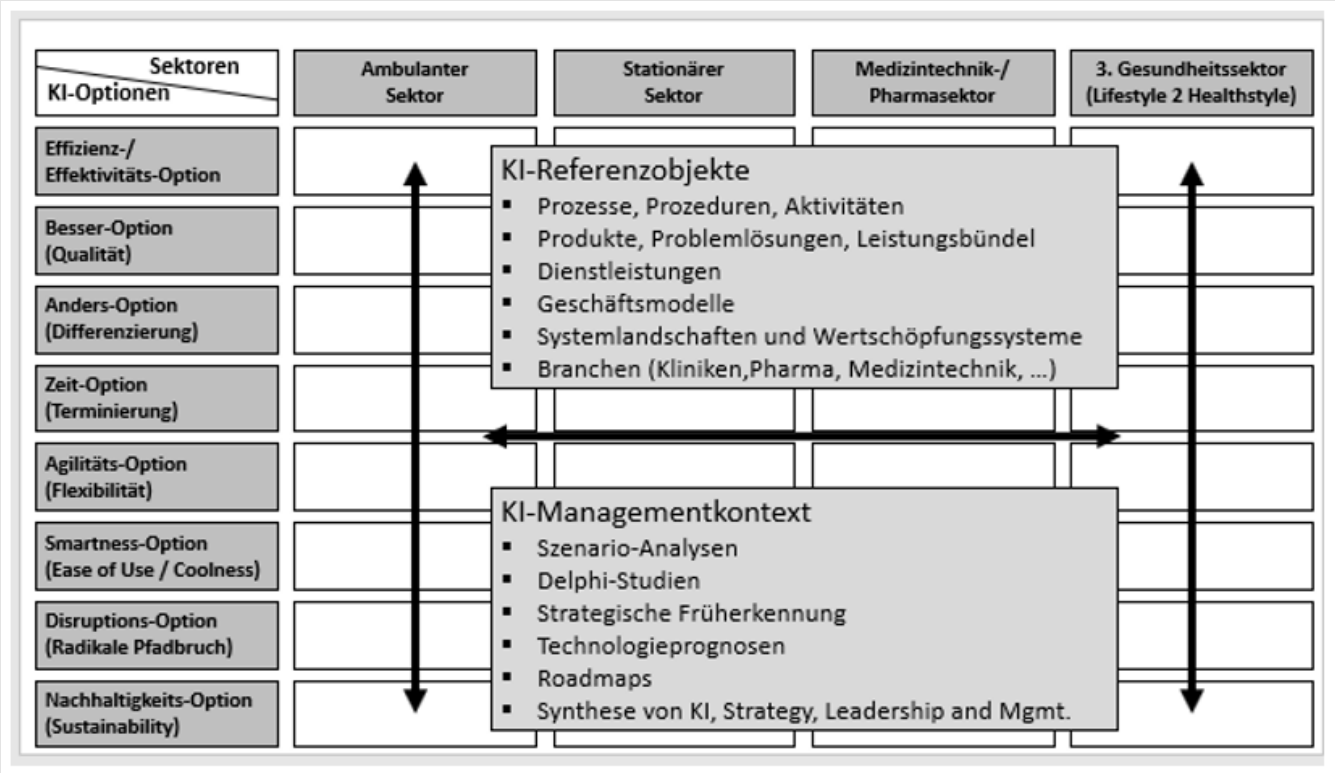

Figure 2.

Health of Nature

The protection of bio-diversity is a strategic goal because devastated eco-systems deprive mankind of substantial medical and pharmaceutical opportunities. The precious asset of bio-diversity provides scientists with an untapped access to promising substances, genetic varieties therapeutical knowledge of first nation people. The latter increasingly command a fair share of value of their eco-diversity and knowledge about plants and substances. Fair trade from an ESG perspective implies a sharing economy logic that we must arrive at a new normal of property rights to honor the healthcare value for inhabitants. The one-world- and one-health-approach places special emphasis on complex dynamics because both hemispheres of the world represent a dynamically connected system with respect to global climate change, global migration and migration of microorganisms. Health and quality of life are highly dependent on impeccable ecosystems that may be explored in a sustainable und humble manner, but should not be exploited as has happened from the onset of colonization until now. The so-called critical industries are those sectors that place the burdens of value generation on nature, nations and natives when exploiting resources efficiently and paying adequately for the negative external effects. Longevity of mankind and generations hinges on a deal with nature to take advantages of the latter while not exploiting it for economic reasons (Figure 3).

