Most Regrettable Business Decisions

ERRORS - MISSED OPPORTUNITIES - PITFALLS - TAKEAWAYS

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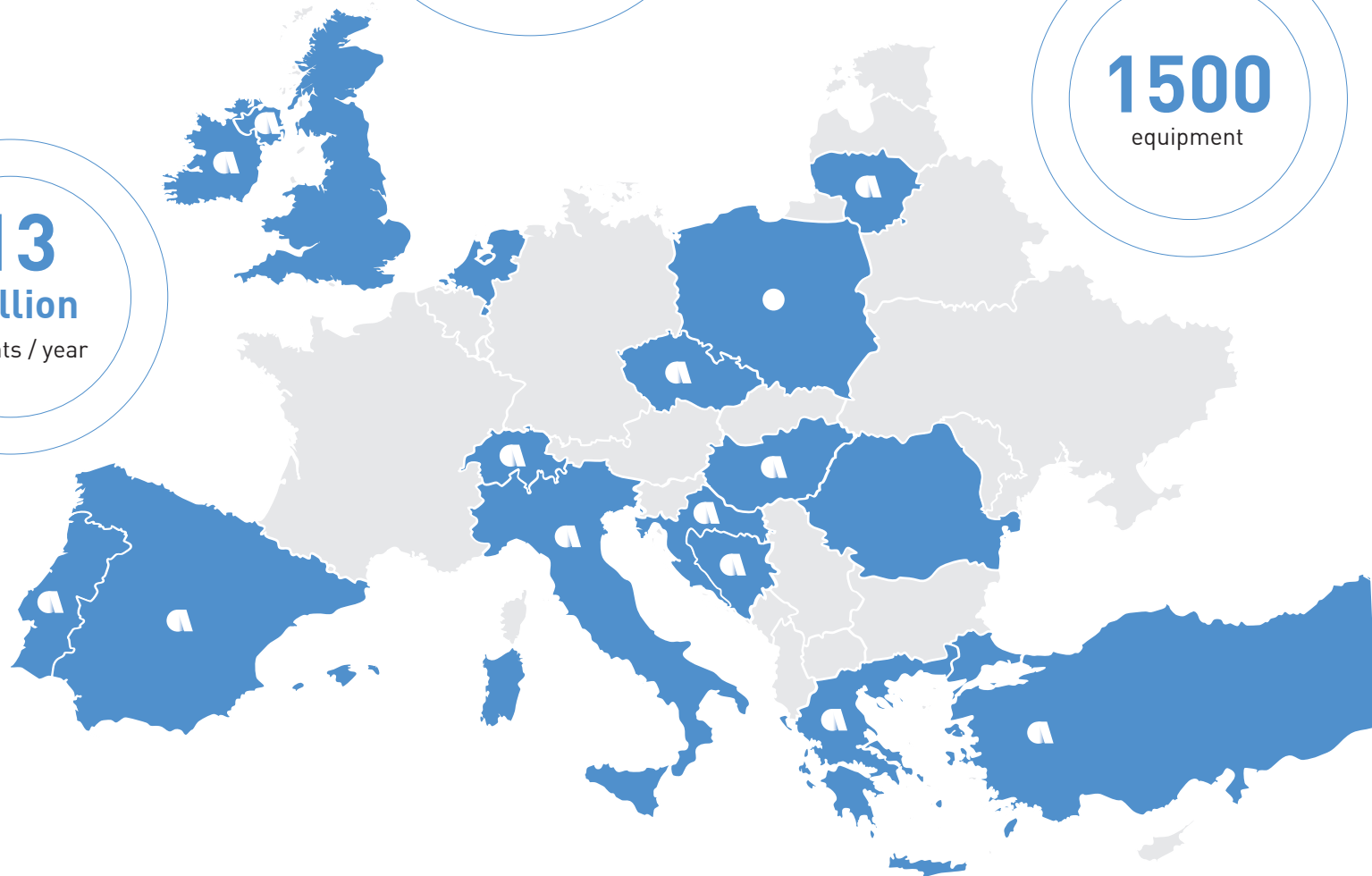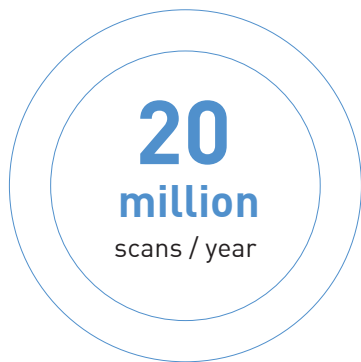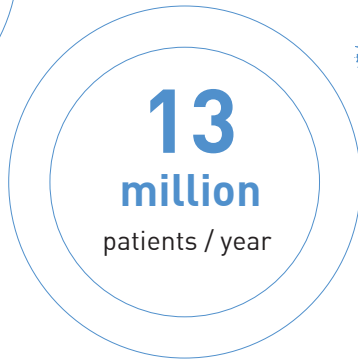
Editorial

PROF ALEXANDRE LOURENÇO

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Most Regrettable Business Decisions

Regrettable healthcare management decisions—errors, missed opportunities, and resource allocation pitfalls—can be profoundly costly and impactful. The ripple effects of such missteps can strain operational efficiency, compromise patient care, and erode the essential trust that underpins the relationship between healthcare providers and their communities. Yet, it is not the absence of mistakes but rather the response to them that truly measures the resilience and adaptability of a healthcare organisation and a healthcare manager. Learning from these errors is critical for developing more efficient, patient-centric healthcare systems, ultimately preserving health and trust.

The journey toward improvement begins with acceptance and reflection. The first crucial step is to recognise mistakes without defensiveness. This acceptance paves the way for genuine reflection, enabling healthcare leaders to understand their decisions' full scope and impact. When managers openly acknowledge their errors, they set a precedent for a culture of honesty and accountability, creating an environment where learning and growth are prioritised.

Investigating the factors that lead to these decisions is vital. A thorough root cause analysis can uncover the underlying issues and patterns contributing to the error. This detailed examination helps ensure that the insights gained are surface-level observations and deep, actionable understandings that inform future strategies. By delving into the complexities behind the missteps, healthcare leaders can identify systemic weaknesses and areas for improvement.

Transparency with all stakeholders about what happened and why is essential in maintaining trust and credibility. Clear and honest communication helps rebuild confidence and shows a commitment to accountability. It demonstrates that the organisation values its relationship with patients, staff, and the broader community and is dedicated to making amends and improving.

Identifying the underlying causes of errors is only part of the solution; preventing future mistakes requires implementing necessary changes to processes, policies, and strategies. This proactive approach ensures that similar errors are not repeated. It involves not just addressing the immediate issue but also rethinking and redesigning systems to be more resilient and robust. This might include updating protocols, enhancing training programmes, or investing in new technologies.

Offering support to healthcare staff and stakeholders affected by these decisions is also crucial. When errors occur, the impact is felt across the organisation. Providing the necessary support helps mitigate the adverse effects and fosters a culture of care and empathy. This support can take many forms, from counselling services and additional training to creating open forums for discussion and feedback.

Developing a plan to minimise the negative impacts of these decisions is essential for regaining stability and moving forward. This plan should outline realistic goals and actionable steps to address the fallout and rebuild the organisation's foundation. Establishing these goals helps provide direction and focus, ensuring that the organisation works towards a common objective.

Fostering a culture where mistakes are seen as learning opportunities is vital for continuous improvement and innovation. Encouraging an environment where staff feel safe reporting errors and discussing them openly without fear of retribution promotes a culture of transparency and constant learning. This approach transforms mistakes from merely regrettable incidents to pivotal learning experiences that drive improvement and innovation.

Mistakes will undoubtedly be made in the complex and dynamic field of healthcare management. However, the manager's actual test lies in its ability to recover and learn from these mistakes. By building a resilient and adaptive framework for the future, managers can turn their errors into opportunities for growth and improvement.

In this issue, our contributors explore various facets of healthcare decision-making and demonstrate how mistakes and regrettable errors can be addressed and rectified, ultimately leading to more robust, more effective healthcare systems.

We hope you enjoy reading this issue and welcome any feedback.

Happy reading!

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Arian Adeli Koodehi is a youthful author, entrepreneur, and student whose entrepreneurial journey began at 13 with AI algorithms for self-driving cars. His ventures span FoodTech and FinTech, culminating in his first book at 16, "The Quantified Fortune," simplifying modern finance for young readers. A TED talk at 18 on life's direction followed, underpinning his dedication today to media innovation and startup support via Evernomic, his venture studio. Featured in Entrepreneur and Business Insider, Arian is passionate about impactful ventures. He shares insights on business, technology, and growth alongside notable peers at www.arianadeli.com

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Albert Alonso is a senior researcher at the Department of Research and Innovation, Clinic Research Foundation Barcelona, Hospital Clinic Barcelona. His focus lies in defining, evaluating, and implementing new health service models, particularly integrated care. Albert has contributed to numerous R&D projects exploring innovative care modalities, frequently leveraging information technology. With MD and PhD degrees in Medicine, along with a postgraduate diploma in Information Systems Management and Organisation, he brings a robust academic background to his role. Albert also serves as a lecturer in both undergraduate and postgraduate programmes, and has held significant leadership roles, including vice-chair and chair of the International Foundation for Integrated Care.

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Antonio Bonaldi has been the medical director of important university hospitals in Bergamo, Verona, Milano (Istituti Clinici di Perfezionamento) and Monza. He is the author of several books and over a hundred scientific and informative articles relating to the ecological footprint of health services, quality improvement of healthcare, clinical risk management, health technology assessment, hospital design, system vision and management of complex systems. He is a member of the Scientific Committee of the International Society of Doctors for Environment - Italy (ISDE-IT) and the Founder & Former President of Slow Medicine.

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Hans Blickman, a native of Amsterdam, the Netherlands, pursued his education at College of the Holy Cross and Boston University School of Medicine, culminating in a PhD from Erasmus Universiteit in Rotterdam. His distinguished career includes roles as Division Chief of Pediatric Radiology at MGH in Boston and Professor & Chairman of the Department of Radiology at UMC Nijmegen in the Netherlands. He later served as Emeritus Professor and Vice Chairman of the Department of Imaging Sciences at URMC and Emeritus Radiologist-in-Chief at Golisano Children's Hospital in Rochester, NY. An Emeritus Editor-in-Chief of the European Journal of Radiology, Hans remains active in manuscript review and editing.

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André Brauers is a seasoned professional dedicated to advancing innovation and excellence at the nexus of technology and education. With an MBA in Marketing and Sales from FOM, Cologne, a Master of Science in Medical Physics from TU Kaiserslautern, and a Diplom-Ingenieur in Electrical Engineering from FH Krefeld, André has held pivotal roles in sales, marketing, product management, and operations. As Global Head of Immersive and Digital Education Solutions at Siemens Healthineers, André spearheaded the development of pioneering digital education services that transformed learning in healthcare. His vision is to continue shaping the future of education and technology, creating immersive learning experiences that empower healthcare professionals worldwide.

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Martina Buttinger, Austria

Martina Buttinger embarked on her career in the late 1980s as a hospital assistant in Vienna, balancing her full-time role with studies to earn a diploma in health and nursing. Over nearly 25 years, she ascended through various management roles in the healthcare sector, leveraging her dual academic achievements to integrate practical expertise with theoretical insight. A mother of five, Martina currently oversees operations at two nursing facilities in Vienna, mentors future health professionals at the Academy for Health Professions, and provides coaching to managers. Her philosophy centres on viewing leadership as intrinsic to human development, reflecting her dedication to both practical management and educational excellence.

Dr Chrystalla Charalambous, Cyprus

Dr Chrystalla Charalambous holds a PhD in Molecular Genetics from the University of Glasgow and is completing her MBA from the Cyprus Business School. Over the past 18 years, she has gained extensive experience in a multinational pharmaceutical company, excelling in roles from medical advisor to General Manager. Dr Charalambous bridges the gap between research and commercialization, bringing numerous innovative products to market. In 2023, she founded her own healthcare consultancy, providing strategic guidance, market analysis, and regulatory insights. Her leadership continues to inspire progress in healthcare, making her a sought-after consultant and trusted partner in the sector.

Prof Lluís Donoso-Bach, Spain

Prof Lluís Donoso-Bach, Chair of the Diagnostic Imaging Department at Hospital Clínic of Barcelona and Professor of Radiology at the University of Barcelona, is a prominent figure in European radiology. With expertise spanning liver imaging, digital imaging, IT applications in diagnostic radiology, and product development, he has significantly influenced the field. Formerly President of the European Society of Radiology and involved in various ESR and ECR committees, he holds a PhD in Medicine and a Bachelor's degree from the Autonomous University of Barcelona. Director of the Clinical Advanced Technologies Institute (CATI) and the UB-Siemens Healthcare Chair, he directed Hospital Clínic's Medical Imaging Department from 2007 to 2021. Known for pioneering work in abdominal imaging and digital technologies, Prof Donoso-Bach has authored numerous publications and held leadership roles in prestigious international societies.

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José Antonio Cano holds a doctorate of Telecommunications Engineering from the University of Valladolid and master's in international relations and foreign trade from INFOREM, he is the Director of Analysis and Consulting at IDC. With over 20 years of experience in multinational and technology companies in strategic consulting, technology, and business, he has been involved in developing policies and projects to promote and implement new technologies and business investment in technology at national and regional levels. He has also advised large corporations to medium-sized enterprises and startups in the process of business transformation, financing, and commercialisation of innovation. José Antonio is also the executive advisor of the Spanish Aeronautical Society and a professor and tutor in organisations and business schools such as CEU, DBS or EOI.

Marc Chong, Netherlands

Marc Chong, a native of The Netherlands, has 30+ years of global experience in MedTech. He is an entrepreneur with the ambition to keep healthcare accessible and affordable for everyone by translating (emerging) technologies to the work floor. Seasoned by years of work experience within the industry he, as visionary, strategic influencer and people person, believes it is about communication, people and processes and, most of all, data.

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Clodoaldo D. Filho, an Executive MBA graduate from FGV Business School, is a result-driven professional with extensive experience in business development and management. As the Global Clinical Governance Project Manager at Affidea, he is responsible for the deployment and execution of Clinical Governance (CG) projects. Clodoaldo works closely with country and centre management and the clinical team to ensure the successful delivery and documentation of CG initiatives. He conducts clinical audits to enhance patient outcomes and implements quality improvement measures. His role involves utilising metrics and tools for tracking progress, diagnosing issues, and ensuring effective risk management.

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Allan Fors is a dynamic professional in Industrial Engineering and Management, specialising in Project Management, Innovation Management, Entrepreneurship, Quality Management, Leadership, and Change Management. With years of experience leading international project groups and university teams in India, China, and Europe, he has a robust background in Sales and Marketing for both global and start-up IT companies, targeting customers in the US and Sweden with notable success. As a social entrepreneur, Allan founded kids.R.ok, an organisation dedicated to providing quality education to children in impoverished neighbourhoods, highlighting his commitment to human empowerment through global networking and technology for local impact and positive change.

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Hector is a Professor of Marketing at ESCP Business School in Madrid. He has lived, worked and studied in Spain, Germany, Japan, South Korea, the USA and the UK. Hector has worked on projects for small- to medium-sized businesses and large international companies such as Pepsi and Ford. He is interested in interdisciplinary research that addresses the phenomena of self and consumption. His work spans areas such as cross-cultural consumer behaviour, body image and consumption, and, in particular, human-robot/AI interactions. He is also a regular guest speaker at international events and engages in executive training.

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Chris is the Chief Technology Officer at Concord Technologies. He is a seasoned healthcare executive with deep experience leading technology and cognitive systems innovation. Chris has built an impressive track record of developing precision medicine solutions in healthcare and life sciences for Microsoft, GE Healthcare, and Elsevier. He has successfully brought multiple cognitive computing products for healthcare to market and is widely recognised as a thought leader in an industry challenged by interoperability.

Dr Pilar Gangas Peiro, UK

Dr Pilar Gangas Peiro joined the International Foundation for Integrated Care (IFIC) in March 2021. As Head of the EU projects portfolio, she manages EU-funded integrated care projects and serves as a Senior Researcher. Pilar contributes to IFIC Conferences and focuses on digitally-enabled integrated care. She has over 20 years of experience as a social and political sciences researcher, project manager, and consultant in both public and private sectors. Previously, she was a university professor and political advisor in Spain's Prime Minister's Office. Pilar holds a PhD in Political Sciences, a Master's in Social Sciences, and a degree in Political Sciences, with a post-doc stay at Harvard University's Center for European Studies.

Prof Nicholas Goodwin, Australia

Professor Nick Goodwin, appointed in July 2019, serves as the Director of the Central Coast Research Institute (CCRI), located at the Health and Wellbeing Precinct on the Gosford Hospital campus. This institute, a collaborative initiative between the University of Newcastle and the Central Coast Local Health District (CCLHD), focuses on advancing health services research and policy. With a background spanning 25 years in social science, Nick has held significant roles, including Senior Fellow at The King's Fund in London and co-founder of the International Foundation for Integrated Care (IFIC). He continues to drive integrated care initiatives globally as Editor-in-Chief of the International Journal of Integrated Care and remains actively engaged with IFIC's collaborative centres in Australia and the Asia-Pacific region. In recognition of his contributions, Nick was honored with the Avedis Donabedian International Award for Healthcare Excellence in January 2016.

Dr Niamh Lennox-Chhugani, UK

Dr Niamh Lennox-Chhugani is a senior leader and advocate for population health through integrated care, with over 30 years of experience. Starting as a clinician, she has designed and evaluated innovative care models, including prevention, self-care, multidisciplinary collaboration, and evidence-based care coordination internationally. Niamh values using both quantitative and qualitative data to assess impacts on health systems. She has worked with policymakers, system decision-makers, provider boards, frontline teams, and community groups. A sought-after speaker, she frequently presents at conferences and webinars. Niamh serves on the Editorial Board of the International Journal of Integrated Care and as a review editor for Frontiers in Digital Health.

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Stephen Lieber is an innovative and accomplished executive with extensive domestic and international experience in healthcare and information technology management. Renowned for his ability to grow organizations, Steve holds a vast executive-level network and has earned national and global recognition. As a consultant, he provides expertise to associations and companies in governance development, strategic and operational analysis, international business expansion, data and analytics services, and digital media. His specialties include not-for-profit management, strategic planning, healthcare policy, mergers and acquisitions, health information technology policy, and digital media. Additionally, Steve serves as a technical and business advisor to startup companies.

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Edward Mena is the Medical Director of the Pasadena Liver Center and President and CEO of the California Liver Research Institute. His interests include non-alcoholic fatty liver disease in adult and paediatric patients, non-alcoholic steatohepatitis in response to chronic hepatitis C and liver cancer, and coordinating outreach programmes in the Latino, Armenian, and Egyptian communities to better understand the role of hepatitis B and C and cirrhosis within these populations. He also focuses on managing and curing patients with primary liver cancer.

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Jens Schneider is a seasoned leader, healthcare consultant and project manager with 20 years of experience in the healthcare industry. He has corporate experience on all levels and field experience in 18 countries. Jens is interested in increasing well-being and margin through redesigning healthcare delivery. His areas of interest include hospital management, telemedicine, artificial intelligence, healthcare reform, strategy, business planning, process and infrastructure consulting for hospitals and the outpatient sector, market development, politics, marketing and sales to C-Levels.

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Dr Alessandro Roncacci joined Affidea in 2019 as Italy's Country Clinical Director. Leading the clinical agenda, he introduced new products, significantly advancing Affidea Italy. In June 2020, he became Interim Chief Medical Officer for Affidea Group. With 15 years as a radiologist and a Ph.D. in Surgical Physiopathology and Gastroenterology from University of "La Sapienza," he previously served at Sant 'Andrea University Hospital and San Camillo-Forlanini Public Hospital, specialising in Emergency Radiology, Breast Imaging, CT, NMR, and US integrated imaging. Dr Roncacci 's work has featured prominently at national and international conferences, with impactful reports and abstracts. Alongside his medical qualifications, he holds a Master's in Healthcare Management from SDA Bocconi University, Milan. An expert in radiology resource management and outsourcing, he plays an active role with the Italian Society of Medical Radiology (SIRM) and the National Radiologists Society (SNR).

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Prof Nicola (Nikki) Shaw is English but has lived in Canada for 20 years in BC, AB, and ON. Her discipline is health informatics, but she also works in health services research, disability studies, medical professionalism, and ethics. She is well-versed in research methods across the spectrum from Qualitative to Quantitative. She frequently uses mixed methods in her own work. She teaches a variety of subjects ranging from Sociology and Philosophy to Epidemiology. She is currently a full Professor in the Department of Biology at Algoma University and is also the Sault Ste Marie Family Medicine Residents Research Tutor for NOSM University. Nikki is deaf and uses a service dog. She is very open to collaboration and partnership and would love to hear from anybody interested in doing so.

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Dr Zoi Triandafilidis is a Research Fellow at the Central Coast Research Institute for Integrated Care and an Honorary Conjoint Scholar at the Central Coast Local Health District. She represents early career researchers in the HMRI Healthcare Transformation Research Program. Since 2015, she has worked with clinician researchers at Western Sydney University's School of Nursing and Midwifery on projects related to breastfeeding support, service evaluation, and women's breastfeeding experiences. Her 2018 PhD examined cigarette smoking among young women, emphasizing the need for nuanced tobacco control. Post-PhD, Zoi contributed to The HIVE at the Black Dog Institute, focusing on mental health and suicide prevention. Her recent research includes transitions for Autistic youth and clinician-researcher capacity in palliative care.

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Michael Virardi is an esteemed speaker, trainer, and author, boasting over two decades of expertise in fostering leadership and organisational excellence. As founder and director of MRV Simple Techniques Ltd., he specialises in facilitating teambuilding sessions and providing mentorship to individuals aiming to achieve their full potential. A two-time TEDx speaker and presenter on "Talks at Google," Michael is also a bestselling author with works like "Positive Impact" and "Crisis? Let's Beat It" available on Amazon. He has collaborated with global giants such as Google, Ericsson, and Microsoft, as well as esteemed institutions like University College London and IMD. Active across major social media platforms, Michael shares daily insights and inspiration for creating positive impacts worldwide.

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Errol is Health-ISAC's Chief Security Officer. He is responsible for overseeing information sharing and daily operations within the organisation's analysis centre. With more than 25 years of experience in information security to his credit, Errol began his career conducting penetration tests of classified networks for the US National Security Agency. He subsequently spent 13 years in various information security roles in the banking and finance sector, where he created and ran Citigroup's Global Cyber Intelligence Center.

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Dr KaT Zarychta is a distinguished Business Development Leader and expert in Biomedical and Medical Devices Solutions, boasting over 20 years of global experience. She holds a PhD from the Laser Physics Laboratory at Sorbonne Paris University, complemented by dual Master's degrees in Physics and Biomedical Engineering, and has completed executive programmes at Harvard in Entrepreneurship, Finance, Innovation, Strategy, Negotiation, and Digital Health. Her roles include Expert Advisor for the EU Commission, Founders Institute, and RIF Cyprus, alongside independent consultancy work focusing on Market Access, Business Development, Commercialisation, startup evaluations, Due Diligence, funding opportunities, and expanding networks across Pharma, Biotech, CROs, and EU Institutions. She led European-wide strategies overcoming barriers to medical technology accessibility, achieving significant sales growth through the successful commercialisation of AI-driven diagnostic tools and innovative therapies across Europe, APAC, and the Middle East.

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Alan Zettelmann, an innovation expert and partner at Innovation 360 Group AB in UAE, boasts over 17 years of experience in technology and entrepreneurship. With a Master's degree in Business Innovation and Administration from the University of Deusto, he's earned recognition for his corporate innovation, including winning an Innovation Award in Austria in 2017. Based in Dubai, he's renowned for his strategic innovation consulting, measuring organisations' 'Innovation IQ' to uncover blockers and foster radical pockets of innovation. Zettelmann's influence extends beyond consultancy; he's a professor at CEU, Deusto Business School, and EOI Business School, sharing his expertise with future business leaders. Additionally, he's the founder of INNOCONSULT, a boutique consultancy impacting areas like Space travel, Immortality, New gold, and ESG projects.

Spotlight

Innovating Oncology: Transformative Future Directions in Cancer Care

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DR ALESSANDRO RONCACCI

SVP Chief Medical Officer of Affidea.

In the ever-evolving landscape of oncology, Europe leads revolutionary changes aimed at improving patient outcomes through integrated care pathways, technological advancements, and personalised treatment strategies.

This editorial explores emerging trends shaping the future of cancer care across the continent, highlighting significant developments and their implications.

Europe faces over 1.9 million cancer deaths annually, with 4.5 million new oncological cases each year. 40% of these cancers are considered preventable through effective strategies.

This study is based on a comprehensive review of the current state of cancer care in Europe, drawing from data provided by the World Health Organization (WHO) and other authoritative sources. The focus includes examining prevention strategies, multimodal treatment approaches, and the role of technology, particularly AI, in enhancing cancer detection and treatment.