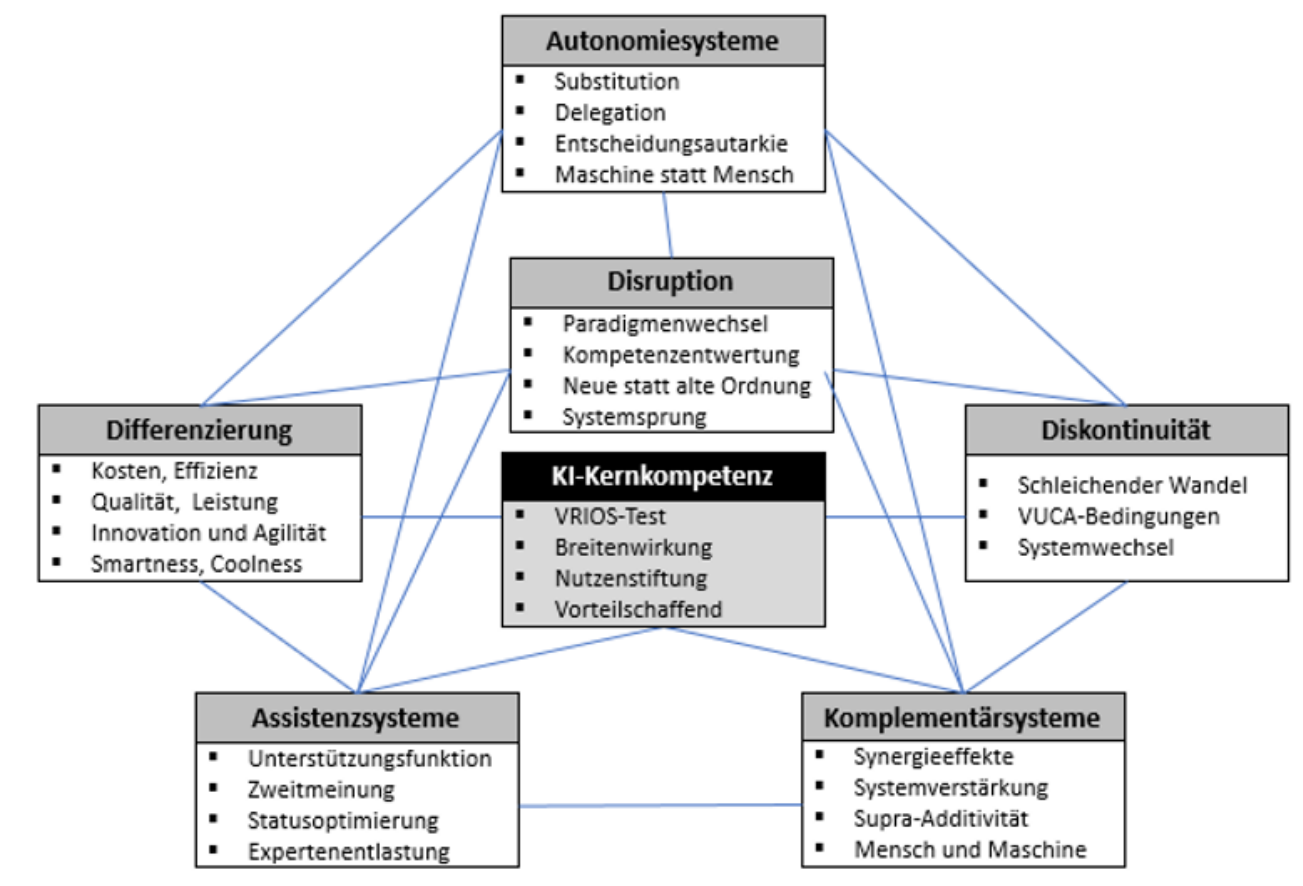

Figure 3.

AMLEG-Framework: 360-Degree Longevity Navigation

The one-planet-approach is a plea for a 360-heathcare when mastering the present and preempting the future (Friebe [7]). The AMLEG-framework stands for administration, management, leadership, entrepreneurship and governance of healthcare and ensuing longevity. From the political and institutional point of view healthcare and longevity can only be reached if navigation a direction setting take place (Steffen [9]).

Longevity Administration

Healthcare institutions often lack a smart, lean and digitalized administration that is a precondition resource disposition, service deliv-

ery and patient-centered healthcare. Administrative professionalism corresponds with hospital and healthcare processes beyond paper and pencil work as often prevalent in conservative and path dependent industries.

Longevity Management

Longevity is dependent on professional and circular management as epitomized by the PDCA model. Demographic change and transformation from disease repair to preventive and predictive health maintenance challenge entrenched wisdoms of the path-dependent hospital system. The is over-administrated, but under-managed when it comes to opportunities digitalization and AI.

Longevity Leadership

Path-breaking transformation processes and paradigm shift are more a function of leadership than of management and administration. Longevity means a paradigm shift for the diagnostics, therapy and medication industry because the old normal of sickness is replaced by the new normal lifestyle of health and sustainability. Healthcare providers must be braced for an aging population of involved longevity customers claiming perceived value instead of paternalistic treatments.