	Males	Females	Both sexes
Population	361 242 024	386 301 803	747 543 827
Incidence*			
Number of new cancer cases	2 359 303	2 112 119	4 471 422
Age-standardized incidence rate	319.6	253.4	280.0
Risk of developing cancer before the age of 75 years (cum. risk %)	31.9	24.7	27.9
Top 3 leading cancers (ranked by cases)**	Prostate Lung Colorectum	Breast Colorectum Lung	Breast Colorectum Lung
Mortality*			
Number of cancer deaths	1 091 871	894 222	1 986 093
Age-standardized mortality rate	135.3	84.4	106.3
Risk of dying from cancer before the age of 75 years (cum. risk %)	14.3	9.0	11.5
Top 3 leading cancers (ranked by deaths)**	Lung Colorectum Prostate	Breast Lung Colorectum	Lung Colorectum Breast
Prevalence*			
5-year prevalent cases	6 888 582	6 757 505	13 646 087

Integrated Cancer Care Pathway

General education and awareness (Typical model)	Screening and Prevention programmes (In-house)	Findings discovered (In-house)	Diagnosis confirmed (In-house)	Treatment (Partner & Outsource)	Long-term monitoring and follow-up (In-house)
• Patient awareness and education • Communicate information on screening and prevention	• Provide screening and prevention, inc. consultation, specialistic tests, imaging and blood test capability • Will evolve to include genomics	• Findings discovered either through screening and prevention, specialistic tests, imaging, etc.	• Referral to a facility that has specialists, surgeons, radiologists, oncologists, etc. who will confirm diagnosis through specific exams	• MDT determines treatment • Surgery and interventions, radiotherapy, chemotherapy, or immunosuppressant gene therapy	• MDT determines monitoring and follow up plan

Integrated Care Pathways: A Holistic Approach

Cancer care in Europe has shifted towards integrated care pathways, encompassing diagnostic imaging, multidisciplinary teams (MDTs), and continuous patient monitoring. These pathways ensure a seamless and personalised care experience from prevention through post-treatment follow-up. This holistic approach enhances coordination among healthcare providers and significantly improves patient outcomes.

Digitalisation: Enhancing Accessibility and Efficiency

The digital transformation of healthcare is revolutionising cancer care delivery. Telemedicine platforms enable patients to consult with specialists from the comfort of their homes, reducing the need for travel and minimising delays in care.

Artificial Intelligence (AI) is playing a crucial role in this transformation, aiding in the interpretation of medical data, predicting patient outcomes, and optimising treatment strategies. These digital advancements bridge the gap between patients and healthcare providers, ensuring high-quality care is accessible to all, regardless of location.

The landscape of cancer treatment is being transformed by several breakthrough innovations:

• Early-stage cancer tests and liquid biopsies are paving the way for less invasive and more accurate diagnostics.

• CAR-T-cell therapy and immunotherapy offer new hope for patients with previously untreatable cancers.

• Predictive AI models enhance the precision of treatment plans.

• A seven-minute treatment jab and a breast cancer prevention tablet make treatment more accessible and convenient.

• Pancreatic cancer detection through genomic clues improves early diagnosis and treatment efficacy.

Multimodal Treatments: Combining Forces for Better Outcomes

The efficacy of cancer treatment is being significantly boosted by multimodal approaches combining surgery, radiation therapy, chemotherapy, and novel treatments like hormonal therapy and immunotherapy. This synergistic approach increases survival rates and enhances the quality of life for patients.

Precision Oncology: Tailored Treatment Plans

Precision oncology is at the heart of modern cancer care, emphasizing the importance of genetic sequencing in both diagnosis and treatment. By tailoring treatments to individual genetic profiles and understanding the genetic mutations driving a patient's cancer, healthcare providers can select targeted therapies that are more likely to be effective, thereby increasing the likelihood of successful treatment outcomes.

This approach improves treatment outcomes and minimises side effects, leading to a better quality of life for patients.

Ongoing Research and Development

Ongoing research and development are vital to advancing cancer care. Europe must continue to invest in clinical trials, biomedical research, and the

new therapies. Collaboration between academic institutions, healthcare providers, and the private sector will drive innovation, leading to breakthroughs that improve patient outcomes and quality of life.

Patient-Centred Care: Empowering Individuals

A patient-centred approach is fundamental to the future of cancer care. Empowering patients with information, involving them in decision-making, and providing psychosocial support are all critical components of comprehensive care. Through education and shared decision-making, patients become more engaged in their care, leading to better health outcomes.

By focusing on the needs and preferences of patients, healthcare providers can deliver more compassionate and effective care.

A Collective Effort

Effective cancer care requires a multidisciplinary approach, with healthcare professionals from various specialities working together. Oncologists, radiologists, surgeons, geneticists, and support personnel must collaborate closely to develop and implement comprehensive care plans. This teamwork is essential for managing cancer as a chronic illness, ensuring that patients receive continuous and coordinated care throughout their journey.

At Affidea, we are committed to pioneering all these advancements. By leveraging cutting-edge technologies, fostering collaboration among healthcare professionals, and prioritising a patient-centred care, we strive to enhance the quality and accessibility of cancer treatment. Our dedication to innovation and excellence ensures that patients receive the most effective and efficient care possible, always accessible through our extensive network of Centres of Excellence in Oncology. Through our efforts, we aim to contribute to a future where cancer is more manageable, and patients can feel empowered to live healthier, fuller lives.

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ISSN = 1377-7629

VOLUME 24 • ISSUE 4 • € 22

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Cover Story

Why Do So Many Healthcare Innovation Initiatives Fail

Successful healthcare innovation requires more than technical and clinical expertise; it demands a deep understanding of the ecosystem, including regulatory requirements, reimbursement systems, and organisational dynamics. Embracing a holistic approach, fostering continuous feedback, and engaging stakeholders early are crucial for overcoming barriers and achieving scalability and sustainable, impactful growth in patient care.

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key points

- Complex Systems: Understanding the healthcare system's complexity and adopting a holistic approach are crucial for successful innovation.
- Economic Hurdles: Engage early with payers and validate economic models to overcome reimbursement challenges.
- Regulatory Compliance: Collaborate with regulators and strategically manage approval processes for efficient compliance.
- Evidence and Validation: Build robust clinical and economic evidence, including real-world validation, to gain stakeholder trust.
- Scaling Innovation: Address organisational resistance and integrate new solutions with existing practices and technology for successful scaling.

As an innovation leader, I was involved in a major project aiming to revolutionise at-home patient monitoring. The product development was carefully planned, and the team possessed the necessary technical and clinical expertise. The organisation had already been successful in producing products for monitoring patients in intensive care units (ICUs) around the world, which put it in a strong position in hospitals globally. Everything appeared to be in place for this to be a resounding success. However, it ended up being a failure. What went wrong?

Today, I am involved with several promising healthcare ventures in behavioural health, mental health, advanced diagnostics, and cancer treatment. Each of these ventures has identified real and urgent patient needs and designed feasible solutions to tackle significant challenges in healthcare. However, they have encountered obstacles at various stages that have prevented them from progressing as planned and making the impact they had hoped for. Even powerful consumer platforms like Amazon have faced setbacks. My experience with the patient monitoring venture taught me to proceed with caution.

Adopting an Ecosystem Mindset and System Thinking for Success in Healthcare Innovation

Healthcare systems are complex. The industry has strict regulations, rigorous quality standards, complicated reimbursement mechanisms, many stakeholders, and many vested interests.

As we did with many products before, we approached this venture as a regular pipeline development: We designed a product with what we believed were compelling features

and functions fulfilling a real need: supporting patients at home, where they tend to recover or stabilize faster than in the hospital, at a much lower cost. However, the complexity of the healthcare system requires a different approach than the regular linear product pipeline prescribes.

Our first mistake was taking too mechanical a view of the world. As we learned along the way, the secret to mastery of complex programmes is adopting system thinking—a holistic approach that uncovers the interconnections and dynamic forces driving outcomes. This approach works from the perspective of the ecosystem and its most important players: it identifies the influence networks, barriers, and system dynamics.

While the solution succeeded in getting better patient outcomes at lower cost, we didn't take a couple of crucial things into account. The most important one was the economics for the hospital: the reimbursement model didn't reward a better solution. The insurer would reimburse a night in the hospital for thousands of dollars but not the monitoring of a patient at home for a fraction of those costs. The other significant barrier was that most care providers were reluctant to change their working methods and relationships.

In this case, the solution impacted different departments, how they worked together, and the relationship with referring general practitioners. We should have validated and approached our concepts from the payers' and various care providers' economic, cultural, and clinical perspectives. Early feedback would have given us insights that would have prompted a different proposition.

Cultivating a culture of continuous feedback, learning, and adaptability is crucial. This environment encourages teams to engage deeply with stakeholders, innovate, and experiment with solutions

> The secret to mastery of complex programmes is adopting system thinking—a holistic approach that uncovers the interconnections and dynamic forces driving outcomes

that must be viable from all perspectives to succeed. Understanding the broader context is paramount. It differs from driving tight schedules and project plans and focusing on revenue.

We concluded that we had to delve deep into the nuances of the ecosystem and conduct thorough customer feedback sessions and risk assessments. Creating scenarios to tackle unforeseen roadblocks ensures that the organisation is prepared for any eventuality, turning potential setbacks into opportunities for growth.

Transformative leadership hinges on the active engagement of all stakeholders. Fostering open communication channels where concerns and challenges are explicitly discussed and addressed builds trust and collaboration. This inclusive approach ensures that every voice is heard and valued, paving the way for collective success.

While strategies will evolve and the solution adjusted to the user needs, an unwavering commitment to the original vision and goals is essential. Leaders must remain flexible in their approach, adapting to changing circumstances without compromising quality. This steadfast dedication to excellence sets the standard for outstanding solutions. Large cohorts of patients will ultimately be monitored from home, but much water will have flowed under the bridge.

By embedding system-thinking principles into their leadership approach, leaders can significantly increase the odds of success in even the most ambitious endeavours. System thinking is not just about managing projects but gradually transforming organisations and driving sustainable, long-term growth.

Innovation Capabilities in Healthcare Ecosystems: A Holistic Approach to Diagnostics and Therapy

Several innovations in diagnostics and therapy have been developed in the last decades. But most have been point-solutions, solving specific problems for specific diseases. Unfortunately, many solutions never reach scale because their scope is too narrow, and they don't seamlessly integrate into existing systems and workflows.

In our case, we developed a clinically sound solution that needed to be better designed for integration into healthcare ecosystems. We also compromised the technical design, assuming hospitals didn't want to put their data in the Cloud, which would have made the solution more scalable.

This obstacle can be overcome by combining clinical, operational, technical, and economic capabilities to jointly design for the broader care flow and all the stakeholders instead of just the point solution. Innovation is way more than invention. Attention should be paid to fitting the innovation into existing economic models and clinical operational processes. This implies a team of brilliant clinicians or technologists will not cut it. You will have to bring the entrepreneur, the user-experience designer, the legal expert, and the data/ tech specialist together to craft a solution that could see the light of day. The design should start with the needs of the ultimate beneficiary of any healthcare solution: the patient. But more is needed. Each stakeholder's value (and monetisation) must be assessed, measured, and articulated.

An ecosystem approach can be pursued by partnering with complementary players to share insights, data, and technology and jointly create a more impactful proposition for all stakeholders. Technology choices will impact the solution's functionality, manageability, and cost. Cloud-based solutions and connected devices (IoT) allow solutions to be delivered and distributed at substantially lower costs than on-premises alternatives. Access to high-quality data is critical for all tech-based solutions, as AI will become progressively important in identifying and quantifying disease and personalisation of care pathways.

Leveraging Scientific Evidence to Overcome Clinical and Economic Validation Challenges

While our solution could prove that patient outcomes and experience were better and cost lower, based on baseline studies, hospitals asked for peer-reviewed studies with randomised trials.

So, another obstacle to success is the general requirement for clinical and economic evidence that the innovation will work as claimed, is safe, and delivers the promised benefits. Again, the standard is high, and there may be a need for randomised clinical trials, preferably double-blind ones. And even if you have successful, peer-reviewed evidence, your potential customers will ask for real-world evidence, which you will not have because you still have to take that hurdle. However, the requirement is valid: just having data from the isolated world of a clinical trial does not guarantee that the solution works in the complexity of the real world.

An approach that builds evidence for claims and hypotheses is valid for any business. It is part of an agile mindset. You experiment, continuously test, and rebuild to shape a solution that stands up to deep scrutiny. Working with the academic world has advantages, and many universities are eager to bring their methods, findings, and inventions to the market. An agile approach will also guide you towards bringing solutions to life early to create the feedback loops necessary to build a solid solution. Exposing the solution to actual patients and care pathways early will give you the required feedback. Leveraging existing clinical data, trials, and approvals helps speed up the solution. A collaborative, win-win approach will get you more than a zero-sum one. Many studies still live in splendid isolation.

Navigating Regulatory Approvals: Strategies for Efficient Compliance and Integration

With our solution, we recognised the need for regulatory approvals but had insufficiently isolated the components, like monitoring algorithms, that require regulation from those that don't. This means that any significant changes require revalidating the entire system rather than just those parts. This is a very costly and time-consuming aspect of the lifecycle cost of a healthcare solution.

Any new clinical solution will need to get the regulatory approvals (FDA and CE-mark) to validate patient safety and efficacy of the solution. If you have a genuinely innovative, new-to-the-world solution, this may take substantial time and effort. Every future-proof solution should aggregate data about users (patients and providers), engagement, and workflows. There are privacy hurdles to overcome. While GDPR and HIPAA provide clear frameworks, you will have to deal with variations of the different regions where you plan to deploy, which need to be baked into the design.

Working closely with regulators helps you better understand goals, requirements, and guidelines. In some areas, like AI-based clinical algorithms, regulatory approvals are still a work in progress, and you can influence how regulation is shaped. Your contractual agreements must take current and future rules into account. For instance, ask for patient consent upfront so you can start aggregating those critical longitudinal data sets.

It is essential to design for the different approval levels of Class I, II, and III devices. Platform software typically is not regulated, but algorithms that impact clinical outcomes are. Separating the parts allows for faster approvals.

Reimbursement Challenges: Navigating Payer Systems and Codes

As mentioned, the reimbursement system was one of the biggest hurdles to acceptance. In most Western countries, healthcare services are reimbursed by payers (health insurers) based on reimbursement codes. If the solution fits an existing code, you must apply for payer support based on clinical and economic evidence and regulatory approvals. You may be in for a lengthy process if it requires a new code. Working with selected payers early in the process may give you a better handle on what to expect regarding reimbursement. And beware, each country has different approaches to healthcare reimbursement, and value-based healthcare has yet to take off.

Scaling Innovation: Overcoming Organisational Resistance

While we secured a handful of strong backers to pilot the solution, scaling it was a significant challenge. Acceptance of innovation in a running organisation is the other big hurdle. Changing an organisation's way of working requires considerable effort to get users behind your system. While getting the backing of KOLs (Key Opinion Leaders) and hospital administrators is critical, it is no guarantee. Existing guidelines, processes, care pathways, protocols, and routines take time and substantial effort to change. That you bring clinical and economic improvement evidence is insufficient to transform your potential user's practices. Risk avoidance and downside protection are expected behaviours.

While great strides have been made in diagnosing and treating many diseases, we haven't seen much progress on the healthcare system level. Generally, hospitals still look the same, and despite a spike in virtual care during the pandemic, it has returned to face-to-face in brick and mortar. Care is fragmented and episodic rather than integrated and continuous. Prevention is still an orphan. There is incumbent inertia, with players holding on to their positions and unwilling to rock the boat, as this may have a potential downside. EMR and technology vendors hoard the data in their systems. Then there is the innovator's dilemma: it makes more sense to tweak the existing services than risk disrupting new systems and services that take advantage of new technologies, like AI.

Many hospitals will have the budgets and capabilities to pilot, but most of those will never scale up. As a hospital administrator told me, "We have more pilots than American Airlines." Innovation must be an integral part of the strategy, with clear stage gates, committed scale-up budgets, and an organisational drive to deploy a validated solution widely.

A multi-stakeholder approach will be necessary to bring everyone along. This requires a careful balance between fitting into the existing practices and workflow before being able to make the required change toward better outcomes. So, every solution should embrace the old while quickly showing the benefit of the new. There will be many design trade-offs, not just in user interfaces, workflow, and data management but also in change management. And the solution has to be flexible, as each provider will have specific processes and practices. Lastly, every solution must address safety, quality, and privacy upfront to get through the door.

Conclusion

Failure is a great teacher. This initiative changed my perspective on successfully deploying innovative solutions in healthcare. Navigating the intricate landscape of healthcare innovation requires more than just technical and clinical expertise. It demands a comprehensive understanding of the ecosystem, including regulatory requirements, reimbursement systems, and organisational dynamics. The lessons learned from our patient monitoring venture underscore the importance of adopting a holistic, system-thinking approach, engaging stakeholders early, and building robust evidence to support claims.

Healthcare leaders can overcome barriers and drive sustainable, long-term growth by fostering continuous feedback, collaboration, and adaptability. Embracing these principles will pave the way for impactful, scalable solutions that genuinely transform patient care.

Conflict of Interest

None

How Cultural Differences Can Make or Break Mergers and Acquisitions

Organisational culture has a pivotal impact on M&A success. Neglecting cultural differences can lead to reduced productivity, operational hurdles, and strategic misalignments. Proactive strategies like cultural assessments and effective communication foster integration and enhance overall merger outcomes in a competitive business landscape.

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key points

- Importance of Organisational Culture: Organisational culture significantly impacts M&A success, influencing decision-making, communication, and conflict management within merged entities.
- Challenges in M&A Processes: Cultural differences often overlooked in M&A can lead to integration failures, decreased morale, and inefficiencies, jeopardising overall performance.
- Strategic Alignment of Cultural Elements: Successful mergers require strategic alignment of leadership styles, values, and communication practices to foster a cohesive environment.
- Critical Areas for Attention: Effective integration strategies should address differences in leadership styles, culture, values, communication, and diversity and inclusion practices.
- Consequences of Ignoring Cultural Differences: Neglecting cultural differences can result in reduced productivity, operational disruptions, strategic misalignments, and increased employee turnover, highlighting the need for proactive cultural management in M&A processes.

Mergers and acquisitions (M&A) are common business strategies for achieving growth, diversification, and competitive advantage. While considerable emphasis is placed on financial, legal, and operational aspects, cultural differences often do not receive the necessary attention. Ignoring organisational culture can lead to integration failures, affecting employee morale and, ultimately, the performance of the merged entity. This article explores the unaddressed cultural differences in M&A processes and their impact on successful integration.

M&A Activity Continues in Digital Economy Despite World Uncertainties

Currently, we are living in a BANI[1] world, dominated by turbulences and uncertainties still clouding the outlook for 2024: economic volatility, high inflation rates, geopolitical tensions (including wars), increased regulatory pressure, supply chain disruptions, and upcoming electoral processes in several countries that require navigating uncertainty related to M&A processes.

Despite this situation, now more than ever, the Digital Economy speeds up the process of the creation of value. According to IDC, the IT expenses in Europe in 2024 will grow 2.5 times faster than the GDP to speed up the process of efficient technology in creating value, and 44% of CEOs are aligning both IT and business strategy to speed up the transformation journey. In this context, 70% of executives expect to use M&A operations to accelerate access to technology and related processes, and 60% of CEOs anticipate making at least one acquisition in the next three years to prepare their business for the future (PWC, 2024).

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[1] BANI: Brittle, Anxious, Nonlinear and Incomprehensible.

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The Crucial Role of Organisational Culture in M&A Success

However, while we see M&A processes governed by financial, legal, and operational aspects, we often overlook the impact of organisational culture. This refers to the shared values, beliefs, norms, and practices that define behaviour within a company. It is an intangible but crucial factor that affects how decisions are made, how employees communicate, and how conflicts are managed. In a merger process, two different organisational cultures must coexist and eventually integrate. If not handled properly, it can lead to a disastrous failure of the integration. The clash of cultures can result in misalignment of goals, loss of key talent, decreased morale, and overall inefficiency. Successful mergers require a deep understanding and strategic alignment of cultural elements to foster a cohesive and productive environment. Therefore, recognising and addressing cultural differences early in the M&A process is essential for ensuring a smooth transition and realising the intended synergies and benefits of the merger.

Addressing Cultural Differences in M&A: Leadership Style, Culture & Values

Leadership style and values occupy a prime position among the main cultural differences that can arise in an M&A process. However,

strategies can be applied to mitigate a potential negative impact.

> 70% of executives expect to use M&A operations to accelerate access to technology and 60% of CEOs anticipate making at least one acquisition in the next three years.

- **Leadership styles:** Having different leadership styles (for example, authoritarian and hierarchical vs. horizontal and collaborative) can lead to tension and confusion among employees who may be unsure of whom to report to or how decisions are made.

- **Culture, values, and beliefs:** An organisation's fundamental values and beliefs influence its culture. For example, one company may prioritise innovation and risk-taking, while
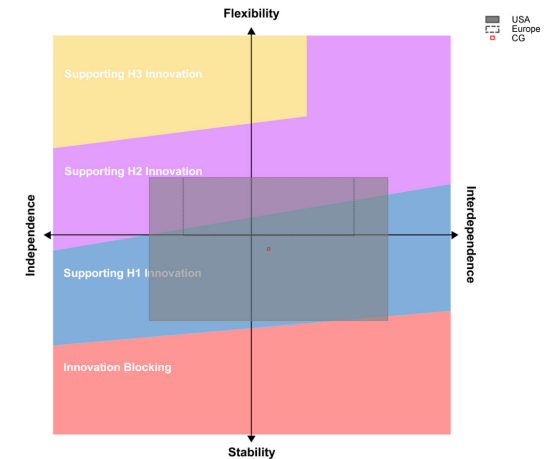
InnoSurvey® Data - Culture Difference between US and European Corporations

another may focus on stability and risk minimisation. Aligning values and beliefs is essential for successful integration, as discrepancies can lead to resistance and conflicts. In this regard, it is interesting to analyse the differences in innovation.

Cultural integration efforts require continuous monitoring and willingness to adapt strategies based on feedback and evolving circumstances. As seen from the Culture Mapping taken from InnoSurvey®, containing global data of more than 5000 companies from 105 countries, we can see the culture gap between US corporations and European corporations. It shows that US companies with a broader culture map can easily encompass a European company acquisition. In contrast, the other way around, European companies have to make significant changes management in place to overcome the culture gap.

Understanding and addressing cultural differences is essential for the success of M&A initiatives. Companies can enhance integration, employee engagement, and overall performance by proactively managing these differences.

Addressing Cultural Differences in M&A: Communication, Diversity & Inclusion

Two other critical areas that require careful attention are communication and D&I. These elements significantly influence how well the merged entities can function as a cohesive unit and achieve their strategic goals.

- **Communication (both internal and external).** The way information is conveyed both inside and outside the company is another critical cultural aspect. Some organisations prefer formal and structured communication, while others opt for a more informal and open communication style. Differences in communication styles can lead to misunderstandings and a lack of transparency during the integration process.

- **Diversity and inclusion.** The approach to diversity and inclusion may be different in organisations, even if both promote an inclusive environment. Alignment in diversity policy can be crucial to avoid tensions and promote an inclusive work environment.

Impact & Consequences of Ignoring Cultural Differences in M&A Integration

When cultural differences are not adequately addressed, the consequences can be significant, especially in the following areas:

- **Reduced morale and productivity,** leading to conflicts and misunderstandings, which affect employee morale and productivity. In addition, it can increase the resistance to change by employees who may resist new policies, processes, or management styles introduced by the acquiring company.

Now more than ever, companies are focused on employee productivity. An increase in layoffs, especially in overlapping roles and voluntary departures, due to uncertainty and dissatisfaction with the new management can prompt valuable employees to leave, increasing employee rotation.

- **Failures in operational integration.** Differences in practices, systems, and processes can hinder operational integration, affecting the efficiency and effectiveness of the new entity. Also, organisational structure, roles, and responsibilities can create confusion and inefficiencies.

- **Strategic misalignments.** Misalignment of strategic visions and goals between merging entities can lead to conflicts and diluted focus, which increases execution risks (divergence in execution styles and priorities can hinder the realisation of synergies and intended benefits).

Conclusion

Mergers and acquisitions offer corporations significant strategic benefits, such as market expansion, increased innovation capabilities, and economies of scale. However, cultural differences in mergers and acquisitions are a decisive factor that should not be ignored. Addressing these differences proactively and strategically can be the key to successful integration. By recognising the importance of organisational culture and taking steps to align differences, companies can maximise opportunities for long-term growth and success.

To help organisations address cultural differences, conducting a cultural assessment before the merger or acquisition (through interviews, surveys, and/or document analysis to understand organisational cultures) is essential. This will identify differences between the organisations and allow for the planning of appropriate integration strategies.

Additionally, **maintaining open and transparent communication** throughout the integration process will better inform employees about changes, objectives, and expectations, thereby reducing uncertainty and fostering collaboration.

Finally, it is crucial to implement **cultural integration programmes** that help align differences between both organisations. Workshops, training sessions, or team-building activities will promote cohesion among employees from both organisations.

Conflict of Interest

None

(references)

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Missteps in Market Entry and Failed Clinical Trials

Market entry business decisions are critical in healthcare, and the impact of mistakes, clinical trial failures and ethical lapses can be profound. Such bad business decisions leads to significant financial losses, damaged reputations, and risks to patient safety, underscoring the imperative of ethical conduct and rigorous validation in healthcare innovation and business strategy.

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key points

- Complexity of Healthcare Business: The healthcare industry, spanning pharmaceuticals, biotechnology, medical devices, and services, operates under strict regulations and high stakes, necessitating careful decision-making and strategic planning.
- Impact of Missteps: Errors in market entry and unsuccessful clinical trials have cost healthcare companies billions, tarnished reputations, and jeopardized patient safety, underscoring the critical need for meticulous evaluation and ethical conduct.
- Case Studies in Failure: Examples like Vioxx and Theranos illustrate the dire consequences of insufficient data and fraudulent claims, leading to legal battles, financial losses, and regulatory scrutiny, highlighting the risks of prioritising rapid market entry over thorough validation.
- Clinical Trial Realities: Failures such as Pfizer's bapineuzumab in Alzheimer's treatment showcase the financial and emotional toll of unsuccessful drug development, emphasizing the unpredictable nature of pharmaceutical innovation and the need for continued research.
- Importance of Validation and Ethics: Ensuring technologies are rigorously validated and supported by robust data and ethical considerations is crucial for successful market entry in healthcare, promoting trust, adoption, and ultimately, patient well-being.

High Stakes and Heavy Costs: The Impact of Business Decisions in the Healthcare Industry

In the healthcare industry, making the right business decisions is often crucial for a company's success. This industry, which encompasses pharmaceuticals, biotechnology, medical devices, and healthcare services, is known for its complexity and strict regulations. The high stakes and weight of every business decision in healthcare can have significant implications, underscoring the importance of careful consideration and strategic planning.

Regrettable decisions in healthcare businesses often stem from mistakes in market entry and unsuccessful clinical trials. These decisions have led to companies losing millions or even billions of dollars, damaging their reputation irreparably, and putting patients' lives at risk. The potential for such significant financial loss should serve as a cautionary tale for all involved in healthcare business decision-making, highlighting the potential damage to reputation and patient safety that can result from missteps.

The Vioxx Debacle: A Costly Lesson in Pharmaceutical Market Entry

An example of a wrong decision in healthcare market entry is demonstrated by the insufficient high-quality data regarding side effects when the pharmaceutical company Merck launched the painkiller drug Vioxx. Initially, Vioxx was met with great success in the market and was praised for its effectiveness in alleviating pain. However, it was later discovered that the Vioxx medication posed serious cardiovascular risks for patients, including an increased risk of heart attacks and strokes. This alarming revelation led to widespread litigation as affected patients and their families sought justice. As a result of these legal challenges, Merck was ultimately forced to withdraw

Vioxx from the market. This action not only eliminated a significant revenue stream but also led to substantial financial repercussions. The company was obligated to pay billions of dollars in legal settlements to resolve the claims.

In the long run, this debacle severely tarnished Merck's corporate image, eroding trust among healthcare professionals, patients, and investors. The Vioxx case underscores the critical importance of thorough and transparent clinical testing. It should serve as a reminder of our responsibility to ensure comprehensive safety evaluations before bringing a new pharmaceutical product to market.

Theranos: The Perils of Unverified Medical Innovation

An example of a regrettable business decision in healthcare is the failed launch of the blood testing startup Theranos. Founded by Elizabeth Holmes, the company claimed to have developed a revolutionary technology capable of conducting a wide range of medical tests using just a few drops of blood. This innovation promised to make blood testing faster, cheaper, and more accessible, leading to significant attention and investment. Theranos achieved a valuation of nearly $9 billion, and Holmes became a celebrated figure in the tech and healthcare industries.

However, it was later revealed that the company's technology was fraudulent. Despite the initial excitement and substantial financial backing, investigations uncovered that Theranos had misled investors, regulators, and patients about the capabilities and accuracy of its blood-testing devices. The company's

proprietary machines, which were touted as groundbreaking, were unable to deliver reliable results and often required traditional blood testing methods to verify their findings.

> [These missteps] should serve as a cautionary tale for all involved in healthcare business decision-making, highlighting the potential damage to reputation and patient safety.

This deception led to legal and regulatory challenges. The U.S. Securities and Exchange Commission charged Theranos and Holmes with fraud, and the company faced multiple lawsuits from investors and patients who had been misled. Ultimately, these challenges led to Theranos's downfall and Elizabeth Holmes's criminal conviction for fraud.

The Theranos scandal demonstrates the risks of creating hype around unproven medical technology that lacks rigorous scientific validation. It highlights

the critical importance of transparency, ethical conduct, and adherence to scientific standards in the healthcare industry. This case emphasises the potential consequences of prioritising rapid market entry and sensational claims over thorough testing and validation, reminding stakeholders of the need for caution and integrity in the pursuit of innovation.

Costly Failed Clinical Trials: The Case of Pfizer's Alzheimer's Drug

The healthcare industry has recently seen several well-known cases of failed clinical trials that resulted in substantial financial and reputational consequences. One prominent example is Pfizer's Alzheimer's drug candidate, bapineuzumab. This drug was developed with the hope of providing a breakthrough treatment for Alzheimer's disease, a neurodegenerative condition affecting millions worldwide and currently lacking a cure.

Pfizer invested billions of dollars into the development of bapineuzumab, conducting extensive clinical trials to test its efficacy and safety. There was immense anticipation surrounding the drug, as it represented a potential beacon of hope for patients suffering from Alzheimer's and their families. Many believed that bapineuzumab could potentially slow or even stop the progression of the disease, which would be a monumental achievement in the field of neurology.

However, despite the extensive research and investment, the clinical trials ultimately revealed that bapineuzumab failed to show effectiveness in treating Alzheimer's disease. The drug did not produce the desired cognitive improvements in patients, and the trial results were disappointing. This failure not only caused a

significant financial loss for Pfizer, which had dedicated considerable resources to the project, but it also had broader implications for the company's reputation in the pharmaceutical industry.

Beyond the financial implications, the failure of bapineuzumab had a profound emotional impact. It shattered the hopes of millions of patients and their families who had eagerly anticipated a potential treatment for this devastating condition. The setback was a poignant reminder of the challenges and uncertainties inherent in drug development, particularly for complex diseases like Alzheimer's.

The bapineuzumab case underscores the high risks associated with pharmaceutical innovation and the significant impact that failed clinical trials can have on both companies and the patients they aim to serve. It highlights the necessity for ongoing research and the need for continued investment in the search for effective treatments, despite the inevitable setbacks that are part of the scientific process.

Navigating Market Entry: The Imperative of Validation and Ethics in Healthcare

The lack of validation of technologies and Health Technology Assessment (HTA) data poses a significant challenge for new healthcare companies entering the market. This deficiency can severely affect their chances of receiving reimbursement from insurance companies and healthcare payers, which is crucial for the commercial success of any new medical technology.

Without validated data, medical professionals and governing bodies are likely to hesitate in adopting and

> Healthcare companies must prioritise ethical decision-making, prioritising patient safety and well-being. They should also keep scientific integrity as a priority, have a long-term strategy, and avoid being solely profit-focused at all costs.

recommending these technologies, further impeding their market acceptance and integration into standard healthcare practices.

Consequently, the inappropriate market entry strategy adopted by these companies, driven by inadequate validation and assessment, can lead to their failure. These companies often invest substantial resources into

developing innovative technologies, but their products struggle to gain traction without proper validation and HTA data. This not only results in financial losses but also wastes valuable time and resources that could have been directed towards more promising initiatives.

These unfortunate decisions in the healthcare industry underscore the critical importance of ethical considerations, patient safety, scientific rigour, and the quality of technology validation data. In an industry where human lives are at stake, prioritising ethical practices and patient well-being is paramount. Ensuring that new technologies are thoroughly validated through rigorous scientific methods before they are brought to market is essential to maintain trust and efficacy in healthcare innovations.

Furthermore, these examples emphasise the need for robust clinical trial design, rigorous testing, and transparent communication to ensure a positive impact. Comprehensive and well-structured clinical trials are necessary to gather reliable data on the safety and efficacy of new technologies. Rigorous testing helps in identifying potential risks and benefits, ensuring that only those technologies that meet the highest standards are approved for use.

Transparent communication is also crucial in this process. It ensures that all stakeholders, including medical professionals, patients, and regulatory bodies, are well-informed about the capabilities and limitations of new technologies. This transparency builds trust and facilitates the adoption of new innovations, ultimately leading to better patient outcomes and advancements in healthcare.

The validation of technologies and the collection of robust HTA data are essential components for the successful market entry of new healthcare innovations. Ethical considerations, patient safety, scientific rigour, and transparent communication form the foundation upon which the future of healthcare technology should be built, ensuring that new developments lead to meaningful improvements in patient care and health outcomes.

Conclusion

The healthcare industry has seen its fair share of regrettable business decisions, especially concerning market entry and failed clinical trials. These missteps resulted in significant financial losses, legal and regulatory challenges, and damaged reputation. Most importantly, these missteps harmed patients.

Healthcare companies must prioritise ethical decision-making, prioritising patient safety and well-being. They should also keep scientific integrity as a priority, have a long-term strategy, and avoid being solely profit-focused at all costs. By doing so, the healthcare industry can fulfil its fundamental mission of improving and ultimately saving patients' lives.

Conflict of Interest

None

Hard Lessons to Navigate Leadership: Insights from the Radiology Department

Pr Hans Blickman's career in radiology highlights the importance of trusting one's instincts, understanding the limits of one's influence, and recognising the significance of leadership compatibility. Through personal anecdotes and reflective insights, he underscores the necessity of aligning personal values with professional aspirations to achieve lasting fulfilment and effectiveness.

PROF HANS BLICKMAN

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key points

- Trust your instincts: Even when receiving overwhelmingly positive advice, it's crucial to heed your own instincts and evaluate the full context of a career opportunity.

- Beware of the 'saviour' complex: Understanding one's limitations as a change agent is vital, especially when transitioning to a different cultural or professional environment.

- Leadership compatibility: Recognise the importance of aligning your leadership style with the organisational culture and existing leadership dynamics.

- Self-awareness in career roles: Be mindful of your strengths and preferences in leadership roles, avoiding positions that may not align with your natural inclinations and expertise.

- Align personal values with professional aspirations: Ensure that career decisions align with your values and long-term goals for sustained professional fulfilment and effectiveness.

Navigating the labyrinth of professional advancement often entails grappling with the stark realities of decision-making and leadership dynamics. This narrative of hard-learned lessons underscores the crucial importance of trusting one's instincts, understanding one's limitations as a change agent, and recognising the significance of leadership compatibility. Through a series of pivotal career experiences, I have come to appreciate the profound impact of these elements on professional fulfilment and effectiveness. The following recounts these defining moments, each offering valuable insights that have shaped my approach to career decisions and leadership roles.

Trust your instincts, not the advice of others, even when laudatory

As a highly driven professional, I found great satisfaction in the rapid advancement of my career within the radiology department. In my early 40s, while holding a leadership position for several years, I was approached for an attractive opportunity by a headhunter. At that particular time in my life, my plate was full, juggling the responsibilities of caring for young children, meeting articles and books writing commitments, and managing a heavy workload due to understaffing. The prospect of taking on a prestigious role and leading a project that aligned closely with my expertise was alluring, as it held the promise of potentially lightening my workload and making a significant impact.

After consulting with mentors and family, I distilled the offered task into a clear plan: to lead the pediatric radiology department's expansion, doubling the faculty to nine or ten members and establishing it within a new Children's Hospital building. The consensus was largely in favour of seizing the opportunity, especially considering it could be a potential stepping stone towards a future leadership position at the prestigious

(Boston) Children's Hospital in 5 to 10 years. Despite the overwhelmingly positive advice, I had moments of hesitation, especially during several late-night walks with my dog. Nevertheless, I ultimately disregarded these doubts.

After making the move for the new role, it swiftly became evident that the working environment in the South was markedly different from what I had been accustomed to in the 'north'. This was something I had failed to fully take into account during my interviews and pre-acceptance assessment of the job. There were discrepancies in promises, timelines, budgets, and the overall work culture. Consequently, the position did not unfold as anticipated. In hindsight, it became clear that my initial instincts were correct: the faculty at that location is still relatively small over 20 years later, the Children's Hospital remains unbuilt, and there has been limited academic achievement.

Do not delude yourself thinking you can be 'the' change agent

As a native of the Netherlands, I received from time to time inquiries from Academic Medical Centers about my interest in returning to the Netherlands to serve as chairman of an academic radiology department. The persuasive, likeable, and engaged dean of a medical faculty finally convinced me by appealing to my sense of 'giving back' after spending so many years in the American medical system. Blinded by this notion of being a 'saviour' of sorts, I conveniently forgot that I had been away from the Netherlands since graduating high school almost 30 years earlier. I lacked the network that was a natural product of the Dutch University system and had minimal experience with the so-called 'polder model'

or consensus method of leadership in the Netherlands. Nevertheless, my enthusiasm(again!) overruled the caution I should have exercised. I believed the recruiters who assured me that I could be the change agent their department and Medical Center needed.

Upon accepting the position, I immersed myself in my new role, determined to bring about positive change. We made significant strides in modernising the department and improving its operations, but, over time, the cultural differences and my approach to change began to clash with the deeply ingrained consensus-driven culture. While my 'crazy American can-do attitude' was initially seen as refreshing, innovative, and overall very successful, it eventually started to wear thin, and after two five-year terms, I returned to the US, quite disillusioned.

If you know you are better 'at the wheel', do not settle for a 'next to' role.

Upon leaving the Netherlands, I was recruited to an upstate New York Medical Center by the chairman of Imaging Sciences, who needed assistance revitalising the pediatric radiology section and building a new Children's Hospital. He also expressed particular interest in my quality assurance experience for the entire imaging department. After my stint as chairman of a department, I convinced myself that I would be fine as the vice chairman (the 'wise' man behind the chair) as well as the section chief of pediatric radiology. However, I failed to consider that my personality might not align well with that of the chairman, who had fallen into the position and was very protective of it.

While I did not mesh well with the chairman, I found that I got along well with the department's rank and file, the board chair, and others. This led to predictably

uncomfortable tensions. From my extensive sailboat racing experience, I knew that I performed best at the wheel of the boat, not as a crew member. How I wished I had heeded my own advice. The clash in personalities and leadership styles between the chairman and me became increasingly apparent, causing friction within the department.

Despite my best efforts to adapt and contribute positively, the mismatched dynamics ultimately hindered my effectiveness and satisfaction in the role. This experience reinforced the importance of self-awareness and the need to carefully evaluate not just the professional opportunities but also the interpersonal dynamics and leadership structures when considering new roles.

Conclusion

Reflecting on these experiences, the key takeaways are clear: trust your instincts, recognise the limits of your influence, and understand your strengths in leadership roles. Each chapter of my career has taught me invaluable lessons about navigating complex professional landscapes. These insights have not only shaped my approach to career decisions but have also underscored the importance of aligning personal values with professional aspirations. At this almost-retired stage of my career I do look back on having had many positive contributions, serious lasting impact and I hope these lessons may be of some benefit to younger professionals contemplating similar career paths.

Conflict of Interest

None

Shiny Object Syndrome: When Abandoning Projects Too Early Can Become an Unconventional Entrepreneurship Model

Shiny Object Syndrome can be defined as constantly chasing new ideas that seem fresh and exciting, leading to abandoning current projects for other ideas. Recognising past failures as learning experiences can allow one to shift that weakness into strength when managing various projects simultaneously.

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key points

- Shiny Object Syndrome: Struggling with numerous ideas and the tendency to abandon projects too early, leading to missed opportunities in high-potential areas.
- Unconventional Business Approach: The Evernomic venture studio exemplifies an unconventional approach to business, leveraging Shiny Object Syndrome to manage different ideas simultaneously.
- Embracing Failure and Learning: Viewing past mistakes as character-building experiences, staying committed amidst doubts, and turning perceived weaknesses into strengths in entrepreneurial pursuits.
- Lessons from Past Ventures: Reflecting on abandoned projects in AI-driven trading systems and innovative FoodTech solutions, highlighting their early promise and eventual mainstream adoption.

Unconventional Entrepreneurship: Juggling Ideas Away from Textbooks

I want to start by saying that I run my businesses in a nontraditional way. My organisation has an average age of just over 21, and I'm drawn to nontraditional methods rather than textbook approaches to entrepreneurship.

Two years ago, I founded a venture studio called Evernomic, which exemplifies this unconventional approach. At the time, the concept of a "venture studio" was new, as "venture capital," "accelerator," and "incubator" were the more common terms. Without real-life examples to follow, I had to navigate through the intricacies and figure out the details to make it work for myself. Additionally, while venture studios typically raise external funds, Evernomic and its first batch of startups were bootstrapped through internal funding, which is another unconventional characteristic.

I constantly have numerous ideas running through my mind, which can be both a blessing and a curse. One of my regrettable mistakes is not following through with some of my past endeavours. I tend to exhibit *shiny object syndrome*, which means I can become attracted to a new idea, invest time into a project, and later abandon it.

Unrealised Potential: Reflections on Regrettable Missed Opportunities

The first project I abandoned was about five years ago when I was still in high school. I was interested in trading and the stock market and had the idea to develop algorithmic trading systems, which are very

common today due to the exponential growth of artificial intelligence. However, back then, they were not as popular. I developed several AI systems using different strategies to achieve high profitability rates but didn't commit to the project. Soon after I stopped working on it, trading became extremely popular, and many people started investing in it. Looking back, I see it as a missed opportunity, especially considering the rapid growth in the popularity of trading and automated services since then. It would have been incredibly profitable if I had been one of the pioneers in that sector.

Another project that I heavily invested in but left incomplete was a FoodTech startup that I pursued with five other students. We made significant progress with this project compared to the trading bot. Working in a team and having more experience at the time, we identified a gap in the food industry. We developed a feature that allowed phones to scan a photograph of ready meals or ingredients, identify the photo's contents, and provide relevant recipes. We thought it was an innovative approach to food waste and healthy eating, and we even received awards for our efforts. Interestingly, Apple is now implementing a similar native feature in iOS. Clearly, the idea we had four years ago, before AI became mainstream, was well ahead of its time. If we had followed through on this project, perhaps we could have brought this concept to life while there was still an unrecognised gap in the market.

Embracing Doubt and Gaining Fresh Perspectives

Despite this journal issue being about regrettable business decisions and listing ideas I regret not seeing through, I do not regret starting them or spending time developing them or my skills. As a rule, I go through life without regret. I do not speak of that with absolute confidence; instead, I recognise that failure is part of life and, therefore, business.

> I constantly have numerous ideas running through my mind, which can be both a blessing and a curse. One of my regrettable mistakes is not following through with some of my past endeavours.

I give in to my *shiny object syndrome* and try out ideas that speak to me, but I keep a clear head and a backup plan in case the idea does not work out. These are simply lessons that have now strengthened my character as an entrepreneur.

Circling back to Evernomic, as it is a new concept for the world, the answers to my questions are not always there. There are times when I go through stages and cycles of asking, "Am I even doing the right thing?" or "Is the model even remotely justifiable?"

I've asked myself many questions like these and have had to face countless inevitable doubts. Now that I've learned from those past mistakes, this is likely just another time where I've identified a wave before it comes. I am already seeing supporting evidence with holding companies and venture studios becoming increasingly popular since I founded Evernomic. I do not plan to abandon Evernomic. With my stroke of luck in diving into new ideas and developing them ahead of their time, I am proud to see Evernomic where it stands as I've seen it through to this stage and will continue to do so.

Turning Mistakes into Strengths

I have developed a keen interest in venture studios because I enjoy working on multiple projects and initiatives simultaneously. In the past, my habit of switching from one idea to another was seen as a weakness, but now it's part of my job, and a reason I'm good at it. I've realised that everyone's approach to learning from mistakes is different. Sometimes, it's about turning past mistakes into strengths. One thing is certain: these regrettable decisions shape our lives, and it's our responsibility to make them for the best.

I've learned to shift my mindset and now see regrets as opportunities for improvement in future projects rather than dwelling on missed chances. It takes time and careful consideration of priorities, but you can also start to view your failures as stepping stones rather than obstacles that hold you back.

Conflict of Interest

None

Avoiding Costly Mistakes: The Importance of Learning from International Experiences in EMR Implementation

Implementing electronic medical records (EMRs) across various countries highlights significant potential benefits but also reveals numerous challenges and pitfalls. This highlights the importance of learning from international experiences to avoid costly mistakes and inefficiencies.

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> **key points**
>
> - Transformative yet Challenging: EMRs have revolutionized healthcare but come with significant implementation challenges.
> - England's Early Adoption: England's experience shows the need for strategic planning and phased implementation in expanding EMRs beyond primary care.
> - Australia's Lessons: Australia's difficulties highlight the importance of learning from other countries' experiences in healthcare IT.
> - Canada's Doctor-Patient Study: EMRs did not harm doctor-patient relationships, but chronic disease registers introduced new trust issues.
> - Critical Implementation Lessons: Successful EMR systems need semantic integrity, structured data, GIS integration, and effective vendor management.

The integration of electronic medical records (EMRs) in healthcare has been a transformative yet challenging journey across different countries. This narrative explores my personal and professional experiences with EMRs in England, Australia (Kidd M, 1997), and Canada (Protti D, 2003), highlighting the lessons learned and the pitfalls encountered. By examining these varied experiences, it becomes clear that while EMRs offer significant potential benefits, their implementation must be approached with caution and careful consideration of the lessons from other nations.

EMRs in England: Early Adoption and Challenges

Having grown up, been educated, and begun my career in England, I was accustomed to the widespread use of EMRs by family physicians. By the late 1990s, EMRs were ubiquitous in primary care, yet their adoption in other healthcare sectors lagged. Despite the familiarity and perceived benefits, challenges remained, especially in achieving comprehensive integration across all areas of healthcare. The reluctance to expand EMRs beyond primary care highlighted the complexities and resistance within the healthcare system, underscoring the need for strategic planning and phased implementation.

Australia's National Strategy: Lessons from the UK

In 1998, my time in Australia involved evaluating the first National Strategy for Primary Care Computerisation by the then General Practice Computing Group (GPCG)(More D G, 1999). My report emphasised the pitfalls that could be avoided by learning from the UK's experiences (Ellis N T, 2000). Despite these insights, Australia's implementation faced significant hurdles, reflecting a broader

trend where countries often overlook valuable lessons from predecessors. The reluctance to fully embrace these insights led to slower adoption rates and highlighted the necessity for international collaboration and knowledge sharing in healthcare IT initiatives.

Canada's Study: Doctor-Patient Relationship and EMRs

After working with dozens of primary care clinics in chronic disease management and meeting key indicators envisioned as indicative of professional care, I moved to Canada in 2003. My move was primarily because computerisation in primary care was still uncommon and I was interested in the impact of the change in information management methods during a consultation on the doctor-patient relationship. At that time, I was informed that the NHS would be implementing electronic health records (EHRs) and that there was no need for evaluation as it was axiomatic that they would be beneficial as they had been in other industries (Burns H, 2004), such as banking. However, the lessons that could be learned from banking (Shaw N T, 2006) were ignored.

In Canada, I was funded by CIHR to undertake a study of 30 primary care clinics across British Columbia. I matched the clinics by size and type of location in groups of three. One group was already computerised, and the other two were using paper-based charts. I provided information management training to one of the two using paper-based charts and to the computerised clinic every six months for three years. At the same time interviews and surveys of the patients and doctors were conducted in all clinics. We knew by then that the use of a computer in the consultation added minutes to the time for the encounter, which was later disproved (Hayward J, 2015) but what we didn't know was whether that improved the doctor-patient relationship or not.

Interestingly, the results showed that the relationship between the doctor and patient was good when the doctor made eye contact and included the patient in charting the consultation. It made no difference whether or not they used paper-based charts or computerised ones (Shaw N, 2004). However, the concurrent introduction of chronic disease registers adversely impacted the doctor-patient relationship. For example, diabetic patients who had been stable but not within the new requirements were suddenly expected to be tested more frequently. This led to frustrated patients and a new distrust in their doctor. The patients felt that if the doctor hadn't been concerned before, there must have been something wrong if they now needed more tests. Explaining that it was simply a mechanism of ensuring that the doctor was paid for the care they provided did not help the situation (Shaw N T, 2002).

Ultimate Lesson in Implementing Electronic Medical Records

Governments should have learned from other countries that installing medical billing systems and expecting clinicians to use them instead of paper charts is a fundamental mistake. Over 30 years later, governments are still grappling with this basic understanding. Medical billing systems and paper charts serve different purposes, and substituting one for the other without addressing their inherent differences leads to inefficiencies and errors.

Globally, people & organisational issues, alongside evaluation (Kaplan & Shaw, 2004), must be addressed and are critical to a successful EMR implementation. Unfortunately, these aspects are often forgotten or ignored (Gagnon et al., 2009).

Ensuring Semantic Integrity and Overcoming Free Text Challenges

A critical lesson is that records should only be shared when semantic integrity can be ensured. This means that when Doctor X diagnoses a patient with Diabetes, Doctor Y should see the same diagnosis in the record without having to infer it from prescribed medications. Free text entries in computerised records have historically been problematic. Until recently, artificial intelligence and natural language processing have struggled to accurately extract medical diagnoses from narrative entries (Zweigenbaum P, 1995), (Wieland-Jorna Y, 2024), (Lorenzoni G, 2024) such as "Saw patient in clinic today, tests show that they do not have diabetes. Will investigate further". In the past, this would have resulted in a false diagnosis of diabetes being added to the record, whereas the exact opposite is true (Zweigenbaum P, 1995). This issue underscores the importance of structured data in medical records.