Longevity Entrepreneurship

Adopting a start-up and business development standpoint longevity provides us with a flurry of sound investment option when aligning health and healing with digital options as reflected by MedTech-unicorns and platform-based healthcare solutions employing deep learning, algorithms and artificial intelligence. The entrenched incumbents must be aware of disruptors from outside who define the landscape of medicine, care giving and service delivery in an innovative way.

Longevity Governance

The future of healthcare hinges on governance, regulation and legislation calling for political impact management to push new ideas and concepts against all odds. Aging societies must challenge sickness governance to arrive at a new level of holistic healthcare navigation. Governance systems are forced to change the incentive schemes with respect to payments and renumeration to avoid sickness administration instead of healthcare navigation. Emergency medicine and acute interventions are options of last resort and not standard operation procedures of problem fixing. The AMLEG-pentagon reflects the options of 360-dergree healthcare navigation and represents a self-enforcing system of supporting and promoting longevity aspirations (Steffen [9]).

Manifesto 4 Longevity

Longevity in general is not only about the length of time that a person, organism or other species not only can live or survive in an uncomfortable ecological niche. The potential lifespan of an individual or the average lifespan of a species is only a necessary condition to be filled. The sufficient condition reflects the quality-of-life-dimension, since people and patients want to enjoy fitness, health and independence irrespective of their calendric age. What counts is perceived biological and mental age. For sure, lifespan is ultimately limited, but can be positively influenced by many sustainable lifestyle choices culminating in a beneficial healthstyle. While genetic endowments are to some extent preordaining longevity due to "excellent genes", the science also evidence the relevance of epigenetics. However, scientific advancements and improvements in healthcare contributed substantially to and an increase in average life expectancy over the past decades. Nevertheless, some critical target groups face a decrease of average life expectancy due to non-compliant and health-averse lifestyle.

Obesity, diabetes, cancer, cardiovascular diseases and severe fitness deficits are the negative hallmarks of many less educated people. Sanitation progress, access to clean water and healthy food as well as disease prevention, precision medicine and predictive health are often options for a privileged few, who reflect the value of health and devalue comfort zones laziness and lavishness. Longevity is about slowing down or reversing process of body and soul degeneration by means of a set of self-employed choices due to a mindset of health literacy. Longevity shares common ground with geriatric and gerontologic objectives, but is somehow different with respect to the view on aging. While geriatric and gerontologic studies circle around the stabilization and alleviation of states of decompensation the longevity approach draws a positive aging picture, when providing us with sound plans of healthy and joyful aging (Sinclair & Attia [5,6]).

In brief, we should like to define and delineate the cornerstones of longevity to conclude with10 tenets of importance and prioritization.

1. First, longevity is no appendix of the old normal of sickcare. Moreover, it incorporates the seeds of the new normal of predictive, preventive and precise healthcare.
2. Second, longevity takes full advantage of digitalization and AI solutions on behalf of involved and committed healthcare clients feeling embarrassed by paternalistic medicine.
3. Third, health mankind, animals and nature must go hand in hand because planet earth is a dynamic system of multiple and interdependent vectors that cannot be administrated as isolated and encapsulated elements. One planet = One health!
4. Forth, value for healthcare implies not only rationing, rationalization and prioritization (RRP) to employ scarce resources in an efficient and effective way. Beyond the lean and mean focus on asset exploitation we should also pay attention to new asset exploration by means of entrepreneurship, innovation and digitalization (EID)
5. Fifth, the all-pervading sickcare policies must be comple-

mented by healthcare and lifecare doctrines to make patients behave as emancipated, compliant and committed healthcare experts who do have to worship conventional medicine anymore.

6. Sixth, longevity goes beyond compliance in a rule-abiding sense when prioritizing companionship with patients. Patients evolve as co-value creators of their own and self-controlled health.
7. Seventh, gerontologic and geriatric studies must embody the value longevity in aging societies to overcome the paralyzing pathology of sickness monitoring and disease management.
8. Eighth, the longevity approach does not resemble medical disciplines although resorting to their scientific and practical evidence. The purpose of this concepts goes beyond individual length and quality of life on the micro-level. Political, ecological, societal and economic ecosystems should also be considered as mediating factors of sustainable health and longevity.
9. Ninth, healthcare systems need an institutional turnaround to pay for health instead of clinging to a sick governance structure and incentive regimes that pay for sickness and honor disease management. Sickcare, healthcare and lifecare are intertwined being the cornerstones of the longevity triangle.
10. Tenth, paternalistic top-down medicine has outlived its usefulness in many cases, because empowered patients postulate a paradigm shift towards client-centered healthcare approach balancing aseptic tech-care with empathetic touch-care.

The Longevity Challenge Framework (LCF) summarizes the key essentials of the paper.

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