The Reality of Universal Patient Records and Vendor Challenges

Despite trillions of dollars invested (Kidd M R, 2002), (Sidorov J, 2006) in computerised medical records worldwide, the concept of a universal patient record accessible globally remains elusive (McGuire M R, 2006). Major companies such as Google™ have attempted to penetrate the market (Brodwin E, 2021) and have soon regretted their decision and got out of the industry with little fanfare and into hosting environments instead (Arana C, 2023). Geographical

Information Systems (GIS), which are commonplace in tools like Google™ Maps, have yet to be effectively integrated into electronic medical records, despite their potential to highlight diagnostic insights based on patients' geographical histories and increases and decreases in risk factors (Davenhall B,2009).

By now many healthcare organisations are on their second, third, or higher vendor. Each change in vendor has caused a degradation of data transferred from one system to the next. In most cases, it would be better to pay medical students to abstract the computerised medical record into an agreed summary of diagnoses, current treatment and prescriptions and start fresh with the new system. Just like we did with a paper chart, beginning a new page as needed with a summary kept at the front of the record.

The Fragmented Nature of 'Universal' Records

Computerised 'universal' records do exist, but in the form of several different systems. I can access my medical

images from one system, my surgeries from another, part of my diagnostic record is available from a third system,

> ## Despite trillions of dollars invested in computerised medical records worldwide, the concept of a universal patient record accessible globally remains elusive

my prescriptions are managed by my pharmacist, and vaccinations by my local public health agency. But

one thing keeps being overlooked: the diagnosis of my deafness. Despite making several requests and authorising the use of email or text messages with me on many occasions, providers fail to properly register my deafness and act on it appropriately.

Conclusion

Countries should proceed with implementing electronic medical/health records only if they first learn and apply lessons from other countries' experiences. They must address these critical issues to avoid making one of the most expensive and regrettable decisions in healthcare history. Ensuring semantic integrity, overcoming the challenges of free text, effectively integrating GIS, and managing vendor transitions are crucial steps towards creating a truly functional and universal electronic health record system.

Conflict of Interest

None

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Common Pitfalls and Essential Strategies for Successful Integrated Care Systems

Health and care systems are fragmented and fail to address comprehensive community needs, which is especially problematic as populations age and complex health needs grow. Despite efforts to implement people-centred integrated care, these programmes frequently fail due to poor design, lack of sustained engagement, and inadequate long-term funding.

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key points

- Fragmentation: Health and care systems are fragmented and disease-centred, leading to poor quality care as populations age and health needs grow.
- Integrated Care Vulnerabilities: Integrated care programmes often fail due to political changes, non-recurrent funding, rigid governance, and lack of evidence or belief.
- Common Implementation Mistakes: Mistakes include using integrated care for cost containment, focusing on structural changes, neglecting people and communities, and treating programmes as temporary projects.
- People-Centred Approaches: Engaging people as partners in their care is crucial, with evidence showing better outcomes from people-driven methods.
- Need for Sustainable Change: Integrated care needs long-term commitment, learning from past mistakes, and integration into core services, not just pilot projects.

Today, health and care systems internationally are fragmented, disease-centred, challenging to navigate and do not consider the needs of the whole person or community. As populations age and the number of people living with complex physical and mental health needs grows, too many people are experiencing poor quality care, often in the wrong settings with undesirable outcomes. Though health and social care systems have been slow to change, the need for a more sustainable business model that promotes better value in care has resulted in a sustained global effort to promote people-centred integrated care.

Yet, within this movement for change, integrated care programmes have proven to be highly vulnerable to failure. However, it's important to remember that these programmes, like many small businesses, have the potential to succeed with the right support, funding, leadership, and management. Since most integrated care programmes operate in the public sector, their potential for success can be hindered by factors such as political change, non-recurrent financial investments, inflexible governance and accountability arrangements, professional tribalism, embedded norms and values, and the lack of evidence or belief.

However, the steady growth of supra-national, national, and regional policies and programmes prioritising integrated care over the past two decades has brought a much greater understanding of the building blocks for success. It is in the light of such knowledge that we highlight here four of the most 'regrettable' yet common business decisions that continue to be made when implementing integrated care programmes:

1. Integrated care designed and driven as a cost containment measure.

2. Integrated care focusing on structural solutions as the endpoint.

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3. Integrated care that fails to place people and communities at the centre.

4. Integrated care that remains treated as a special project rather than as a core business.

Mistake 1: Integrated care designed as a cost containment measure.

Given the accelerating cost of health and care services worldwide, the inevitable strain on budgets and the ongoing need to contain costs pose a problem for health system decision-makers to find new 'business models' in which to promote financial sustainability whilst trying not to compromise on access to and quality of care. The belief that integrated care can achieve this is supported by a

> Integrated care is a path for improving the quality of care and not a means to reduce costs

substantial body of evidence (Rocks et al., 2020; Stadhousers et al., 2019), yet, at its heart, integrated care is a path for improving the quality of care and not a means to reduce costs (Goodwin, 2016).

A good example of failed business logic here is case management, a well-established tool for integrating services around the needs of individuals with long-term conditions. As a targeted, community-based approach to co-ordinate care to people living with complex needs, an expectation is raised that costs should be reduced as fewer people require hospitalisation. Whilst the evidence does point to

improved care experiences and outcomes for people, it is often poor for cost containment, especially in the short term (Stokes et al., 2015; Klaehn et al., 2022). Multiple but predictable reasons for this include the unlocking of unmet needs in the community that increases demand for care, the inability to prevent hospitalisations due to the lack of primary and community care capacity to respond, a lack of focus on supporting people to self-care, poor patient targeting and inappropriate design and delivery in the context of where case management is deployed. The blind assumption that case management can, on its own, contain costs is always likely to lead to failure since it only works best as part of a broader programme of care in which multiple strategies are employed (Ross et al., 2011).

Mistake 2: Integrated care focusing on organisational solutions as the endpoint.

The evidence for effective integrated care requires optimising care at the service and clinical level – for example, by professional care teams that pro-actively coordinate care in partnership with patients and carers (Gonzalez-Ortiz et al., 2018). In contrast, the same evidence demonstrates that structural reforms are often inversely related to the ability to deliver better value in care. In other words, most well-functioning integrated care programmes happen despite the organisational and systemic solutions designed to support them. For example, a study of structural reforms in Scotland and Norway demonstrated how focusing on organisational solutions meant the system lost sight of user outcomes as they became compromised by other agendas (Huby et al., 2018).

In both countries, complex regulatory environments stultified the ability to deliver partnerships working at a local level, leading to little tangible impact.

This does not mean, of course, that structural reform will always be futile. In the Basque Country, Spain, their Strategy to Tackle the Challenge of Chronicity understood that transformation initiatives led 'top-down' were doomed to fail. Instead, their focus was placed on bottom-up initiatives with consensual, collaborative, and 'messier' decision-making processes leading to tangible and beneficial results (Alvarez and Nuño-Solinís, 2016; Bengoa, 2013; Nuño-Solinís et al., 2012). As Glasby (2016) argued in the UK context, evidence from policy reforms demonstrated how structural change needs to encourage local partnerships to be creative and provide the scaffolding to support them to be impactful. This lesson, however, is seemingly unlearned consistently. A recent Independent Review of Integrated Care Systems in the UK, for example, found that they have yet to 'deliver on their promise' due to complex regulatory, accountability and systemic requirements that have disabled the pace at which integrated care solutions have been able to emerge (Hewitt, 2023).

Mistake 3: Integrated care that fails to put people and communities at the centre.

One of the results of these first two failures is their complicity in crowding out the voices and needs of the people and communities they are intended to serve. For example, a retrospective review from the National Integrated Care Pilots in the UK showed that while a user focus was central to their purpose, the sustained engagement of citizens and patients was absent (Lewis et al., 2021). The limited evidence for any positive impact from consumer involvement in integrated care programmes is essentially an artefact of the general lack of engagement at any or all stages in the design and implementation process (Nilsen et al., 2006; Wiles et al., 2022).

> Perhaps the most regrettable business decision is seemingly the failure to learn from past mistakes, an inability to acknowledge and be open about when things do not work, and the lack of commitment to long-term sustainable change

Engaging people as partners in care is essential to integrated care's core business model. Many available tools and methods enable people to take control of their care and bring services together to achieve outcomes important to them. These are proven to improve the quality of care and outcomes (Ferrer, 2015). Yet, evidence demonstrates that integrated care programmes remain too passive, condemn patients and carers to subservient roles, and preserve a power imbalance favouring systems and professionals over people and communities. Though more research is needed, evidence shows that people-driven approaches to system change that respond directly to community needs and goals - like the NUKA health system in Alaska and the Eksote model in Finland – do better than traditional 'top-down' methods (Goodwin et al., 2022).

Mistake 4: Integrated care that remains treated as a special project rather than as core business.

Perhaps the most enduring of all failures is that integrated care programmes themselves are too often established as time-limited pilot projects with 'special' but non-recurrent funding. As a result, they sit 'outside' of established core service delivery models rather than being integrated within them. The general idea is that pilots may act as vehicles to provide a 'proof of concept' for further growth, but the majority are neither given the time nor the attention needed to do so. Hence, the mortality rate of integrated care programmes is high, even when they prove successful, as a lack of core funds and support results in their discontinuation. A recent editorial by Stein et al. (2021) examining the lessons learned from 20 years of integrated care as a public policy

concluded that the prevailing 'top-down' approach to implementation lies at the heart of many business failures.

Conclusion

As authors, we have all been involved in designing, implementing, and evaluating integrated care at different levels in health and care systems for many years. While we have seen how integrated care can succeed in improving care and outcomes for people, its implementation necessitates thinking and acting in different ways from the traditional. Perhaps the most regrettable business decision is seemingly the failure to learn from past mistakes, an inability to acknowledge and be open about when things do not work, and the lack of commitment to long-term sustainable change.

Conflict of Interest

None.

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The High Cost of Complacency: Lessons from Kodak, Blockbuster, and Nokia

The stories of Kodak, Blockbuster, and Nokia highlight the catastrophic consequences of failing to adapt to technological changes and market shifts. They emphasize the need for businesses to remain agile, innovative, and forward-thinking to stay competitive in a rapidly evolving landscape.

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key points

- Failure to Adapt: Kodak, Blockbuster, and Nokia all suffered from a critical inability to adapt to technological advancements and changing consumer preferences, leading to their decline.
- Missed Opportunities: Kodak's neglect of digital photography, Blockbuster's dismissal of Netflix's potential, and Nokia's late pivot to smartphones highlight how missed opportunities can have catastrophic consequences.
- Importance of Innovation: These companies' downfalls underscore the need for businesses to continuously innovate and disrupt their models to stay competitive in a rapidly evolving market.
- Visionary Leadership: Strategic foresight and visionary leadership are important, as companies need to anticipate market dynamics and embrace change proactively to maintain their edge.
- Agility in Strategy: Modern businesses must prioritise agility in their strategic planning, staying attuned to market trends and ready to pivot quickly in response to new technological advancements and consumer behaviour shifts.

Throughout corporate history, there have been numerous decisions that, in retrospect, have been deeply regrettable. These decisions often serve as cautionary tales, illustrating the complex dynamics of business strategy, market forecasting, and the unpredictable nature of innovation. Notable examples include Kodak, Blockbuster, and Nokia, among others, which highlight how critical failures to adapt to changes in technology and consumer behaviour can lead to dramatic downfalls. Kodak's reluctance to embrace digital photography, Blockbuster's dismissal of the streaming revolution, and Nokia's inability to compete with the smartphone surge are prime instances of how technological advancements and shifting consumer preferences can outpace established business models. These examples underscore the necessity for companies to remain agile, continuously innovate, and keenly attuned to market trends to sustain their competitive edge and avoid similar fates.

Kodak: A Cautionary Tale of Complacency and Missed Innovation

Kodak is perhaps the quintessential example of a regrettable business decision. Despite inventing the first digital camera in 1975, Kodak chose not to pursue the technology, fearing it would cannibalise its lucrative film business. This decision was rooted in the belief that the digital market would take decades to mature, underestimating the rapid pace of technological adoption. As a result, Kodak continued to focus on its traditional film products, while competitors like Canon and Sony embraced digital photography. By the time Kodak pivoted to digital, it was too late; the company filed for bankruptcy in 2012.

Kodak's downfall underscores the dangers of complacency and the importance of embracing innovation even at the expense of existing revenue streams. This decision

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reflects a critical failure to understand and adapt to the shifting technological landscape and consumer behaviour. Kodak's reluctance to disrupt its own profitable film business blinded It to the imminent digital revolution. The company's leadership failed to recognise that innovation often requires cannibalising current successes to pave the way for future growth.

Blockbuster: Ignoring Market Shifts and Technological Innovation

Similarly, Blockbuster's decline is a stark reminder of the perils of failing to anticipate market shifts.

> Kodak's downfall underscores the dangers of complacency and the importance of embracing innovation even at the expense of existing revenue streams

At its peak, Blockbuster was a dominant force in video rental, with thousands of stores worldwide. However, in 2000, the company famously declined an opportunity to purchase Netflix for a mere $50 million. Blockbuster's leadership dismissed the potential of Netflix's mail-order and, later, streaming model, confident that their retail stores would remain the primary distribution method for home entertainment. This misjudgment proved catastrophic. As consumers increasingly favoured the convenience of digital streaming, Blockbuster's business model quickly became obsolete.

Netflix, meanwhile, has grown into a global entertainment powerhouse, valued in the billions. Blockbuster's fate illustrates the critical importance of adaptability and the willingness to invest in emerging technologies. The reluctance to shift from a brick-and-mortar business model to a digital-first strategy highlighted Blockbuster's inability to foresee the rapid evolution in consumer preferences. While Netflix embraced the burgeoning internet age, continuously evolving, from DVDs by mail to streaming, then producing original content, Blockbuster clung to its outdated model, hoping to ride out the changes.

This scenario underscores the necessity for businesses to stay ahead of technological trends and consumer behaviour shifts. Companies must foster a culture of innovation and be willing to pivot when necessary. Blockbuster's downfall is a cautionary tale about the risks of complacency and the importance of visionary leadership. It demonstrates that success in the past does not guarantee future relevance, and in the fast-paced world of technology, only those who embrace change can thrive.

Nokia: The Importance of Strategic Foresight and Adaptability

Nokia's fall from grace offers another poignant lesson in the importance of strategic foresight. In the early 2000s, Nokia was the world's leading mobile phone manufacturer, renowned for its durable and user-friendly devices. However, the company was slow to recognise the potential of smartphones, particularly the shift towards software-driven user experiences epitomised by Apple's iPhone. Nokia's adherence to its Symbian operating system, and its late and flawed transition to the Windows Phone platform,

left it lagging behind competitors. By the time Nokia attempted to recover, its market share had eroded significantly. In 2013, it sold its mobile phone business to Microsoft.

Nokia's story highlights the necessity for businesses to stay ahead of technological trends and remain agile in their strategic planning. The company's failure to anticipate and adapt to the smartphone revolution marked its downfall. While rivals like Apple and Samsung focused on integrating cutting-edge software and user experiences, Nokia remained entrenched in its hardware-centric approach. This strategic myopia prevented it from innovating and responding effectively to the rapid changes in the mobile industry.

Moreover, Nokia's delayed pivot to the Windows Phone platform, rather than embracing the more popular Android system, further isolated it in the competitive landscape. The decision to partner with Microsoft came too late and was insufficient to regain its lost ground. This misstep emphasises the critical role of timely decision-making and the willingness to adopt new technologies and platforms to meet evolving consumer demands.

Nokia's decline shows that industry leaders must not only maintain but also anticipate market dynamics. Continual innovation, adaptability, and a forward-thinking mindset are essential for sustaining leadership and preventing obsolescence in a fast-evolving technological environment.

> ## Nokia's story highlights the necessity for businesses to stay ahead of technological trends and to remain agile in their strategic planning

Conclusion

These examples—Kodak, Blockbuster, and Nokia—underscore a common theme: the failure to adapt to changing environments and recognise new technologies' potential can lead to catastrophic outcomes. These companies were once industry leaders, yet their reluctance or inability to pivot in the face of innovation resulted in their decline.

For modern businesses, these cautionary tales emphasise the importance of remaining vigilant, embracing change, and fostering a culture that prioritises long-term vision over short-term gains. In an era defined by rapid technological advancement, the ability to anticipate and adapt to change is not just advantageous; it is essential for survival. Companies must invest in innovation, stay attuned to market trends, and be willing to disrupt their own models to stay relevant. The stories of Kodak, Blockbuster, and Nokia serve as potent reminders that even the most dominant market players can fall if they fail to evolve. Embracing a forward-thinking mindset and being agile in strategic planning are crucial to thriving in today's fast-paced, technology-driven world.

Conflict of Interest

None

Leadership Lessons: Authenticity, Accountability, and Effective Delegation

Throughout a managerial career, it becomes clear that addressing mediocrity, staying true to one's values, and practising effective delegation are crucial for leadership success. Reflecting on these lessons reveals their significant impact on teams and organisations, offering valuable insights to help others become more effective leaders.

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key points

- Address Mediocrity: Leaders must tackle poor performance and behaviour directly to maintain team standards and a positive culture.
- Value Authenticity: Staying true to personal values enhances decision-making and fosters genuine employee engagement.
- Delegate Effectively: Proper delegation prevents manager burnout, empowers team members, and promotes skill development.
- Learn from Mistakes: Reflecting on and learning from past errors is crucial for continuous leadership improvement.
- Foster High Performance: Courageous, value-driven leadership and effective delegation are essential for sustaining a high-performance culture.

During my career as a manager, I have faced numerous situations that required me to make decisions crucial to my professional development. Upon reflecting on these experiences, I realise their significant impact on my team, my organisation, and myself. I have learned the harmful effects of tolerance, the importance of being true to my values, and the vital significance of effective delegation. Despite being sometimes hard, each of these lessons has been invaluable. I hope to share my experiences to help others become more effective and fulfilled leaders without going through the inevitable challenges that come with the learning process.

The Cost of Tolerance: Why Leaders Must Address Mediocrity

Tolerance is the enemy of every leader. Tolerating mediocrity, either in performance or in behaviour, is the biggest mistake I made in my managerial decisions. Early in my management career, I encountered employees whose performance and, worst of all, behaviour consistently fell below expectations. Instead of addressing the issue directly, I chose to overlook their shortcomings, thinking that the potential disruption to the team dynamics and daily work wasn't worth it. However, this was far from reality, as in doing so, I communicated the wrong message. In fact, tolerating a high performer with a bad attitude is even more detrimental to a team than any disruption that would come from cutting ties with this individual.

The critical lesson highlighted here is that leaders should not prioritise tolerance when it comes to managing their team. It is crucial to address performance or behaviour issues promptly and decisively. Having the courage to make tough decisions early on is essential for maintaining a high-performance culture. Looking back, I now understand that the discomfort of having difficult one-on-one conversations, creating development plans, and even letting go of team members is significantly outweighed by the long-term benefits of

staying true to one's principles and fostering a culture of excellence.

The Power of Authenticity: Staying True to Your Values in Leadership

While working in a complex multinational organisation, one often finds themselves in situations where they are asked to communicate decisions that have already been made without necessarily agreeing with or supporting them. In one particular instance, I was tasked with conveying a decision that I did not believe in. Instead of challenging the decision or voicing my own beliefs, I went ahead and communicated it. As a result, I found it difficult to defend the decision or provide a convincing explanation when faced with challenges.

Following that experience, I realised the importance of being authentic and genuine to my own values. I made a commitment to myself to never engage in decisions that did not align with who I am as a person and that I could not wholeheartedly defend. I believe that authenticity and staying true to one's values not only improves decision-making but also fosters genuine engagement among employees. Leaders acting consistently with their values motivate and encourage their teams. This approach ultimately contributes to a positive organisational culture, leading to sustainable success and personal fulfilment for both managers and their teams.

The Crucial Role of Delegation in Leadership Success

Understanding the importance of delegation is essential for the success of any team and its leader.

Reflecting on my own journey, I have come to realise the pivotal role of effective delegation. Early in my career, my insecurities made me hesitate to properly delegate tasks. As a result, I found myself overwhelmed with an excessive workload, ultimately becoming the bottleneck for my team. This not only led to my own exhaustion but also hindered team members from assuming their responsibilities.

> Tolerance is the enemy of every leader. Tolerating mediocrity, either in performance or in behaviour, is the biggest mistake I made in my managerial decisions

I learned that when leaders immerse themselves in every small task, crucial aspects of leadership, such as strategic thinking and seizing future opportunities, tend to suffer. Similarly, team members miss opportunities to develop their skills and garner valuable experience, resulting in decreased engagement and a prevailing sense of dependency. Over time, this pattern can lead to burnout among managers and a disengaged, underutilised team, ultimately impeding the organisation's growth and success.

Conclusion

All of us will inevitably make mistakes when leading a team. It's crucial to take the time to reflect on these experiences and learn from them in order to avoid repeating similar mistakes in the future.

For those in management roles or aspiring to lead, I believe having the courage to address both performance and behavioural issues directly is essential. It's equally necessary to ensure that your decisions align with your values and beliefs. Effective delegation plays a crucial role in enabling leaders to focus on their primary responsibilities – guiding and leading their teams through present and future challenges.

The journey of management is an ongoing process of learning and development. Embracing our mistakes, critically evaluating our choices, and making necessary adjustments are all vital in the pursuit of becoming better leaders. While we can't change the past, my commitment now lies in applying these valuable lessons to create a more positive and successful future for both myself and my team.

Conflict of Interest

None

Embracing Failures as Stepping Stones to Success

Exploring how perceived regrettable managerial decisions can foster significant learning, Brisk Markets' Executive Director, Driss Seffar, delves into strategies for turning these disappointing experiences into ways to enhance business success and improve leadership.

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key points

- Value in "Regrettable" Decisions: Even the managerial decisions initially viewed as failures provide critical learning opportunities that shape future strategies and innovation.
- Time and Flexibility: Continuous monitoring and reassessment of strategic decisions are essential for effective resource allocation and sustained growth.
- "Just Do It" Philosophy: Swift, informed decision-making promotes adaptability and improvement, helping businesses stay competitive.
- Culture of Innovation and Agility: Encouraging quick decision-making and adaptability fosters innovation, employee engagement, and competitive advantage.

In the delicately balanced world of business management, every decision a manager makes carries potential consequences and opportunities. Navigating these decisions requires keen insight and a deep understanding of how each choice can impact future developments. This article argues that there are no inherently wrong decisions in management; instead, every outcome serves as a valuable learning opportunity to refine strategies and improve leadership effectiveness.

Redefining "Regrettable" Decisions in Business

In the traditional sense, decisions leading to financial losses or missed market opportunities are often branded as regrettable. However, this narrow perspective fails to fully recognise the more profound value embedded within these experiences. A more comprehensive and forward-thinking perspective acknowledges that the genuine measure of a decision's impact can be found in the invaluable lessons it imparts. Although decisions may demand substantial time and resources and may not immediately align with expectations, they can still act as pivotal learning experiences that fuel strategic refinements and foster innovation.

The Importance of Time in Decision-Making

Making strategic decisions in the business world involves a complex process that often unfolds over extended periods, making it challenging to promptly assess their effectiveness. For instance, a decision to invest in a promising new technology might seem advantageous initially, but it could lead to significant resource allocation away from other potential growth areas if not continuously monitored and reassessed.

This dynamic nature of strategic decision-making emphasises the importance of maintaining vigilance and flexibility in long-term investments and strategic pivots. Through continuous monitoring and reassessment, businesses can avoid prolonged commitment to unproductive paths and effectively reallocate resources for sustained growth.

The Merits of the "Just Do It" A Philosophy to be Learned

In a dynamic and ever-evolving business landscape characterised by rapid changes in market conditions, consumer preferences, and technological advancements, the ability to swiftly make informed decisions and seamlessly implement changes is paramount for staying competitive. The "Just Do It" philosophy promotes the proactive initiation of actions based on the most up-to-date and comprehensive information available, with a willingness to adapt and fine-tune strategies as necessary. Embracing this forward-thinking approach not only serves as a bulwark against organisational inertia but also fosters a culture of adaptability, agility, and relentless improvement within the organisation. This, in turn, equips businesses with the capability to promptly and effectively respond to emerging challenges and capitalise on new opportunities in the market.

Turning Mistakes into Milestones on the Path to Success

One prevalent misconception in the business world is the belief that a high frequency of mistakes indicates a lack of progress. However, an alternative and more insightful perspective suggests that a team's encounter with a greater number of mistakes brings them closer to achieving breakthrough success. This concept is based on the understanding that each mistake presents a unique learning opportunity and provides a chance to refine strategies and approaches. It is often through persistent trial and error that the most innovative solutions are not only discovered but also perfected. In environments

> A more comprehensive and forward-thinking perspective acknowledges that the genuine measure of a decision's impact can be found in the invaluable lessons it imparts

where mistakes are recognised as essential to the learning process, teams are more likely to push the boundaries of innovation and explore solutions that would otherwise be dismissed as too risky. Embracing a culture that does not shy away from mistakes but instead learns from them can significantly accelerate a company's path to success.

Fostering a Culture of Innovation and Agility

Managers can establish a work environment that nurtures and catalyses innovation by fostering a culture that values quick decision-making and encourages adaptability. In such an environment, employees feel empowered to take initiative and are more likely to experiment with new approaches, knowing that there is flexibility for adjustments. This supportive culture not only expedites the development and application of new ideas but also plays a pivotal role in enhancing employee engagement and job satisfaction. Ultimately, these factors contribute significantly to the organisation's competitive advantage and resilience in the market.

Conclusion

Reflecting on the intricate decision-making process in management, it becomes evident that the most regrettable decisions are those from which no valuable lessons are derived. When leaders adopt a management style characterised by proactivity and adaptability, they can ensure that their teams are not only equipped to navigate the complexities of modern business but also primed for ongoing growth and continual innovation. Therefore, it is crucial for sustainable success and the cultivation of effective leadership to embrace each decision as an invaluable learning opportunity.

Conflict of Interest

None

Leadership Disconnect: Uncovering the Hidden Challenges in Organisational Alignment

Many organisations experience a disconnect between leadership and the workforce due to traditional top-down business planning, leading to miscommunication and misaligned priorities. Implementing a Business Outcome Driven Enterprise Architecture (BODEA) framework can bridge this gap by enhancing visibility and collaboration, ensuring employees understand their roles, and improving overall organisational performance.

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> **key points**
>
> - Business As Usual: Traditional top-down business planning often leads to a significant gap between executive leadership and the workforce.
> - Great Question: Seeking employee input and acknowledging their expertise bridges the gap and aligns them with organisational goals.
> - Empower The Workforce: Visualising business plans and using Citizen Development provide employees with clear, actionable insights, improving engagement and performance.
> - Connecting The Dots: The BODEA Framework enhances visibility, alignment, and collaboration, leading to better decision-making and organisational success.

In many organisations, the annual business plan is a cornerstone, laying out objectives, goals, and initiatives for the year ahead. However, the traditional top-down approach often creates a significant disconnect between the executive leadership and the workforce. This gap can lead to misaligned priorities, miscommunication, and a lack of understanding at the employee level, ultimately hindering organisational success.

The Disconnect Dilemma: Challenges in Implementing Business Plans Across Organizations

Many organisations follow a process where the leadership team develops an annual business plan outlining objectives, goals, and initiatives, which is then shared company-wide. Implementation is then transferred to the various organisational departments, managers, and employees to achieve success. During this "**Business As Usual**" phase, challenge arises when the implementation of these plans filters down, creating a disconnect between the executives and the workforce. This gap is often caused by the cascading of information and expectations through various layers and silos within the organisation.

Challenges include management's different interpretations of priorities, physical distances between employees, the transfer of information between shifts, and high workload expectations. In most cases, workers do not have a clear understanding of why they are instructed to do certain tasks, so they simply

follow orders without understanding the reasons behind them.

Value of Engagement: Bridging the Leadership-Workforce Gap

My boss once asked me, "What can YOU do to help us meet our objectives this quarter?". This "**Great Question**" really resonated with me. It made me feel appreciated and valued because my boss sought my input, acknowledged my expertise and engaged with my work. However, it wasn't an easy question to answer. It got me thinking - if an employee simply follows instructions, are they genuinely aligned with the organisation's mission, vision, and goals? Are they engaged in meaningful work or just keeping busy? Do they feel valued and appreciated? Will the organisation be able to retain them in the long run? Essentially, is the organisation benefiting from the full potential of its workforce, getting the value it expects and needs?

This unintentional disconnect between leadership and the workforce is a widespread challenge many companies face today. It is often not acknowledged until it escalates and it's too late. Vital feedback and insights from employees who are closest to the day-to-day operations often fail to reach the executive level. Valuable feedback tends to get lost in the communication gap and differing priorities between the executive team and the various levels of departments. This disconnect severely impacts organisational culture, employee motivation, retention rates, buy-in, acceptance of decisions, and the organisation's ability to deliver on expected outcomes.

When leadership is transparent with priorities and expectations, and clear about expectations, organisational culture becomes deeply connected to

> This unintentional disconnect between leadership and the workforce is a widespread challenge many companies face today, often not acknowledged until it escalates and it's too late

the overall mission, vision, and goals. Consequently, the workforce feels empowered and motivated to engage in meaningful work. This positively impacts organisational performance and the ability to meet objectives.

Empowering the Workforce: Leveraging Visualisation and Citizen Development

Asking the "**Great Question**" at all levels of the organisation is one way to determine if there is a disconnect and to bring awareness to the multiple layers and departments. Once there is awareness, organisations can take steps towards resolving them. One solution to consider is to outline the Business Plan architecture through visualisation. By doing this, the connections between employees, their processes, expectations, and contributions will be visually revealed.

Many tools are available to provide visibility, but I believe the best way to start is with a few dedicated individuals and the use of Citizen Development. Citizen Development is a way to translate data into information and information into data, or to be more specific, bring the objectives, goals, and initiatives from the Business Plan to life by making the employee-required information transparent and focused on actionable insights. Citizen Development helps provide visibility both individually and cross-functionally to empower employees to get the relevant information they need to perform at a high level. Citizen Development assists employees to break silos and stay connected and on task while providing them the opportunity to use their experience to improve business processes and outcomes. This approach can genuinely ignite and "**empower the workforce**".

Connecting the Dots: Enhancing Organisational Alignment with BODEA

A Business Outcome-Driven Enterprise Architecture (BODEA) framework is a visual representation that defines how everything in the organisation is connected: "**Connecting The Dots**". Implementing a BODEA framework is a way to strategically bridge the disruptive disconnect between leadership and the workforce. It provides visibility, awareness, alignment, and connectivity. This, in turn, leads to increased employee motivation, dedication, and a stronger drive to achieve organisational goals, as individuals across all levels understand the impact of their contributions and the significance of their work.

BODEA builds operational efficiency by breaking down silos and fostering collaboration with cross-functional teams, a necessity to meet organisational goals on budget and on time. Additionally, executives will be able to solve challenges by making decisions and setting priorities based on facts & figures from real-time information. The pace of change in business today is unrelenting, and the need to make well-informed decisions, pivot quickly, and retain good people is essential to survive. Implementing a BODEA framework is a great way to stay attuned to the organisation's pulse and be prepared for the unexpected. Don't regret your business decisions; begin **Connecting The Dots** between leadership and the workforce today.

> Vital feedback and insights from employees who are closest to the day-to-day operations often fail to reach the executive level, severely impacting organisational culture, employee motivation, retention rates, buy-in, acceptance of decisions, and the organisation's ability to deliver on expected outcomes

Conclusion

Bridging the gap between leadership and the workforce is crucial for organisational success. Implementing a Business Outcome Driven Enterprise Architecture (BODEA) framework can provide the necessary visibility, alignment, and connectivity. By fostering transparency and collaboration, organisations can ensure that every employee understands their role and contribution, leading to higher motivation, better performance, and improved business outcomes.

Conflict of Interest

None.

Leveraging Five Leadership Pitfalls into Business Lessons

These five lessons from business decisions failures provide insights that leaders can leverage to navigate challenges more effectively, fostering resilience and sustainable success within their organisations.

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key points

- Delaying decisions on underperforming employees can exacerbate issues and erode team morale. Leaders must face performance facts promptly, seek honest feedback, and be decisive when supporting improvement or facilitating respectful transitions.
- Isolating decision-making from key stakeholders and established company frameworks can lead to strategic misalignment and cultural discord. Leaders should value collaborative input and involve executive teams in critical decisions.
- Relying solely on past successes and gut instincts without rigorous market analysis can lead to costly strategic errors. Leaders must prioritise thorough market assessments, leverage industry expertise, and avoid overconfidence in their organisational capabilities.
- Disengagement in critical business activities, such as outsourcing contract oversight, can lead to operational inefficiencies and client dissatisfaction. Leaders should maintain active involvement and adhere to governance practices to mitigate risks and uphold service standards.
- Violating client trust through broken promises can have profound, long-lasting repercussions. Organisations must uphold commitments to confidentiality and ensure rigorous adherence to ethical standards even in challenging legal contexts.

In the dynamic business world, decisions can make or break an organisation. While successful choices are celebrated, it's often the missteps that provide the most valuable lessons. This article explores five of the most regrettable business decisions, ranging from personnel management to strategic planning. By examining these cases of errors, missed opportunities, and resource allocation pitfalls, we aim to shed light on common traps and provide insights to help leaders avoid similar costly mistakes in their own organisations.

The following scenarios are contributions from five senior executive healthcare colleagues, all with lifetimes of experience. They are shared anonymously as the value is not in the who but the what: the problem and the solution.

Wishful Thinking in Personnel Management

In the first scenario, from a former provider organisation CIO and retired HIT company executive, the challenge is personnel management and an issue that most of us will easily recognise.

More than once, I waited too long to act when it became clear that a lieutenant was not up to the job. If someone lies or harasses a colleague, my anger is quick, and the person is dispatched as soon as possible. However, if a person was good at some aspects of their job but not so good at other aspects, I would work with them to take steps to up their game.

I have had multiple instances where the performance issues remained despite their and my efforts. I wound up trying to convince myself and them that the problems were not too bad and that if we just kept working on them, we could make them disappear.

That can be wishful thinking and there are several problems with wishful thinking. The job that needs to be done is not getting done. Other lieutenants see the issues and wonder why I am not more decisive. The person who is struggling knows they are struggling, and their head may not be in a good place.

What should I have done? I should have faced the facts and recognised that the performance improvement plan was not working and that wishful thinking would not make it work. I should have sought the advice of colleagues to get their honest feedback about whether the person and I should keep trying or call it a day. The employee and I needed to have a very candid discussion about the situation, setting clear goals to be accomplished in a short period of time.

If it was time for them to seek employment elsewhere, we should ensure that we handled their exit with dignity and humanity.

Isolated Decision-Making

The second scenario is from a retired healthcare consulting company CEO. Here, he explores the fallout from not utilising his management team and trusting in the value they could have provided.

One way decision-making can lead to negative outcomes is if it is performed in a vacuum, without guidance from others, or, as I did in the following example, while ignoring the greater framework of a company's decision-making guidelines.

We once lost an IT strategy deal to a much bigger competitor. I was upset that a competitor who was far less qualified to handle IT strategy than we were had beaten us. After pondering the situation, I decided that we needed to expand into the strategic-market-planning business to ensure that we didn't miss out on future opportunities.

I surveyed the industry and eventually acquired three boutique strategic planning companies. I architected and executed the acquisitions with our CFO and then made the biggest mistake of my career: I did not include my executive team in the decision-making process. Instead, I made a command decision.

> I should have faced the facts […] and I should have sought the advice of colleagues to get their honest feedback about whether the person and I should keep trying or call it a day.

Once the acquisition had been completed, some of the CEOs of the acquired companies joined our executive management team. What ensued became the most significant lesson in my career.

The acquired executives didn't share the same set of values as our original executive team. I gave these new executives a lot of leeway, and they made some awful decisions with it. Management meetings became contentious, and I found that I had to make command decisions, whereas previously the team would have reached a consensus. The strategic planning companies' business models differed from ours, and our company wasn't built to execute multiple business models.

In one meeting, one of the acquired executives, Sally, had developed a list of strategic planning services we could take to market. All the managers were in the room, including her former boss, Bill, who, it turned out, was her nemesis. Sally filled four whiteboards with list after list of services. When she was done, I counted the number of services we had to develop plans for; there were more services than we had employees. On top of that, as she went through her presentation, her nemesis sabotaged it line item by line item.

We were an hour into the meeting when I finally said, "Stop!" I looked around the room and told everyone to leave except Bill, to whom I said, "You, stay." Everyone sheepishly left. I looked at Bill and said, "This isn't working. You're going to have to go." Bill acted surprised and started rationalising his behaviour. I cut him off and said, "This isn't up for discussion. I've had enough. Please collect your things and leave now." Soon thereafter I also asked Sally to leave the company.

I then called a management meeting with only my top executives and apologised for the disrespect I had shown them in executing the acquisitions independently. I apologised for not seeking their advice, for not listening, and for not forming teams to help make these critical decisions. Over the next few months, I unwound all my

acquisitions and allowed the acquired employees and executives to return to the marketplace as independent companies.

The result was a very difficult and painful lesson about what happens when you forget your values, when you believe you are above everyone else, and when you personally experience culture slapping you so hard that it knocks you down.

We all know that our greatest lessons come from our mistakes. In this case, I made two mistakes: losing our focus on being the best at a few things rather than trying to master four whiteboards' worth of product solutions and failing to respect a culture that I had helped to build—a culture that was inclusive, not exclusive; a culture in which trust was based on transparency, respect, and teamwork.

When Analysis Trumps Overconfidence

The third scenario is from a former healthcare association CEO who learned the hard way that market analysis always trumps gut feeling.

Arrogance from an early success was the basis for my most regrettable business decision. The business decision was to build vs. buy. That is, was it smarter to build a new company or buy one that was already in existence?

I was once approached by several media executives who wanted to enter the health IT space with a new publishing company. They offered a royalty arrangement in exchange for access to members, events, and branding. Multiple media companies were already

in the HIT space, but none were closely associated with the association. I believed our brand would make a difference. So, I countered with an offer for the association to build the company with them as a partner. They accepted, and the result was a very successful diversified media company that achieved market prominence and significant profitability.

> That first success at building a new company made me believe that we had the people, the smarts, and the brand to do it again.

Shortly after that venture was underway, we identified a different product line that we felt was perfect for the organisation—conducting surveys on IT adoption in hospitals. There was only one other company in the space, and the prevailing opinion was that this other company had below-average data quality and was not particularly well regarded among HIT executives. So, again believing that our brand was a powerful differentiator, I decided to build a competing company although this competitor was looking to sell. We spent two years and significant financial resources to build

this company only to shut it down after a brief, very unsuccessful effort to break into this market. Shortly after, we did what we should have done in the first place—buy the company that was already there. That acquisition turned out to be one of the association's biggest reputational and financial successes.

That first success at building a new company made me believe that we had the people, the smarts, and the brand to do it again. What I didn't recognise were the factors outside of our organisation that made that first venture a success: experts in that field who understood that market and who had the business expertise to build that type of company.

The Cost of Disengagement When Outsourcing

In this scenario from a current healthcare CIO, we see the consequences of not paying close attention and staying engaged in critical business activities.

Our handling of an IT infrastructure outsourcing contract is certainly the worst business decision I've been involved with. Several years ago, we entered into a new contract, and it was not long before things went south.

I was letting our CTO manage the contract and learned much too late that I should have been more involved. We didn't follow our contract governance practices, and we didn't send dispute letters per the contract when the company didn't perform as expected. There was a point where normally very polite and calm hospital presidents voiced frustration because we couldn't get simple things done, like hooking up a new ultrasound machine.

Finally, we came to a mutual separation and did an RFP and a new contract with a new company. Honestly, I had no experience with such a large outsourcing contract and was counting on my CTO (who did have experience). He dropped the ball, and I was accountable.

Broken Promises and Trust Violation

In the last scenario, contributed by the founder of an HIT Company, we see the consequences of violating a client's trust.

The fallout from broken promises can have powerful consequences with a long-lasting impact. Our business model's success is based on confidential interviews about the performance of technology products. Individuals willing to be interviewed are guaranteed anonymity and rewarded with open access to the vendor differentiation findings. Willing participation is based upon a strong relationship tied to individuals' trust in the model.

A lawsuit between a participating organisation and their vendor requested that we share candid vendor performance statements from individuals in the participating organisation which we had promised would be kept anonymous. We had denied similar requests due to the anonymous nature of the relationship with participants. This time the participating organisation

pled with us to share the comments from interviewed participants that were part of their organisation. In this case, we aimed to benefit and reward the participating organisations for their abundant sharing. We provided the statements from those individuals who had provided their vendor assessments.

> Business leaders can cultivate a more astute approach to problem-solving, ultimately fostering resilience and long-term success in their organisations.

The fallout was a shock. One of those individuals who was deposed for the civil lawsuit had left the participating organisation and was no longer near or involved in

the disagreement. The individual was surprised when contacted by the court system and was extremely displeased with our organisation for not keeping the commitment to their anonymity. We missed it big time, thinking the participating organisation would have embraced its participants by preparing them for the lawsuit activities. It was a wake-up call for us, never to be forgotten. We have never broken that promise since.

Conclusion

These five case studies underscore the far-reaching consequences of poor decision-making in business. From neglecting employee performance issues to mismanaging contractor relationships, each scenario highlights the importance of thoughtful, informed choices. The lessons learned emphasise the need for proactive management, collaborative decision-making, strategic humility, vigilant oversight, and unwavering commitment to client trust. By reflecting on these regrettable decisions, business leaders can cultivate a more astute approach to problem-solving, ultimately fostering resilience and long-term success in their organisations.

Conflict of Interest

None

Five Mistakes Radiologists Should Avoid

Radiologists can significantly improve their professional effectiveness and team dynamics by avoiding common mistakes such as ineffective communication, improper delegation, avoiding difficult conversations, failing to adapt, and neglecting work-life balance. By addressing these issues head-on, radiologists can foster a more innovative, cohesive, and supportive work environment, ensuring long-term success and personal well-being.

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key points

- Effective Communication: Radiologists must ensure clear, two-way communication to avoid misunderstandings and inefficiency, especially in large teams.
- Balanced Delegation: Balance delegation and micromanagement by setting clear expectations, trusting team members, and conducting regular check-ins.
- Proactive Conflict Resolution: Address difficult conversations promptly with empathy and constructive feedback to maintain team cohesion and performance.
- Adaptability: Encourage innovation and stay informed about advancements to adapt to changing environments and maintain a forward-thinking practice.
- Work-Life Balance: Set boundaries and prioritise self-care to avoid burnout and sustain long-term success and personal well-being.

Radiology is a demanding field that requires a delicate balance of technical expertise, interpersonal skills, and strategic management. The complexity of this profession often leads to common pitfalls that can impede both personal and professional growth. By recognising and avoiding these mistakes, radiologists can enhance their effectiveness and contribute more positively to their teams and patients. This article discusses five critical mistakes radiologists should avoid to achieve success and maintain a healthy work-life balance.

Failing to Communicate Effectively Can Lead to Misunderstandings and Inefficiency

Effective communication is the cornerstone of any successful organisation, yet it is often overlooked. Radiologists, particularly in large departments, may assume that their vision and direction are understood without clear communication. This assumption can lead to misunderstandings, confusion, and decreased morale and efficiency. The risk of miscommunication is even higher in large departments, where teams can comprise hundreds of members. Therefore, radiologists must diligently ensure that their messages are conveyed clearly and understood correctly.

Embracing two-way communication in radiology can bring about numerous benefits. Radiologists should actively listen to feedback and concerns from their team members. Doing so ensures that everyone is aligned with the organisationl goals and can work collaboratively towards common objectives. This can be achieved through regular team meetings, open-door policies, and fostering a culture where team members feel comfortable voicing their opinions and

concerns. Effective communication not only enhances team cohesion but also improves overall departmental efficiency and morale.

Striking the Right Balance Between Delegation and Micromanagement

Striking the right balance between delegation and micromanagement is a common challenge in the field of radiology. Micromanaging can have detrimental effects on the team and the department as a whole. It can stifle creativity, reduce job satisfaction, and lead to burnout, as team members feel a lack of trust and autonomy. Conversely, over-delegation can result in a lack of oversight and accountability, leading to missed deadlines and subpar work quality.

The key is to delegate tasks while setting clear expectations and trusting team members to deliver. Regular check-ins are essential to monitor progress without constantly overseeing every detail. This approach allows radiologists to focus on strategic planning and leadership while ensuring optimal team performance. By empowering team members with the autonomy to execute tasks, radiologists can foster a more innovative and motivated work environment. Additionally, it is important to provide team members with the necessary resources and support to succeed in their roles, further enhancing their productivity and job satisfaction.

Avoiding Difficult Conversations Can Exacerbate Workplace Issues

Conflict and performance issues are inevitable in any workplace, but avoiding difficult conversations can exacerbate these problems. Radiologists must proactively address issues as soon as they arise rather than allowing them to fester. This proactive approach helps maintain team cohesion and performance. Ignoring problems can lead to resentment, decreased morale, and a toxic work environment.

> Effective communication is the cornerstone of any successful organisation, yet it is often overlooked

By encouraging open and honest communication, radiologists can resolve conflicts efficiently and prevent them from undermining the team's effectiveness. It is important to approach these conversations with empathy and a solution-oriented mindset. Providing constructive feedback and working collaboratively to address issues can strengthen team relationships and enhance overall performance. Additionally, offering training in conflict resolution and effective communication can equip team members with the skills needed to handle difficult conversations more effectively.

Failing to Adapt to Changing Environments and New Information

In a rapidly evolving field like radiology, flexibility and adaptability are crucial. Sticking rigidly to plans and strategies despite changes in the external environment or new information can hinder progress. Radiologists should encourage innovation and create an environment where new ideas and approaches are welcomed and tested. This adaptability not only keeps the practice current with technological advancements and industry trends but also fosters a culture of continuous improvement and resilience.

Encouraging a mindset of continuous learning and development is essential. Radiologists should stay informed about the latest advancements in their field and be open to integrating new technologies and methodologies into their practice. This may involve attending conferences, participating in professional development courses, and fostering a culture of curiosity and experimentation within the team. By

embracing change and encouraging innovation, radiologists can ensure that their practice remains at the forefront of the industry.

Neglecting Work-Life Balance Can Lead to Burnout and Decreased Well-Being

One of the most pervasive mistakes in the medical field is neglecting work-life balance. Radiologists who often prioritise work over personal life risk burnout and decreased overall well-being. Failing to attend to individual needs, such as health, family, and hobbies, can lead to reduced motivation and engagement at work and in personal life. Being constantly available for work-related matters can intrude on personal time, creating stress and affecting relationships.

Additionally, overcommitting to work responsibilities can result in poor performance and neglect of personal commitments. Sustaining a healthy work-life balance is essential for long-term success and personal happiness. Radiologists should set boundaries and ensure time for personal interests and relationships to maintain their health and productivity. Implementing strategies such as time management, setting realistic goals, and prioritising self-care can help radiologists better balance their professional and personal lives.

Radiologists can maintain their health and productivity by setting boundaries and ensuring time for personal interests and relationships. Fostering a supportive work environment where team members

> One of the most pervasive mistakes in the medical field is neglecting work-life balance. Radiologists who prioritise work over personal life risk burnout and decreased overall well-being

feel encouraged to take time off and prioritise their well-being is also beneficial. Regularly assessing workload and redistributing tasks can help prevent burnout and ensure that team members can maintain a healthy work-life balance.

Conclusion

Radiologists can transform their professional lives by addressing these common mistakes head-on. Commit to improving communication within your team, ensuring that your vision and direction are clearly understood. Find the right balance between delegation and micromanagement to empower your team while maintaining accountability. Do not shy away from difficult conversations; tackle issues proactively to maintain a cohesive and high-performing team. Embrace flexibility and adaptability to stay ahead in the rapidly evolving field of radiology. Finally, prioritise your work-life balance to sustain long-term success and personal well-being.

By taking these steps, you can enhance your professional effectiveness, foster a supportive and innovative team environment, and achieve a fulfilling career in radiology. Engage with your colleagues, share these insights, and work collaboratively to implement these changes. Your proactive efforts will not only benefit your career but also contribute to a more effective and harmonious workplace. Take action today to avoid these pitfalls and set yourself on a path to success.

Conflict of Interest

None

Turning Challenges into Opportunities: A 25-Year Journey of Perseverance and Success

This letter from Cyprus highlights how overcoming local market challenges through perseverance and the wisdom of mentors can transform obstacles into opportunities, leading to a thriving career. Celebrating 25 years in business, Michael R. Virardi emphasises the importance of continuous learning, networking, and maintaining a high level of performance to obtain and sustain success.

MICHAEL R. VIRARDI

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key points

- Overcoming Market Challenges: Addressing the local market's resistance to progressive business practices.
- Seizing Business Opportunities: Recognising and capitalising on untapped potential in the local market.
- Mentorship and Study: Gaining insights from influential business mentors and personal guidance from the author's father.
- Value of Networking: Utilizing online education and networking to connect with and learn from others.
- Celebrating Longevity: Marking 25 years of continuous growth and success in the business arena.

Every successful person will tell you that, at some point in their life and career, they were forced to deal with a challenge of some kind – anything from having to endure a severe illness to persevering despite receiving hundreds of rejection letters. In my case, the major problem was the local market, which was not ready for what other, more progressive nations – especially the USA – considered as essential components of good business practice (e.g. keynote addresses, educational management retreats, workshops, seminars, etc.).

Seizing Opportunities: Lessons from a Blank Page and the Wisdom of Mentors

My hopes rested on the lesson gleaned from the well-known funny story about the two shoe salesmen who visited a distant country, where they were surprised to discover that all the people there walked around in their bare feet. One of them called his manager at the company's headquarters and told him there was no possibility of making any sales there since no one wore shoes. The other called the same manager to report that there was a huge sales opportunity for precisely the same reason: no one wore shoes!

So, in "barefoot" Cyprus, I saw my opportunity and seized it. With no other serious challenge on the horizon, I knew that it would all be about perseverance and resilience if I were to realise my dream of having a career beyond the borders of my small island. I, therefore, spent thousands of hours reading and studying. Inside the pages of many remarkable and value-packed books, I found future mentors like Jeffrey Gitomer, Brian Tracy, Chet Holmes, Jim Rohn and many others. Since there was no

Internet in Cyprus until 1995 and, at the time (1999), no YouTube, my only in-person mentor and teacher was my late father, Rolando, whose invaluable wisdom and influence were equally significant.

From Online Education to International Invitations: A 25-Year Journey of Learning and Success

Eventually, online education—in its broadest sense—gave me access to a huge pool of inspired writers and speakers, whose tactics and styles I could learn from and attempt to emulate. Networking rooms proved to be of crucial value, and I saw for myself how ideas multiply when exchanged and people become even more formidable when they truly connect. Some of the professional connections that I made at the start of the millennium have now lasted for over two decades.

I finally reached the stage where I had written two best-selling books of my own, and slowly but surely, I began to make massive progress in the local business arena, gradually leading to invitations from abroad.

> As I celebrate 25 years in business, I always keep in mind one particular saying, which has its roots in the theatrical world: 'You are only as good as your last performance.' This keeps me alert, ensures that I take nothing for granted, and drives me to work consistently to the highest levels of my ability

Conclusion

My journey started in 1999, and despite some lows and highs, it has been an amazing one. As I celebrate 25 years in business, I always keep in mind one particular saying, which has its roots in the theatrical world: "You are only as good as your last performance." This keeps me alert, ensures that I take nothing for granted, and drives me to work consistently to the highest levels of my ability.

Conflict of Interest

None

Digital Transformation at Universitätsklinikum Halle Using Artificial Intelligence

An overview of the challenges faced by the German healthcare system and how AI can be used to digitally transform healthcare and make it more efficient.

JENS SCHNEIDER

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key points

- The German healthcare system operates across three primary domains: outpatient care, inpatient care (hospitals), and rehabilitation facilities.
- German hospitals are under huge pressure and are facing an unprecedented crisis. Insolvency rates continue to increase and are expected to reach historic highs in 2024.
- The current system in Germany uses Diagnosis Related Group (DRG)-based fees where patient treatments are reimbursed according to DRGs, essentially operating as a lump-sum payment system per diagnosis.
- The German Hospital Future Fund, known as "Krankenhauszukunftsfonds" in German, is a programme initiated by the German government to modernise and improve the country's hospital infrastructure.
- Universitätsklinikum Halle is a first mover with AI and has implemented an AI system to self-triage and steer patients into the right treatment path.

The German healthcare system operates across three primary domains: outpatient care, inpatient care (hospitals), and rehabilitation facilities. Outpatient care, managed by self-employed healthcare professionals like doctors, dentists, and psychotherapists, typically begins with a visit to a family doctor (Hausarzt). These practitioners, often general practitioners, internists, or paediatricians can refer patients to specialists if needed. Additionally, patients can directly access specialists without a referral.

Alongside individual practices, Germany hosts joint practices and medical care centres where multiple healthcare professionals collaborate. These larger setups, sometimes termed "Praxiskliniken" ("practice hospitals"), can provide specialised services akin to hospital care.

Hospitals in Germany cater to all patients, regardless of insurance type, with public, charity-run, church-run, and private hospitals constituting the landscape. Inpatient treatment involves fees for accommodation and meals.

Challenges for German Healthcare

These days, German hospitals are under huge pressure and are facing an unprecedented crisis. Insolvency rates continue to increase and are expected to reach historic highs in 2024. Small and medium-sized hospitals are going bankrupt.

This is because of some key problems that need to be addressed. The first is that German hospitals, especially those with inpatient care beds, are underutilised. Studies show that one-third of inpatient beds are more or less useless now and even more in the future. The Medtech industry and treatment standards allow more treatments to be done in outpatient care. Hence, shifting patients from inpatient to outpatient is much quicker and worsens the situation of the underutilisation of the beds. There is also the problem of increasing energy costs and staff costs. The German healthcare system calculates the budget increase using the cost figures two or three years prior. However, it is impossible to foresee inflation over the next two years or the payroll hospitals would have to cover, and hospitals may not have

the funds to cover their costs based on cost data from two years before. That is why most hospitals are struggling to cover their expenses with current revenue streams. Decades of underfunding in terms of investment and the persistent absence of inflation compensation are driving this trend. German hospitals are constrained from adjusting their prices in response to inflationary pressures, which makes the situation worse.

What we need to do is reconfigure the system. Treatments should be centralised. Several studies have shown that the quantity of treatment influences the quality of treatment. If a surgeon does several surgeries more often, he gets better. That's the logic for the centralisation of services. The second thing is that you need smaller hospitals or a combination of inpatient and outpatient care that is easily accessible to people. This way, you will not need full-scale hospitals everywhere. Finally, we need to use new technologies to combine these new systems and to allow healthcare providers to work together along the patient value chain. You also need telemedicine platforms to let doctors work together on one case. You need artificial intelligence that may help doctors with diagnosis.

Diagnosis Related Group

The current system of Diagnosis Related Group (DRG)-based fees in Germany has come into focus. Under this system, patient treatments are reimbursed according to DRGs, essentially operating as a lump-sum payment system per diagnosis. While this approach has its merits, it also has drawbacks. Critics argue that it creates incentives for excessive treatments aimed at maximising DRG-based fees per patient. However, as mentioned before, numerous

hospitals across Germany are teetering on the brink of closure and financial insolvency. That is why the expected reform should change things for hospitals. The core principle of this reform is to prevent occasional medicine ("Gelegenheitsmedizin") through specialisation and centralisation and prioritising outpatient care over inpatient care. Consequently,

> The Hospital Future Act (KHZG) is a law passed in September 2020 and is intended to make a significant contribution to digitisation in the healthcare sector

the aim is to minimise financial incentives and focus on consolidating larger hospitals and medical facilities to enhance the overall structure and quality of healthcare in Germany. This endeavour also involves reducing the overall number of hospitals across the country.

German Hospital Future Fund

The German Hospital Future Fund, known as "Krankenhauszukunftsfonds" in German, is a programme initiated by the German government

to promote innovation and digitisation within the healthcare sector. The Hospital Future Act (KHZG) is a law passed in September 2020 and is intended to make a significant contribution to digitisation in the healthcare sector. To modernise the health system and improve patient care, the law provides for the establishment of a hospital future fund (KHZF). This is a €4.3 billion initiative to bolster hospitals' emergency capabilities, enhance digitisation, and fortify IT security.

Eligible projects encompass a range of digital advancements such as patient portals, electronic care documentation, digital medication management, AI and IT security enhancements. Additionally, the funding will support the implementation or enhancement of telemedicine, robotics, and cutting-edge medical technologies.

Digital Transformation at Universitätsklinikum Halle

At Universitätsklinikum Halle, we have been the first movers with AI and have implemented an AI system specifically customised for our needs in several languages (https://www.umh.de/krankenversorgung/digitaler-gesundheitslotse). We are the first hospital to use it to self-triage. Our goal is to streamline payments that come into our emergency unit and get them on the right treatment path. The project was launched in April last year, and a full-scale launch took place in September. The core software for this AI solution was bought from a third-party supplier and was then customised and integrated into our processes.

The process is simple. A patient visits a hospital and sees a doctor or nurse. Their diagnosis is adjusted

as per its severity level, and based on this, they are assigned a digital health advisor and fill out their information. The quality of this information is much better. It is not a short interview in a stressful situation in the emergency department. It is information that comes directly from the patient and goes directly into their electronic health record so that nurses and physicians can work with this information. The patient can decide to leave the ED and go into a normal outpatient clinic if their case is less severe.

Not only does this streamline the patient flow, but it also automatically corrects the payment pathway. In the German healthcare system, payments are determined based on where the patient is treated. If there is a real emergency and the patient is treated and then goes into inpatient care, the hospital gets paid for this. However, if the patient is treated in the emergency department and is not a severe case, they will not go into inpatient care but will leave the hospital the same day. If this happens, the payment is very small. We have several thousands of these cases, and it can be estimated that this misclassification of patients could result in a loss of more than €100 per case. These patients thought they were ill but were not really that ill to justify a visit to the ED and then subsequent treatment.

The first step was a text-based chatbot; the next step in this project is to develop - an avatar like in a video game. People today prefer computer games rather than text-based tools. Our goal is to create a cool system where you could even arrange registration robots who come and say, *"Hi, welcome to the Uniclinic Halle. How can I help you today?"* Our goal is to provide this service in different languages so that immigrants can also use it easily.

It is important to understand the demographic shift, especially here in Sachsen-Anhalt. We are the oldest population in Germany, which will likely result in more cases for the health system. We also have a staff shortage, not so much here in Halle, but in the rural areas. It is thus safe to assume that we will have

> To modernise the health system and improve patient care, the law provides for the establishment of a hospital future fund (KHZF) that invests 4.3 billion Euros in the digitalisation of hospitals and health systems

more patients and less staff. The solution can only be that the productivity increases, and to increase the productivity of health workers, you need new tools - tools that help them diagnose faster and more accurately and that can help them with treatment procedures. These tools should a) be designed to steer patients in the right treatment path and b) help

with diagnosis. The objective is to direct the patient in the right direction.

AI can also help with administrative tasks and paperwork. In Germany, clinicians still have much paperwork to deal with. At Universitätsklinikum Halle, we are implementing a check-in patient portal that will allow patients to check in from home. The documents can then come in, and AI can easily streamline and manage this information. We often end up with no-shows or returns because patients often have an appointment and come in with missing information, which is rescheduled. This is a waste of time and resources. To reduce the inefficiencies of this system, we are implementing this new patient portal.

The core message is that there is a need to better utilise AI in healthcare. We need more innovative projects and more user experience. We need to streamline the insurance and payment processes, and we need clinical studies that show evidence of benefits that can be derived from these AI-based projects. We need evidence so that we can develop trust. It is not only the digital transformation of healthcare – it is the digital transformation of human beings. We need to customise AI as per our needs and develop projects that can address the inefficiencies in the system. We need leadership and encouragement to take this path; we need root-cause development, and we need the willingness to change. That is the journey to the future.

Conflict of Interest

None.

Human-Centric Artificial Intelligence and Robots in Healthcare

This article explores artificial intelligence and robotic solutions for human-centric healthcare resource allocation, addressing challenges like privacy and bias for equitable implementation.

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key points

- Artificial intelligence and robotics optimise healthcare resource allocation.
- Challenges include privacy, data security, and algorithmic bias.
- Collaboration is crucial for ethical implementation and patient acceptance.
- Despite challenges, these technologies can potentially improve care access and patient outcomes.

Introduction

In the complex ecosystem of healthcare management, decisions made at various levels can have profound implications for patient outcomes, resource utilisation, and overall efficiency of the system. From misallocation of resources to failure to coordinate patient care, the landscape is rife with challenges that can ultimately inhibit human-centric care. A human-centric approach in healthcare is one that focuses on the needs and perspectives of human beings, involving those offering and receiving the care. Fortunately, emerging technologies, particularly artificial intelligence (AI) and robots, are increasingly offering means of optimising healthcare management practices. As such, these technologies can be integrated through adequate application to avoid drastic resource allocation pitfalls. This article will discuss how virtual and physically embodied AI technologies can be applied in healthcare scenarios to offer human-centric care through effective resource allocation. Moreover, the article will outline some challenges that may arise while applying robots and AI in healthcare.

Virtual AI Applications

Virtual AI applications refer to software systems that use artificial intelligence to perform tasks and interact with users virtually, often via chatbots, virtual assistants, or automated systems. In contrast to robots, virtual AI applications do not have a three-dimensional physical presence.

One of the main areas where AI can address resource allocation problems is predictive analytics and demand forecasting. By analysing large amounts of data, including patient demographics, historical utilisation patterns and epidemiological trends, AI-powered algorithms can generate accurate predictions of future healthcare demands. These insights enable healthcare

organisations to proactively allocate resources such as staff, equipment and supplies based on anticipated needs, thus minimising underutilisation or overcapacity. For example, some diagnostics companies have implemented AI-driven solutions to forecast demand for medical diagnostics tests, such as blood tests and genetic screenings. By leveraging machine learning algorithms, these companies can analyse vast amounts of data from healthcare facilities and historical trends to predict future testing needs accurately. This helps them optimise inventory management, ensure timely supply chain operations, and ultimately improve patient care.

In addition, AI-based predictive models can identify areas of inefficient resource utilisation, allowing healthcare managers to reallocate resources strategically. For example, AI algorithms can analyse patient flow patterns within a hospital, identify bottlenecks in the care delivery process and suggest optimisations to improve throughput and reduce waiting times. By reallocating resources to areas of greatest demand or need, healthcare organisations can improve access to care and enhance patient satisfaction. From an employee perspective, this also includes staffing schedules that account for a fair workload distribution that considers adequate rest times for healthcare workers. Overall, optimising the forecasting of patient demand staffing schedules presents a reduction of wasted resources (e.g. sitting around) while improving the overall service experience of the patient. Moreover, healthcare professionals will feel less pressure due to staffing shortages, resulting in fewer errors and risk of burnout.

It should be noted that the aforementioned applications rely mainly on AI systems that can run virtually to offer optimised resource allocation in combination with human staff. However, such optimisation efforts should also consider the integration of physical robots that can directly act and participate in tasks in the three-dimensional realm.

> AI-based predictive models can identify areas of inefficient resource utilisation, allowing healthcare managers to strategically reallocate resources

Physical Embodied Robots

Physical robots also play a crucial role in optimising resource allocation in healthcare. Robots with AI capabilities can perform repetitive and time-consuming tasks with precision and efficiency, freeing human resources for more complex and value-added activities. For instance, some healthcare providers have already implemented robotic inventory management systems. Such systems use robots to automate the storage, retrieval, and dispensing of medications and supplies in hospital pharmacies, thus improving efficiency and accuracy while reducing labour costs. Ensuring that medical supplies are properly stocked decreases the likelihood of shortages or excess inventory. This automated approach improves resource utilisation and minimises the risk of errors associated with manual inventory management practices.

Moreover, robots are increasingly being used in patient care settings to augment the workforce and alleviate staff shortages. For example, robots can assist with activities of daily living for elderly or disabled patients, such as lifting patients in and out of bed or the bath. Such applications can consequently reduce the physical strain of nursing staff. In addition, robots can provide medication reminders and facilitate remote monitoring of vital signs. Further, although human interaction should be prioritised whenever possible to offer social support, staff-to-patient ratios are often less than ideal, and robots can assist in overcoming these bottlenecks. Indeed, research shows that close interaction with social robots (i.e. those that can communicate with humans) is a fruitful avenue to reduce patients' loneliness and depression. Overall, by supplementing the workforce with robots, healthcare organisations can improve the quality of care, improve patient outcomes, and optimise resource utilisation.

Challenges

Despite these automation-enabled advantages, healthcare organisations must address several challenges to realise the full potential of AI and robots in rectifying resource allocation bottlenecks. First, privacy and data security concerns must be addressed to ensure the confidentiality and integrity of

patient information used by AI algorithms. Companies must ensure that data collection and use are in line with customers' expectations and preferences. Second, companies should be transparent about how they use customer data and provide customers with control over their personal information. This may include the ability to access, modify or delete their data at any time and the option to opt out of certain data collection practices. Third, efforts to mitigate algorithmic bias and ensure equity in decision-making are essential to avoid disparities in resource allocation and access to care. For instance, there are reports indicating that due to algorithmic bias, patients of particular ethnic groups had to be considered much sicker than patients belonging to another ethnic group to be recommended for the same care. This bias was due to the use of AI training data based on previous healthcare spending data due to long-standing wealth and income disparities. Therefore, it is essential that AI models and the training data are constantly monitored to offer non-discriminatory services. Otherwise, despite the initially seemingly resource allocation benefits, investment into such technologies may be unacceptable from an ethical perspective.

To overcome these challenges, collaboration between clinicians, administrators, data scientists, and technologists is essential to designing and implementing AI-powered solutions that align with organisational goals and ethical practices. Decision-makers should consider the patient, who will ultimately interact with the technology. Not all patients have the same technological skills and display high degrees of technology acceptance, particularly when it comes to a delicate topic such as their health. Hence, optional

> Robots are increasingly being used in patient care settings to augment the workforce and alleviate staff shortages

usage of more traditional versus novel technologies and care approaches should be offered during the first integration stages. Gradual integration will enable managers to improve technology acceptance among patients, thus assuring a more long-term benefit in terms of their allocated resources. Similarly, beyond patients, the impact on healthcare professionals needs to be accounted for. The integration of these technologies entails that healthcare professionals will suddenly have a new "artificial co-worker", which can disrupt their current practices. Thus, it is important to educate the affected healthcare professionals about how integrating these technologies may impact and benefit them.

Conclusion

Finally, if managed adequately, AI and robots have immense potential to rectify healthcare resource allocation problems by harnessing predictive analytics, robotic automation and augmented workforce capabilities. Despite the potential challenges, by harnessing the power of these technologies, healthcare organisations can optimise resource utilisation, improve access to care, and ultimately improve patient outcomes in an increasingly complex and dynamic healthcare landscape.

Conflict of Interest

None.

Healthcare Systems and Territorial Governments: The Essential Alliance to Advance Ecological Transition

The climate crisis strictly relates to global warming and the growing effects on people's health and environmental conditions. The evidence of the vulnerability of the European and especially the Mediterranean areas increases the need for more impacting actions. The EU project that involves 112 cities committed to reaching net zero impact by 2030 shows that such engaging commitment can be reached with a stricter alliance between territorial areas/cities and healthcare governments.

DR ANTONIO BONALDI

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key points

- Climate change refers to long-term shifts in temperatures and weather patterns. Energy, industry, transport, buildings, agriculture, and land use are among the main sectors that cause greenhouse gases.
- The consequences of climate change include intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms and declining biodiversity.
- Net zero means cutting carbon emissions to an amount of residual emissions that can be absorbed and durably stored by nature and other carbon dioxide removal measures, leaving zero in the atmosphere.
- To avert the worst impacts of climate change and preserve a liveable planet, global temperature increase needs to be limited to 1.5°C above pre-industrial levels.
- The Earth is already about 1.2°C warmer than it was in the late 1800s, and emissions continue to rise. To keep global warming to no more than 1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050.
- The concept of a Green Hospital is based on providing healthcare without harming the environment or the healthcare worker or imposing restrictions on care.

Framework

The climate crisis resulting from global warming, the effects of which on people's health and well-being start to be more and more evident for all to see, is considered the most serious health threat of the 21st century. What is not completely realised is that we are talking about an actual threat, not something to envisage for a not-so-defined future. We are talking about the present, a dramatic phenomenon that fills the daily chronicles worldwide. This phenomenon affects everyone, progressively changing our lives and radically affecting the health and lives of new generations.

Very few persons or groups can deny that the GHGs produced by human activity made 2023 the hottest year in the last 100,000 years (Romanello et al. 2022).

Furthermore, scientists have alerted us that this record will not last long, as a new record can be expected in 2024.

Today, the earth's average global temperature has risen by about 1.2°C. If we do not change our ways of behaving, by the end of the century, it will rise to 2.7°C above pre-industrial levels. A value that may appear insignificant but is not both for creatures and even more for the environment in which they live. A temperature rise of just a few degrees could, in fact, irreversibly compromise some of the Earth's most sensitive ecosystems, such as coral reefs, tropical rainforests, permafrost and polar ice caps, with devastating consequences for the environment, fauna and the lives of many millions of people. By the end of the century, the 3°C rise in temperature would make many areas of the planet

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uninhabitable and force a third of the world's population to migrate for climatic reasons, exacerbating the social conflicts, frequently violent already, generated by the inescapable competition for access to sources of energy, water and food (Lenton et al. 2023).

Fast Action on Several Fronts Needed

In 2015, at the Covenant of Partners, known as CoP 21, 194 member states of the United Nations signed the famous Paris Climate Agreement in which governments around the world committed to keep global warming within 1.5°C. To this end, many intermediate targets have been defined and are constantly updated, including reducing man-made CO_2 emissions by 55% by 2030 and zero by 2050. These goals are certainly challenging but achievable, provided that action is taken in a synergetic, determined and rapid manner.

For each specific sector of activity (energy, agriculture, transport, urban environment, buildings, health, ...), there are many feasible and effective solutions with promising synergies and co-benefits, but everyone must play their part, including, of course, health professionals (AR6 Synthesis Report 2023). Indeed, since they deal with health problems, they should lead and set an example for everyone else. It must be admitted, however, that the sensitivity of health professionals on this issue, apart from a few praiseworthy exceptions, is still not

high enough, and certainly not because the provision of care does not have a significant impact on the environment. We have to remember that the healthcare system, between directly produced and induced emissions (the well-known Scope 1, 2 and 3), is responsible for about 4.6% of the total climate-altering gas emissions (Romanello et al. 2022). A significant figure, equal to almost double the entire world's air traffic, which, according to data from the International Council on Clean Transportation (ICCT), is about 2.4% of global CO_2 emissions come from air traffic.

This places direct healthcare and its related activities first among the various service sectors.

Promoting Collaboration and Co-Benefits Policy

The climate crisis is a complex, systemic problem that affects everyone and can only be successfully tackled through immediate, inter- and trans-disciplinary efforts to understand and propose action and coordinated activities by governments, local administrations, professionals, and citizens.
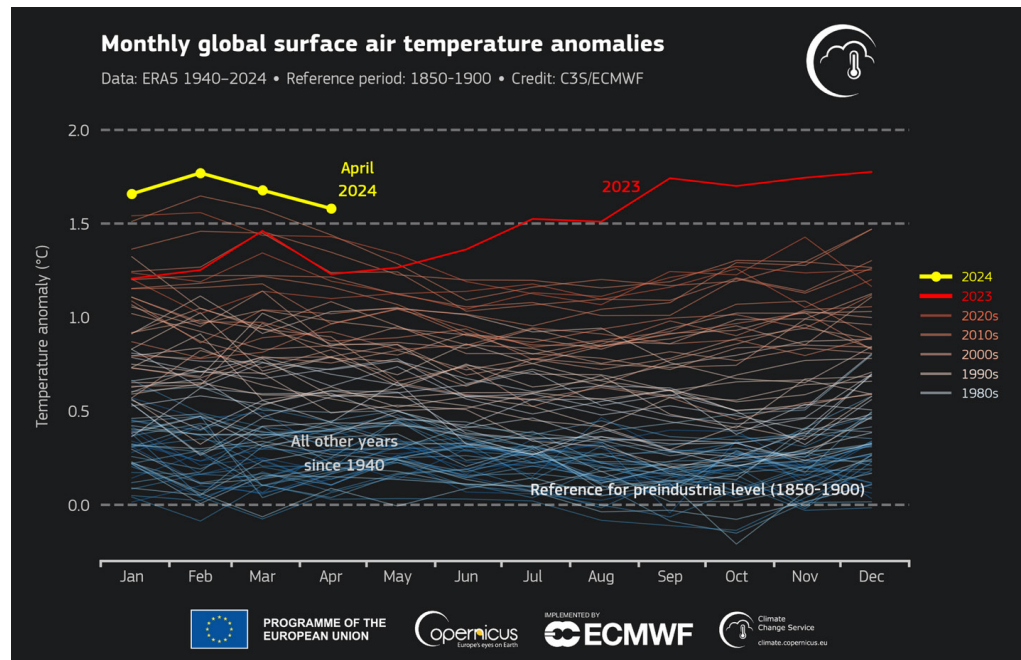
Monthly global surface air temperature anomalies (°C) relative to 1850–1900 from January 1940 to April 2024, plotted as time series for each year. 2024 is shown with a thick yellow line, 2023 with a thick red line, and all other years with thin lines shaded according to the decade, from blue (1940s) to brick red (2020s). Data source: ERA5. Credit: C3S/ECMWF

The climate crisis has no borders, and no one can hope to save themselves by acting alone.

Everyone must play their part in relation to their specific competencies and actual possibilities for action to maximise the benefits for the environment, economy and health. Many of the actions aimed at combatting the climate crisis, as well as safeguarding the planet from the deleterious effects of excessive warming, also have the important aspect of impacting positively on community and individual health, that we correctly have started to label the co-benefit strategy (Italian Ministry of Health 2022).

One of the many examples is creating cycle paths and walking trails, facilitating the understanding and habit of their use by citizens, which will make it possible to consume fewer fossil fuels and consequently improve the quality of urban air, reducing emissions of CO_2 and other air pollutants, with translates immediately in benefits on the incidence of respiratory diseases. At the same time, exercise facilitated by the possibility of walking or cycling in a safe environment helps reduce the incidence of many chronic diseases, including cardiovascular diseases. In other words, a virtuous circle is triggered with positive long-term effects on the environment and immediate effects on the individual and the urban environment in which they live.

Similarly, the actions implemented to reduce meat consumption in favour of proteins of vegetal origin, directly translate into cut on environmental impact, reduction of climate-altering gas emissions (producing 1 kg of beef generate a CO_2 emission equivalent to a car travelling 700 km, while the production of 1 kg of cereals is the equivalent of only 10 km of travel of the same car). In human health terms, a diet richer in vegetables and poorer in meat consumption contributes to reducing the incidence of obesity, diabetes, cardiovascular diseases and cancer.

In practice, the evidence and, therefore, the promotion of actions enhancing the co-benefits policy takes into account the interconnections between environment, health and human well-being and developing actions which seek to tackle climate change, not by taking from one part (environment) and giving to the other (humans), but by acting in an integrated and synergistic manner producing positive results for both (co-benefits) a real win-win situation.

This approach has to be explained, put into action, and appropriately disseminated with a clear exposition of its results. The visibility of the results makes it easier to convince people to take new initiatives (e.g., on urban mobility) or to change their behaviour (e.g., by increasing physical activity and changing their diet to a more vegetarian one). It is important to stress the immediate benefits for the single persons and the community in which they live. The improvement of the present, furthermore, has to be complemented with the anticipation of benefits that will be enjoyed by generations to come, which is, in effect, a further important bonus. As an old saying stresses "who doesn't have a present doesn't have a future".

Acting to Improve the Present for a Better Future: The Example of Bergamo in its Path for a Sustainable Future

Acting to improve the present in leu of a better future, it is certainly the attitude to adopt and disseminate. Words stimulate interest; examples give the determination to act". This is why it is important to give as much visibility to examples of actions that have adopted or are adopting this approach. One such example is that of the city of Bergamo. Presenting the case, it is important to stress that the area of the province of Bergamo, located in the region of Lombardy, North of Italy, was the first in which COVID-19 epidemic made its identified appearance and then it became one of the most severely hit by the pandemic. That same area was suffering from pollutants such as PM 2.5, PM10 as, in general, it is all the Plain of the Po River. It is striking the coincidence between the geographic area suffering for a long time from heavy pollution and the zone seriously hit by the pandemic.

It is important to underline that the city of Bergamo, with a little over 120,000 inhabitants, was chosen by the European Commission, as announced on the 28 of April 2022, as one of 112 European cities (9 in Italy) participating in the Climate Neutral & Smart City Project. These cities, which are particularly sensitive to the issue of climate change, have committed to achieving climate neutrality by 2030, i.e. 20 years earlier than all the others. They will represent the model of reference for other Italian and European cities and commit themselves to putting environmental issues at the centre of local policies. To reach such an engaging goal, it is clear that they must involve institutions, entrepreneurs, professionals, shopkeepers, and intensively citizens They will have to launch concrete initiatives for ecological redevelopment and decarbonisation in all the various fields concerning urban health: energy efficiency of buildings, sustainable mobility, urban design, public green, soil consumption, waste management, food, etc.

In this context, on 6 April of this year, that is after about two years from the launching of the project, 41 public bodies, associations of citizens and

private companies signed the Climate City Contract: a document of intent, with which each signatory voluntarily committed to reduce CO$_2$ and CO$_2$eq emissions related to its own activities and monitor the results obtained. Achieving climate neutrality is now a collective goal that not only concerns the municipal administration but also requires the active commitment of citizens and all public and private social components.

The health sector is a highly engaged part of the movement in this direction. To this end, the Bergamo Medical Association, the Health Authorities of the province of Bergamo, the University, the renowned Mario Negri Research Institute and the Municipality of Bergamo have signed a detailed document of intent further specifying the path to follow "health services and ecological transition: an alliance between institutions" to share ideas, integrate knowledge and launching joint projects to reduce greenhouse gas emissions generated by health services. Based on this experience and generated by the initiative of the General Director of the Agency for the Protection of Heath in Italian ATS (Agenzia per la Tutela della Salute) of the neighbouring city of Brescia, together with the Brescia Medical Association, in recent days, a similar programme was launched in Brescia. This lays down the foundations for further effective collaboration between the two adjacent cities, increasing the impact potentiality of the EU programme.

Reducing the Carbon Footprint of Health Services

The large set of demanding goals in the framework of the EU programme has been defined in the Climate Change Contract. As mentioned above, it is clear that each sector has to confront the challenge of addressing this question: *What can we do more?* And the health sector can recognise that much needs to be done. A large body of scientific literature is available on the subject, but to move from words to actions, it is necessary, first and foremost, for the management of the companies to recognise the strategic value of the care initiative's sustainability and to create the operational conditions, but also the stimulating social context, where all are encouraged to do their best and each one feels the usefulness of even an individual action.

It is certainly important to pay attention that in the healthcare sector, the first prejudice to defeat is that you are required to make sacrifices for the patients to improve the environmental performance of the health systems, in other terms, you have to take away something from the patient to contribute to the environment. The patients themselves have sometime expressed such a concern. The best way to correct this wrong assertion is to get back to the above-mentioned evaluation of the co-benefits. Let's analyse the situation in any hospital, the major infrastructure of the healthcare system. It becomes
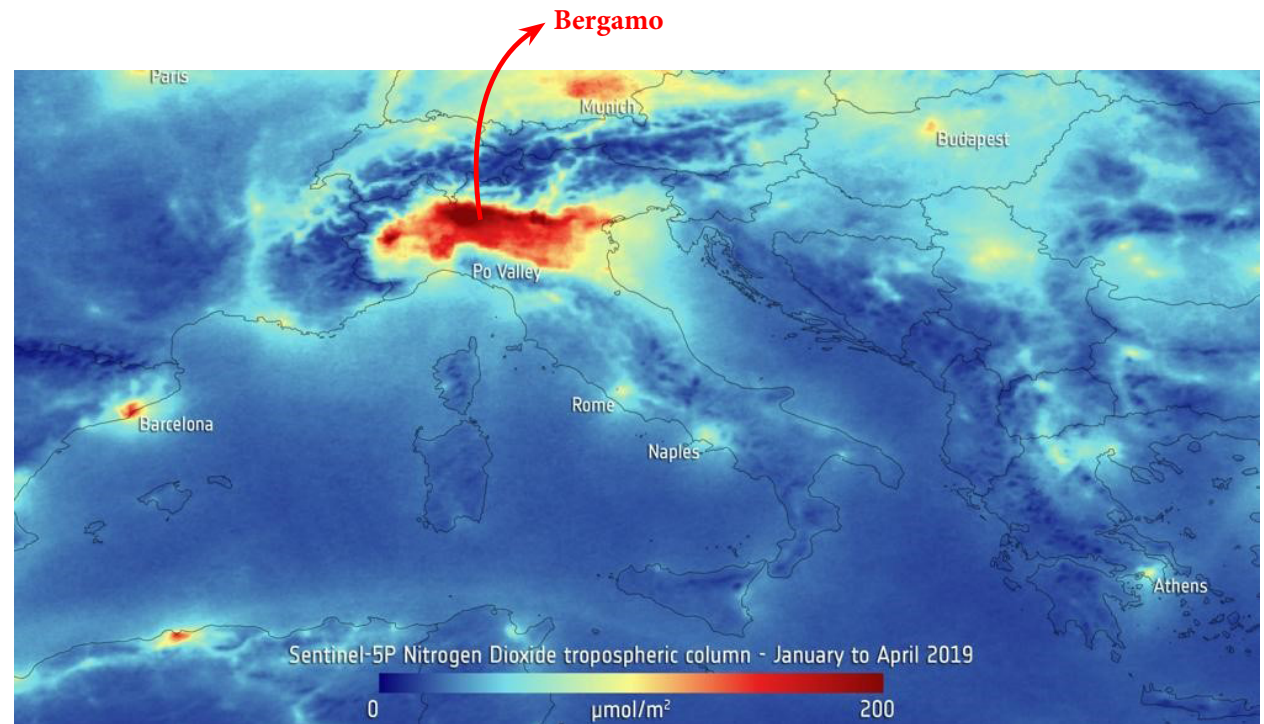
Bergamo: The pollution in the area of the River Po Valley in 2019 was almost coincident with the area of the first hit of the pandemic, progressively becoming the most hit. Source: European Space Agency

easily clear that the opposite is true: environmentally friendly actions, most of the time, produce an improvement in the quality of care. So much so that presently sustainability has been added to the classical dimensions through which the quality of healthcare activities is measured and evaluated, together with effectiveness, appropriateness, efficiency, equity, safety and perceived quality (Mortimer et al. 2018). This stresses once more that the environment is one of the main determinants of health. As the principles of "one health" penetrate every decision, it must be taken into account for each action, especially in the healthcare field. The possible effects on the natural ecosystems of which we are part, thinking of future generations is very important, but also, as stated before, it needs to be the basis of our present well-being.

Back to Bergamo, after signing the above-mentioned document of intent, the signatory institutions set up an inter-institutional "Green Team" that started to meet regularly and launched a number of important initiatives within the ten areas of work on which the participants are focusing. In the external circle, as interesting detail, the percentage of emissions attributed to each specific area of activity, is given and compared to the total emissions attributed to the health sector (NHS 2022):

1. **Energy supply and building management (10%):** Healthcare facilities consume enormous amounts of energy for heating, cooling and lighting. Energy supply and production, optimisation of consumption and energy efficiency in buildings, which have been at the centre of attention for years, with uneven results, are a good starting point for reaching an important step in the decarbonisation

of the sector in the comprehensive effort to tackle all the components involved, from the intervention of improvement of the building itself to the efficiency of the energy production including possible direct self-production of renewable energy.

2. **Transport and mobility (14%):** It includes different categories, and only cooperation among all the parts of society will allow us to achieve significant results. Let's consider the part where the hospitals can have direct or almost direct input: first the staff. Bonuses will be related to goals established by the sector to stimulate, for example, car sharing, substituting cars with bicycles, and facilitating pedestrian movements. The collaboration with the local government, which also has these goals in its participation in the EU project "Climate Neutral & Smart City, " will be essential for improving or designing public transport services. Active mobility (walking and cycling) must be promoted with protected pedestrian routes, cycle paths and parking facilities for scooters and bicycles. With regard to patients' movements, ambulances mainly, the goal is to cover it totally with electric vehicles. For the transport related to the arrival of medicines or to outsourced services (e.g. laundry or catering), the improvement will be achieved by making green transport a factor in the granting of tenders.

3. **Digitisation and telemedicine (5%):** Travel by patients and their carers can be considerably reduced through appropriate telemedicine initiatives, not least because of the benefits they bring from the patient, efficiency and cost perspectives.
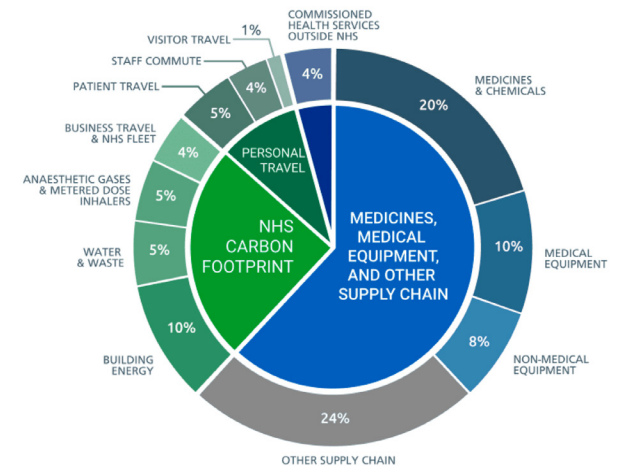
Delivering a 'Net Zero' National Health Service.
Source: NHS England 2022

4. **Medicines (20%):** The production, transport, use and disposal of medicines represent a major opportunity to reduce CO_2 eq emissions. An important action in the general healthcare sector is to stress the importance of appropriateness in prescriptions, choosing drugs with a lower environmental impact, e.g., powder inhalers for asthma, or opting for oral rather than intravenous administration of drugs.

5. **Anaesthetic gases (5%):** Of the various anaesthetic gases, desflurane is by far the most harmful to the environment, with a GWP (Global Warming Potential) index of approximately 2,500 times that of CO_2. Indeed, with a few exceptions, desflurane can be replaced with equally effective, safe and less environmentally harmful anaesthetic gases or by adopting alternative anaesthesia

techniques: intravenous or neuraxial (White et al. 2021).

6. **Healthcare waste (5%):** The impact of healthcare waste on the environment can be contained through initiatives aimed at reducing its quantity, limiting the use of disposable products and through measures favouring separate collection and recycling. A guide on how to use one-time plastic gloves has been experimented with good results. Bergamo's collaboration between the local government and the healthcare system will be based on the principle that producing waste is a complete process, that starts when selecting what is purchased, and circular economy principles must involve more than a single institution.

7. **Nutrition (6%):** Emissions from food can be reduced by adopting vegetarian diets, which are also healthier for humans. In addition, catering contracts can be reviewed, seasonal and local products can be promoted, waste can be recovered, etc. At this regard it must be better understood and used the role that hospitals can have "teaching to patients" to re-appreciate simple foods and ingredients displaced by the much more processed and complex diets now common in our cuisine.

8. **Contract measures and procurement (60%):** A large part of the emissions attributable to health services are generated during the production, transport, use and disposal of medical equipment, medical devices, drugs, food and consumables. Although the healthcare sector does not directly control these emissions, it is evident how important it is to pay attention to what is purchased, taking care to select companies and

products that minimise risks to human health and the environment. Both PPI (Public Procurement of Innovation) and PCP (Pre-Commercial Procurement) are relatively new instruments that have to be better understood and used to direct the procurements processes .

9. **Appropriateness of diagnostic and treatment services:** Only 60% of treatment is based on guidelines of recognised effectiveness. 30% of prescribed treatments are considered useless or of little clinical value, and 10% are even labelled harmful (Braithwaite et al. 2020). Controlling over-prescriptions is considered one of the most important measures to contribute to limiting the climate footprint of health services and a valuable tool for reducing waste and improving the quality of care. The scientific literature is full of examples concerning the overuse of healthcare services, and on this issue, in recent years, several important international initiatives have been launched, among them the project 'Doing more does not mean doing better', also known as Choosing Wisely Italy.

10. **Training, information, and awareness-raising:** The key to building a resilient health system is to become aware that the climate emergency is a serious threat to human and planetary health and that we must act quickly. Changing habitual behaviour requires that people know what they have to do, are able to do it and have the opportunity to do it. To this end, health institutions must know that as part of their role, their core business and strategic interest is the sustainability of health services, informing practitioners of the steps to be taken, and removing obstacles so that everyone is enabled to do their best.

A Creative Initiative for GPs, Easy to Reproduce

The Bergamo Medical Association, in its innovative newsletter on the environment and climate crisis, sent monthly to all doctors in the province of Bergamo, has introduced a section called "Green Pills" with practical suggestions for implementing individual and collective actions to reduce environmental impact without compromising the quality of care.

The group is currently engaged in defining a common working tool (Green Hospital Toolkit) which aims to;

- Help healthcare organisations and professionals identify the initiatives they can implement to reduce the carbon footprint of their activities.

- Inform and describe the actions taken in the different areas of work, taking into account the specific local operating context.

- Establish the starting point and periodically measure the results achieved through a list of shared indicators that will be provided.

Conclusion

Reducing the ecological footprint of health services is possible, but this doesn't mean it is easy. Awareness of the problem needs to be raised, and the entire sector, including the supply chain, needs to be involved. Many habits and routine behaviours, not questioned on their appropriateness, need to be changed, and new unmet needs must emerge. Data have to be used better; more data must be collected and exchanged among bodies within the health sector and inter-sector. Staff need to

be trained. More funds must be granted. But above all, it is a cultural problem. Many of the decarbonisation initiatives also contribute to lower service costs. The real problem is realising that our health is influenced to a large extent by the interaction between man and nature, that preserving the environment is also our ethical and professional responsibility, and that change is possible without compromising, possibly enhancing, the quality and safety of care.

Conflict of Interest

None.

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Simulation Training Could Be The Way To Overcome Skilled Healthcare Workers Shortages

Simulation-based training in healthcare, replicating real-world scenarios in a risk-free environment, effectively enhances learning outcomes, patient safety, and operational efficiency, proving to be a transformative and cost-effective alternative to traditional training methods.

ANDRÉ BRAUERS

Global Head of Immersive and Digital Education Portfolio | Siemens Healthineers

key points

- Effective training for healthcare professionals: With constant changes in medical technologies and standards of care, lifelong learning is essential to provide quality care and save costs for clinical facilities.
- Simulation-based training: A form of digital training that creates a safe environment where users can train and repeat medical devices without endangering patients or jamming medical devices.
- Challenges and Solutions: Technologists and radiology students face challenges such as improving hands-on experience and addressing staffing shortages. Simulation-based training offers efficient solutions to address these challenges and safely develop practical skills.
- Future perspective: The future of healthcare training lies in smart simulators for software and equipment. These simulators offer tailored training solutions, seamlessly integrating into training courses and workshops. They play a crucial role in enhancing the competence of healthcare professionals, paving the way for their success in healthcare.

In the dynamic field of healthcare, keeping pace with the latest medical technologies and standards is a must for professionals. While traditional training methods lay the foundation, they often lack the practical, hands-on experience necessary for mastering complex medical procedures. Simulation-based training effectively fills this gap, a method replicating real-world medical scenarios in a controlled, risk-free environment. André Brauers, Global Head of Immersive and Digital Education Portfolio for Siemens Healthineers, provides an evidence-based perspective on the transformative impact of simulation training in medical education. He underscores its role in equipping healthcare professionals with the skills needed to navigate the complexities of modern medical practice, thereby enhancing learning outcomes, patient safety, and operational efficiency.

Simulation Increases Learning Outcomes in Medical Education: An Evidence-Based Perspective

The constant evolution of medical technologies and standards of care represents a constant challenge for healthcare professionals, who must continually educate themselves to stay up to date. Several studies have shown that well-trained staff can produce higher-quality work while providing significant cost savings for clinical institutions.

A comprehensive analysis by the American Society of Training and Development found that ineffective training can cost companies up to 12.4 millions Euros per year per 1,000 employees. This study highlights the financial impact of ineffective training on organisations and emphasises the importance of an effective training strategy.

Various studies have examined the effectiveness of training. A meta-analysis by Smith et al. (2020) showed that relevant and practical training achieves significantly better learning outcomes than traditional teaching methods. These results underline the importance of training's relevance for learning success.

Numerous studies have proven simulation-based training to be an effective method for learning and improving practical skills. A study by Johnson et al. (2019) found that simulation-based training in medical education significantly improved participants' skills and led to higher patient safety.

Additionally, research showed that simulation-based training is a cost-effective alternative to traditional teaching methods. A study by Jones et al. (2018) found that simulation-based training can lead to a reduction in training costs and faster onboarding of new employees, resulting in significant savings for clinical facilities.

Overall, these studies show that simulation-based training effectively increases learning outcomes in medical education. By integrating simulation into the training concept, healthcare professionals can gain real-world experience and continually develop to meet the healthcare industry's ever-changing needs.

Practical Training With Simulators is a Game-Changer in Technologist Training

Technologists need much hands-on experience to scan patients safely and deliver high-quality images.

Organising comprehensive hands-on training can often be a challenge in a radiology department that needs to be efficient and operational 24/7. Simulators offer an innovative solution that allows technologists, whether students or professionals, to train and practice on a simulated version of a medical device. From their computer, users can try out all system functions in a safe, simulated environment without putting patients at risk - increasing their confidence and improving scanning efficiency.

> By using simulators, we learned how the machine works, how to move the CT table and how to perform the scan

A prime example of the use of software simulators can be found at the MT Vocational School for Radiology (UMM) in Mannheim. Here, students use the simulators to receive practical system training in the classroom. Kim Mathias, a third-year radiology student, highlights the benefits of this new learning method: "By using simulators, we learned how the machine works, how to move the CT table and how to perform the scan. We can try out the buttons without endangering the patient. What we learned

is remembered much better." This sentimental experience is supported by their teacher and principal, Stefan Schäfer, who praises the flexibility and availability of the solution, regardless of the equipment in the department.

In addition to training students, software and equipment simulators also play a crucial role when onboarding new employees or installing new systems. For example, the radiology team at Traunstein-Haslach Radiology was able to receive a comprehensive introduction to the interface of their new MRI system via the simulator. The opportunity to "gain hands-on experience planning scans" proved extremely valuable to the team before they began traditional on-site training.

The cloud-based nature of simulators also allows the customisation of protocols and system settings without impacting the clinical system. These customised settings can then be downloaded to the system within a defined time window.

Access to cloud-based simulators provides a flexible solution that is available anytime, anywhere. Whether in classroom training or clinical workshops, on-site or online via a PC - participants can interact directly with their trainers and colleagues, continuously improving their knowledge and skills.

Digital Twins: Leveraging Virtual Replication for Medical Education

The digital twin, a virtual replication of a real medical device or environment, is an increasingly relevant

technology in medical education. Studies have shown that integrating digital twins into technologists' training can significantly improve learning outcomes.

A study by Li et al. (2021) examined the use of digital twins in the training of CT technologists. The results showed that participants who trained using digital twins were more competent in operating the CT machine and detected errors better than those who used traditional training methods.

Additionally, a survey of radiology teachers conducted by Johnson et al. (2020) found that 85% of respondents believed that digital twins were an effective complement to the practical training of radiology students. Teachers particularly highlighted the ability to simulate realistic scenarios in a safe virtual environment.

These studies underscore the importance of digital twins as an innovative technology for improving medical education and show their potential to revolutionise practical training and sustainably increase the learning success of technologists.

Digital transformation is having a revolutionary impact on medical education and healthcare

> **Simulation-based training can lead to a reduction in training costs and faster onboarding of new employees, resulting in significant savings for clinical facilities**

professionals. By integrating digital technologies such as software and equipment simulators and digital twins, healthcare professionals can train and continually improve their skills in a safe and effective environment. These innovative approaches make it possible to meet the ever-growing demands of the healthcare system while increasing the quality of patient care. Simulators offer a revolutionary solution to training technologists by providing a digital replica of their work environment, allowing them to be successful from the start and continually increase their competency. Simulation-based training creates a safe environment for hands-on practice and supports ongoing education in an ever-changing medical landscape.

As the famous quote from Benjamin Franklin goes: "Tell me and I will forget." Show me and I will remember. Let me do it and I will understand." This highlights the power of hands-on learning, which is further enhanced by innovative simulators.

Conflict of Interest

None

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360-Degree Leadership - Out of the Comfort Zone and into Positive Leadership

Positive leadership, which focuses on employee strengths and fosters a supportive work environment, enhances satisfaction, performance, teamwork, and innovation, making it a crucial contemporary management approach.

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key points

- Positive leadership creates an atmosphere of trust and appreciation, leading to higher employee satisfaction, increased employee retention, and lower fluctuation rates.
- By recognising and promoting employees' strengths, positive leaders can boost their performance and productivity. Valued and supported employees are more motivated and committed to the company's success.
- Positive leadership fosters a climate of cooperation and mutual respect and reinforces teamwork and cohesion. Constructive communication and support among team members enhance team performance.
- Positive leaders encourage creativity and risk-taking by creating an environment that supports experimentation, leading to increased innovation and practical problem-solving.
- By considering individual needs and goals, positive leaders build strong emotional bonds with employees, resulting in higher motivation, increased loyalty and greater commitment to the company's tasks and objectives.

In today's workplace, navigating employee fluctuation and maintaining motivation can be formidable challenges for managers. High turnover rates, waning team morale, and unmet organisational goals are common hurdles that leaders must address. The root of these issues often lies in the disconnect between employees' expectations and managerial objectives. This misalignment can lead to discord and inefficiency. However, through positive leadership, managers can transform these challenges into opportunities for growth and improvement. By fostering a culture of personal development and self-reflection, leaders can bridge the gap between stakeholder needs and organisational goals, ultimately achieving greater synergy and success.

Navigating Employee Fluctuation and Motivation: The Path to Effective Leadership

Who hasn't experienced times of increased employee turnover, decreased team motivation, or missed company goals? These are challenging periods for individual managers and teams alike. Every employee has concerns that translate into expectations for their working environment. When these needs don't align with a manager's objectives, disharmony arises between employer and employee. Ideally, such phases of collaboration should be avoided. However, if they do occur, the positive leadership approach can bring the personal change and self-reflection needed for leadership behaviour to reconcile stakeholders and bridge this divide.

When do managers reap the fruits of success? This happens when they understand and address the needs of their employees through effective leadership. The goal is to align the needs of the staff with those of the organisation to create synergy. While this may seem like an enormous challenge, effective leadership can open the door to success at both the employee and organisational levels.

Positive Leadership in Practice: Fostering Strengths, Satisfaction, and Innovation

Positive leadership is an approach that prioritises harnessing employees' strengths and potential, fostering motivation, and cultivating a positive work environment. This leadership style has become more prominent in recent years as it consistently correlates with heightened employee satisfaction, improved performance, and stronger team cohesion.

Grounded in the principles of positive psychology, this leadership style champions bringing out and promoting the best in individuals. Rather than fixating on shortcomings or weaknesses, positive leadership focuses on employees' strengths and how they can be optimally leveraged. Positive leaders are inspiring, empathetic, optimistic and motivating.

However, its effectiveness hinges on the manager's conviction in this leadership philosophy and their commitment to the development of a suitable framework for the workforce. There are five pillars to build on:

1. Increased employee satisfaction

Positive leaders create an atmosphere of trust and appreciation that makes employees feel valued and respected. This positively affects employee satisfaction, which in turn can lead to higher employee retention and lower fluctuation rates.

2. Improved performance and productivity

Positive leaders can increase their employees' performance and productivity by recognising and promoting their strengths. Employees who feel valued and supported are more motivated to give their best and commit to the company's success.

3. Better teamwork and cohesion

Positive leadership promotes a climate of cooperation and mutual respect. Leaders can improve team performance by creating a positive work environment in which team members communicate constructively and support each other.

> Positive leadership is an approach to leadership that focuses on promoting employees' strengths and potential, motivating them, and creating a positive work environment

4. Promoting innovation

Positive leaders encourage their employees to be creative and come up with new ideas. By creating an environment that encourages risk-taking and experimentation, they can increase their team's innovation and find new ways to overcome challenges.

5. Increasing employee loyalty and motivation

Positive leaders can build strong emotional bonds with their employees by considering their individual needs and goals. This leads to higher employee motivation and greater commitment to the company's tasks and goals.

Implementing Positive Leadership: Practical Strategies for Inspiring and Supporting Teams

Positive leadership is a leadership approach that builds on the strengths and potential of employees to create a motivating and supportive work environment. In practice, positive leadership can manifest itself in various forms, from inspiring leaders to innovative team strategies. Here are some practical examples and success strategies of how positive leadership can be successfully implemented:

Practical example 1: Inspiring communication

An excellent example of positive leadership in leadership is the inspiring communication of managers. Leaders can create a positive and motivating work environment by articulating a clear vision, emphasising the company's values, and encouraging employees to do their best. A CEO who communicates regularly with employees, recognises their achievements, and encourages them to develop can increase team engagement and satisfaction.

Practical example 2: Strengths orientation and development support

Another important practice in positive leadership is focusing on strengths and promoting employee development. By recognising the individual strengths of their team members, promoting them, and using them accordingly, managers can increase performance and motivation in the team. A manager who provides regular feedback creates development plans and

encourages employees to continue training will help the team reach its full potential.

Practical example 3: Teamwork and collaboration

Positive leadership also promotes teamwork and team collaboration. Leaders can create a positive team culture that promotes openness, respect, and trust. Through shared goals, regular team meetings, and the opportunity for employees to contribute ideas and work together on solutions, teams can work together more effectively and achieve better results.

Success Strategies for Positive Leadership in Leadership

Five core values are to be leveraged by positive leaders to be successful:

1. Authenticity and empathy

Be authentic and show empathy toward your employees. Show interest in their concerns and needs to build a trusting relationship.

2. Clear communication

Communicate clearly and transparently with your employees. Share your vision, goals, and expectations so that everyone on the team can pull together. Let it be known that "not approving" topics or applications should also be explained.

3. Recognition and appreciation

Recognition and appreciation are essential components of positive leadership. Praise your employees' achievements, show gratitude, and create a culture of recognition in the team.

4. Offer development opportunities

Give your employees the opportunity for personal and professional development. Create individual development plans, offer further training opportunities, and support your employees in achieving their goals. Of course, this process should be developed and implemented together with the employee concerned.

> Positive leadership has gained importance in recent years and is increasingly recognised as an effective approach to employee motivation and development

5. Be a role model

As a leader, you should, no, you must lead by example. Show positive behaviour, take responsibility, and be a role model for your employees.

By applying these practical examples and success strategies, managers can successfully implement positive leadership in management and create an inspiring and motivating work environment that leads

to higher employee satisfaction, better performance, and stronger team dynamics.

Positive leadership as a management approach is not necessarily new, but it has gained importance in recent years and is increasingly recognised as an effective approach to employee motivation and development. Positive leadership is based on the idea that managers should focus on the strengths and potential of their employees in order to create an inspiring and supportive work environment.

In contrast to traditional, authoritarian or controlling leadership styles, positive leadership focuses on empathy, appreciation, motivation and promoting development. Managers who practice positive leadership are characterised by their authentic behaviour, their open communication and their ability to inspire and motivate employees.

Final Recommendation: Have Fun Implementing It

Positive leadership can help increase employee engagement, satisfaction and performance, ultimately contributing to a positive corporate culture and sustainable company success. Although positive leadership is not an entirely new leadership style, it is increasingly seen as a contemporary and effective approach to leadership.

Conflict of Interest

None.

Democratising Liver Assessment: A New Tool for Identifying MASLD/MASH at any Point of Care

An overview of a new tool that converts highly validated ultrasound technology into a software-based application, enabling any clinician to assess and quantify liver stiffness at the point of care and democratise liver assessment—a critical need in light of the increasing prevalence and care burden of MASLD and MASH worldwide.

DR EDWARD MENA

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key points

- Metabolic dysfunction-associated steatotic liver disease (MASLD) is the leading cause of chronic liver disease.
- MASLD and metabolic dysfunction-associated steatohepatitis (MASH), the active inflammatory form of MASLD, are expected to rise steadily over the next 25 years.
- A new tool converts highly validated ultrasound technology into a software-based application, enabling clinicians to assess and quantify liver stiffness at the point of care.
- The tool consists of a handheld transducer with imaging guidance and a software application loaded onto a consumer laptop or tablet.
- It uses non-invasive transient elastography to generate a liver stiffness measurement, measurements of other tissue properties related to liver steatosis, and an automated report identifying the patient's risk or disease classification.

Modelled on the same principles of softwarisation that brought high-quality photography to the iPhone, a new tool converts highly validated ultrasound technology into a software-based application, enabling any clinician to assess and quantify liver stiffness at the point of care. The Hepatoscope® from E-Scopics® consists of a handheld transducer with imaging guidance and a software application loaded onto a consumer laptop or tablet. The system application uses non-invasive transient elastography to generate a liver stiffness measurement (LSM), measurements of other tissue properties related to liver steatosis, and an automated report identifying the patient's risk or disease classification. Its ease of use and portability can be understood as democratising liver assessment—a critical need in light of the increasing prevalence and care burden of MASLD and MASH worldwide.

Rising Burden of Liver Disease

MASLD (metabolic dysfunction-associated steatotic liver disease, formerly NAFLD or non-alcoholic fatty liver disease) is characterised by fat deposits in the liver and refers to a spectrum of long-term conditions. Though it is often asymptomatic, its progressive form can lead to hepatocellular carcinoma (HCC) and cirrhosis. In the U.K., MASLD is the leading cause of chronic liver disease, estimated to affect 1 in 3 adults in the country. Recent estimates put the overall prevalence of MASLD at a quarter of the global adult population (Rinella et al. 2023), and both MASLD and metabolic dysfunction-associated steatohepatitis (MASH, formerly NASH or non-alcoholic fatty liver steatohepatitis), the active inflammatory form of MASLD, are expected to rise steadily over the next 25 years.

This rapidly rising prevalence will have serious consequences for global health: by

2050, liver-related deaths are projected to increase from 0.4% of all deaths worldwide to 1%. It also has massive financial implications; annual liver-related expenditures already reach tens of billions in the U.S. (Deverbhavi et al. 2023).

Stemming this tide of disease requires a much wider assessment of patients at risk, enabling earlier referrals to liver specialists and achieving better outcomes with existing interventions.

More Interventions in Development

These interventions are proliferating. MASLD is a metabolic disease, so its rise is linked to other forms of metabolic disorders such as type 2 diabetes (T2DM) and high blood pressure. With obesity being a significant risk factor for all three diseases, the advent of semaglutide to address obesity is a promising development for patients with MASLD and those at risk for MASH. Among several studies aimed at evaluating the effects of these drugs on people with MASLD, one study tied semaglutide use to a significant decrease in insulin resistance and liver enzymes, as well as improved liver steatosis in 70% of patients (reducing semiquantitative US staging by at least one full class) (Volpe et al. 2022).

The pharmaceutical industry is also seeking to develop treatments for MASH itself. Madrigal Pharmaceuticals' new drug application for Resmetirom for treating adult MASH patients with liver fibrosis, is now FDA approved.

Better Stratification, More Effective Care

New clinical practice guidelines respond to the mounting burden of liver disease and seek to maximise the effectiveness of interventions and treatments. These guidelines reflect research-based conclusions that early identification and appropriate intervention lead to better health outcomes for patients with MASLD-MASH (Lim et al. 2017; AACE 2022).

> Stemming this tide of disease requires a wider assessment of patients at risk, enabling earlier referrals to liver specialists and achieving better outcomes

The American Association of Clinical Endocrinology and the American Gastroenterological Association have each issued a recommendation that patients be assessed for MASLD-MASH and its associated complications in their clinics; primary care is another important site for screening patients. Because the

risk factors for liver disease are the same as those for T2DM and hypertension, places like diabetes centres are also logical places to perform frontline liver assessment.

As this last example illustrates, patients who are most at risk for MASLD-MASH are often already receiving some form of regular care. The problem has been getting the tools to screen for liver fibrosis to these locations and having someone qualified and available to operate them. First-line serological panels play a valuable role in this evaluation, but they suffer from false positives and are unable to distinguish between intermediate stages of liver fibrosis. The ideal form of surveillance at sites like primary care offices and gastroenterology and endocrinology clinics would be technology that uses premier ultrasound technology to accurately compute a liver stiffness measurement (LSM) at the point of care—without requiring an additional hire or tying up existing staff in time-consuming training.

With its imaging guidance, software-generated scan, and automatic reporting, the system application can be used by any healthcare staff at these sites. This tool will help clinics meet their practice guidelines by detecting advancing liver disease when interventions are most likely to be effective.

How It Works

Unlike existing tools for assessing liver stiffness, the intelligence of the device is not located in a stationary ultrasound machine or even in a "point-of-care" ultrasound machine: the processing of the image,

quantification of liver stiffness, and measurement of related tissue properties is not performed within its hardware (a familiar, easily manipulated transducer) at all. Similar to the applications found on a smartphone, it has miniaturised and softwarised—or dematerialised—the relevant technologies, so that the processing power comes both from the application on the associated tablet or computer and the cloud.

The advantages of this approach include avoiding the limitations of cost and user expertise necessary to operate a hardware-based ultrasound system. They also include the ease associated with any upgrades. The trade-offs or problems of specific hardware, which can only be improved through physical attention, can be addressed remotely in a software-based application. Also, similar to the smartphone example, these upgrades can run in the background of the device/computer, reducing the need for device downtime.

Ultrasound-as-a-Service

Because of the immense need, its potential global benefits, and the new clinical recommendations in the U.S., point-of-care liver assessment was the first application offered by the system's developer. But the application is part of a larger concept called Ultrasound-as-a-Service (UaaS).

Instead of requiring major capital investment, UaaS provides clinicians with an inexpensive transducer and a subscription to its software. In this case, the software addresses the problem of MASLD-MASH.

However, future applications could be added to the platform. Some software-based applications are already being developed for clinical areas beyond the liver. One area of attention will likely be the assessment of inflammatory bowel diseases, using dedicated ultrasound modalities to characterise the bowel wall.

> This ultrasound tool will help clinics meet their practice guidelines by detecting advancing liver disease when interventions are most likely to be effective

Currently, this system application has FDA and CE approval, and its primary use is to generate LSMs to improve prompt referrals to liver specialists and increase the effectiveness of care. Additional uses exist, however, including helping to monitor the effectiveness of new drugs acting on liver steatosis and creating treatment pathways depending on individualised responses to interventions.

Conclusion

The massive global burden of MASLD-MASH, the consequences of its later stages to quality of life and health, and the numerous costs associated with its management demand that clinicians survey at-risk populations more closely and implement treatment or monitoring more quickly. To date, the constraints of hardware cost and user expertise have stymied these efforts. The system application provides the diagnostic power and assessment specificity where they can do the most good: in low-access locations and the front-line clinics where at-risk patients are already undergoing care.

Conflict of Interest

None.

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Cloud Fax: The Data Interoperability Backbone of Healthcare

Chris Larkin is the Chief Technology Officer of Concord Technologies in Seattle. He has held top positions in technology companies, including GE Healthcare and the Healthcare Group Program Manager at Microsoft. HealthManagement.org spoke to Chris about Cloud Fax and how it can help address the challenges of data interoperability in healthcare.

CHRIS LARKIN

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The manual analogue version of faxing is a technology of the past. Cloud Fax is the backbone of the exchange of healthcare information and addresses the challenges of data interoperability. Can you explain how the two differ?

Analogue, or physical, faxing results in reams of printed documents that then have to be manually scanned and/or retyped into an EHR or other system before their data can become part of a patient record or billing system, as just two examples. Physical fax can also suffer from equipment failure, dropped calls, and other impediments to a secure and efficient operation.

Cloud faxing, on the other hand, electronically receives, stores, and transforms unstructured information on the document into structured, digital data and does so securely and verifiably in huge volumes. When one considers that there are many billions of pages of healthcare information where valuable data needs to be extracted and redirected for immediate use, then one can get a sense of its importance as an essential information technology. With an internet connection and an active account with a cloud faxing provider, healthcare organisations can become much nimbler and efficient clinically and operationally.

Why is Cloud Fax so relevant in healthcare?

More than 70% of healthcare providers still exchange medical information via fax. Fax remains the de facto standard and most ubiquitous method for exchanging healthcare information. You touched on the fact that it is helping to solve one of the most critical challenges in healthcare information technology today — interoperability. While emerging standards such as HL7® FHIR® are working toward closing the interoperability gap, fax remains the common communication thread between disparate EHR and HCIT systems that otherwise would not be able to exchange data.

It is also ubiquitous. The smallest to the largest HIPAA-compliant providers can safely and securely exchange data at a low cost on the order of pennies per page of information. This solves the problem of sharing data between healthcare providers - sharing records or sending and receiving referrals and, for example, communications between labs, payers, and pharmacies. So, the cloud is the limit, if you will, which is to say it's unlimited in its potential to receive, store, capture, extract, structure and share data.

Consider that a given hospital must interact with many electronic health record systems in their service region every day. These EHR vendors are not usually incentivised to interoperate. For the majority of EHRs, their

only certain ability to send and receive a patient's record is fax.

What are the key Cloud Fax use cases, and what are some of the applications that are emerging?

For years, healthcare organisations of all sizes have used Cloud Fax vendors to manage the flow of documents containing patient information and integrate those documents into the patient record in the EHR. Using data extraction and classification, aided by AI which we refer to as our "practical AI", we can extract specific and customisable data fields, such as patient demographics, name, date of birth, etc., from unstructured documents — typically fax pages — to facilitate automated document processing, data integration and standardisation.

This technology is used for intake and referral processing, prior authorisations, prescription processing and more. Looking ahead, sophisticated vendors are looking at ways our Practical AI solutions can further solve data integration and interoperability challenges within Continuity of Care Documents (CCDs) and leverage the Consolidated Clinical Document Architecture (C-CDA) standard for integrating unstructured data from fax documents into clinical care summaries.

So Cloud Fax can serve as a platform for data exchange not just intra-institution but also inter-institution. Is that correct?

Yes, and that exchange can be between any parties and as bespoke as one wishes because the information has been digitised and thus can be configured and shared broadly. The technology is versatile and adaptable to different healthcare environments. Whether it's large acute facilities, healthcare systems, or smaller ambulatory centres, our advanced systems ensure a secure and efficient exchange of documents. By categorising and routing documents accurately, we help ensure that the right information gets to the right place or person at the right time.

> More than 70% of healthcare providers still exchange medical information via fax – it remains the de facto standard for exchanging healthcare information

Because the cloud fax servers see the inbound data "first," we can apply our Practical AI™ approach to look for keywords and phrases in the patient record and ensure that the record is treated appropriately within seconds after arrival, rather than waiting for administrative personnel to find it. We can automatically route the document to the appropriate queue within the hospital — all without human touch.

This way of separating the 80% of straightforward transactions that no person needs to see or touch, from the 20% of complex or difficult cases that need a clinician or admin's analysis, provides real cost savings for the health system.

Let's look at a use case/application that you have experience with. We understand that your patient referral application is particularly useful in behavioural health. How does it benefit providers and patients?

This is a clinical application that consolidates inbound referral documents from multiple sources (faxes, email, call centres, and soon direct secure messages) onto one screen, eliminating the confusion and lost time that comes from managing those inbound referrals in disparate systems. It allows intake teams to make faster, more informed decisions. The result is streamlined intake processes, improved collaboration and productivity among intake teams, and faster access to patient care. Key features include actionable analytics and insights, which allow organisations to quickly identify referring facilities with the highest percentage of accepted referrals and better understand the cause of lost referrals.

This solution has saved intake departments some 2-3 hours per day through automated analytics and reporting and boosted bed capacity by up to 60% in certain healthcare facilities. This is possible because the technology can rapidly identify suitable beds across multiple facilities so that patients can receive timely and appropriate care. This enhanced efficiency can, therefore, have a positive impact on patient outcomes.

How do you and those in your sector plan to leverage AI?

This is a long answer, so stay with me. While there is plenty of buzz around AI and its future impact on the delivery of healthcare, there is also a fair amount of uncertainty, scepticism, and, dare I say, fear when it comes to deploying AI-based technology that replaces human decision-making in the delivery of patient care. On the contrary, we are delivering pragmatic solutions today that support —not replace — the end-users critical decision-making needs and processes by accessing, managing, and integrating data from unstructured documents (e.g., fax documents) into customer administrative, clinical, and operational workflows.

These solutions are proven, quick to deploy and yield tangible and measurable improvements to customer operations. They support humans in making human decisions. An example is our *document classification process*, which automatically detects what type of inbound document is being received and uses that information to determine which queue the document should be routed to for data extraction and/or advanced capture. This provides automated routing capabilities to ensure that inbound faxes can be routed to the right place via the use of AI instead of a hard-coded approach of routing faxes just based on fax number or other fax transactional metadata.

Another example is *our data extraction and advanced capture* capability. This feature leverages Artificial Intelligence, specifically machine learning, generative AI, and Natural Language Processing, to extract specific and customisable data fields — such as patient demographics, name, date of birth, etc. — from unstructured documents, typically fax pages, to facilitate automated document processing, data integration and standardisation.

In addition, *shared queues* allow organisations to set up multiple separate inbound document queues and configure the system so that only specific employees can view and access each queue. This allows an organisation to create a seamless approach to managing individual and shared workloads. Finally, there is page streaming for inbound fax documents provides immediate access to fax pages as they are being received, on a page-by-page basis. This feature accelerates inbound fax processing capabilities in environments where time-to-decision is extremely important.

Security is always a major concern. How do you ensure that in healthcare data exchange?

This is paramount for both patient protection and IP security. Secure telecommunication protocols are employed to exchange information, ensuring that patient data remains confidential. Providers need to be certain that vendor servers, policies, and procedures are designed to meet stringent healthcare security standards and protocols, which will effectively safeguard patient and institutional information throughout the process.

Conflict of Interest

None.

Why Cybercriminals Target Healthcare Data and How Organisations Can Protect Themselves

Healthcare data garners significant value on the dark web. This article provides an overview of why cybercriminals specifically target healthcare organisations and how these organisations can better protect themselves.

ERROL WEISS

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key points

- Humans are unchangeable, and the personal and medical data contained in EHRs remain perpetually valuable.
- EHRs are targeted primarily because of the prolonged usability of the data, which gives cybercriminals ample opportunity to sell and exploit the information.
- Beyond the immediate threat of ransomware, the comprehensive nature of EHRs makes them particularly appealing to cybercriminals.
- The massive appeal of healthcare data warrants additional cybersecurity measures to prevent sensitive information from falling into the wrong hands.
- Healthcare organisations must protect EHRs from cybercriminals by bolstering cybersecurity defences and making it much harder for a cyberattack to inhibit operations.

With the growing awareness of identity theft and other forms of cybercrime, the general public has become much more vigilant about protecting sensitive personal data like social security numbers, bank account numbers, and credit card information. However, this data isn't as valuable to cybercriminals as you might think. Healthcare data, by comparison, garners significantly more value on the dark web, where personal data – along with firearms, drugs, and other illegal items – are routinely sold and traded.

Just to give you an idea of how valuable healthcare data is on the dark web, a recent study found that electronic health records (EHRs) can sell for up to $1,000 each, compared to a mere $5 for a stolen credit card number and just $1 for a social security number. Why such a discrepancy? The main reason is that unlike credit cards and bank accounts, which can be closed and reissued, humans remain unchangeable, and the personal and medical data contained in EHRs, consequently, remain perpetually valuable.

While healthcare organisations understand the value of the data they are entrusted with, they may not have the support and resources to adequately fund the cybersecurity resources needed to properly protect that information. Data breaches in the healthcare sector are more frequent than in other industries and more financially damaging due to revenue losses, incident response and recovery costs, and large regulatory fines. The average cost of a breach in healthcare is $10 million, emphasising the urgent need for robust and comprehensive cybersecurity strategies. In light of the costs and reputational issues, this should serve as a catalyst for healthcare organisations to enhance their cybersecurity measures proactively.

Why are EHRs so Valuable?

EHRs are targeted primarily because of the prolonged usability of the data they hold, which gives cybercriminals ample opportunity to sell and exploit the information in various

illit ways. One common method that cybercriminals use is ransomware attacks, in which EHR data is held hostage. Healthcare organisations, under pressure to deliver uninterrupted life-saving patient care, often find themselves in a vulnerable position, making them more inclined to pay ransoms promptly.

Beyond the immediate threat of ransomware, the comprehensive nature of EHRs makes them particularly appealing to cybercriminals. These records are a repository of personal information, encompassing everything from patient addresses and insurance details to social security numbers and before and after surgery photos. The depth and variety of this data opens up multiple avenues for fraudulent schemes.

For instance, criminals might use detailed medical histories in EHRs to submit fake insurance claims or use that information to perpetrate financial fraud. Another example is prescription fraud, where perpetrators could use a patient's identity to obtain prescription medications, either for personal use or for illegal distribution. Medical insurance fraud can lead to financial loss and also poses significant risks to public health and safety.

Boosting Cybersecurity in Healthcare

The massive appeal of healthcare data for cybercriminals clearly warrants additional cybersecurity measures to prevent sensitive information from falling into the wrong hands. Multi-factor authentication (MFA), for instance, adds another layer of security beyond passwords by only granting access to a website or application after the user has cleared two identification hurdles, often through the use of an out-of-band token, such as a six-digit number sent to a mobile phone.

> Data breaches in the healthcare sector are not only more frequent than in other industries but also more financially damaging

While cybercriminals may be able to obtain a user's password, the second form of authentication is intended to be much harder to bypass: an attacker is very unlikely to be in possession of both a potential victim's password and their mobile phone, for example. MFA can be especially effective when that second step involves biometric authentication, which relies on the unique biological characteristics of an individual to verify their identity. Unlike a password, biometric information – such as an individual's fingerprints, face, or iris – is much harder to steal since it is inherently connected to the person.

Similarly, healthcare organisations should consider adopting stringent access controls to ensure that only authorised personnel can access EHRs or other private data. For instance, a role-based access control system should be used in which access to EHRs can only be granted to individuals with certain job responsibilities, as opposed to every registered employee.

In a larger sense, MFA and access control are two aspects of what's called zero-trust architecture, which should become the standard for cybersecurity models in healthcare. Zero-trust requires strict identity verification for every person and device trying to access an organisation's network, as opposed to implicitly trusting certain users and devices that have previously accessed the network time and time again.

Another key aspect of zero-trust architecture is least privilege access, in which users and devices are granted the minimum level of access required to complete their usual tasks. In healthcare, this could mean granting certain users permission to view the data in an EHR but restricting them from manipulating the data. Once the task is completed, the access rights are revoked, and the user and device must be verified again when access is needed.

Tools for Cyber Threat Intelligence

Advanced tools like honeytokens are crucial for enhancing cyber threat intelligence in healthcare organisations. Honeytokens act as digital decoys embedded within an organisation's digital infrastructure. They serve as traps for intruders attempting unauthorised access. When an adversary penetrates the system and interacts with a honeytoken, it distracts and misleads them and also

Cybersecurity

triggers an alert to the security team, who can quickly identify and respond to the intrusion before a breach.

The use of honeytokens extends beyond immediate detection. When malicious actors engage with a honeytoken, it collects real-time data on the tactics used in an attack and reveals exactly what information the hacker is attempting to exploit. This information is crucial in identifying specific vulnerabilities in the organisation's security framework and understanding the evolving nature of cyber threats.

Sharing first-hand experiences with cyberattacks throughout the healthcare community becomes a pivotal aspect of collective cybersecurity efforts. By exchanging insights gained from honeytoken engagements, healthcare organisations contribute to a broader understanding of cyber threats within the industry. This collaborative approach is essential to building a comprehensive picture of common

attack patterns and tactics. Likewise, a deeper understanding of specific vulnerabilities and attack

> Healthcare organisations often find themselves in a vulnerable position, making them more inclined to pay ransom

methods allows security teams to implement more robust cyber defence strategies.

The point is that a united front in sharing information and experiences plays a key role in fortifying the healthcare sector against cyberattacks.

Final Thoughts

Until the healthcare sector addresses its high vulnerability to cybercrime, cybercriminals and nation state threat actors will continue to target organisations that have yet to dedicate the necessary staff and resources to improving cybersecurity. Healthcare organisations must protect EHRs from cyber adversaries by bolstering their cybersecurity defences and making it much harder for a cyberattack to inhibit their operations.

Conflict of Interest

None.

WHAT'S COMING NEXT?

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COVER STORY:

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