

# **A sustainable organisation** *in healthcare*



# Bio

At Roche Healthcare Consulting our talented professionals are committed to optimising patient care. Our diverse range of strengths and experiences creates a balanced team with a wide range of expertise. The following individuals at Roche Healthcare Consulting have contributed their insights on the future of healthcare solutions.



*Judy Han*

**International Projects Consultant  
at Roche Healthcare Consulting**  
[judy\\_ina.han@roche.com](mailto:judy_ina.han@roche.com)

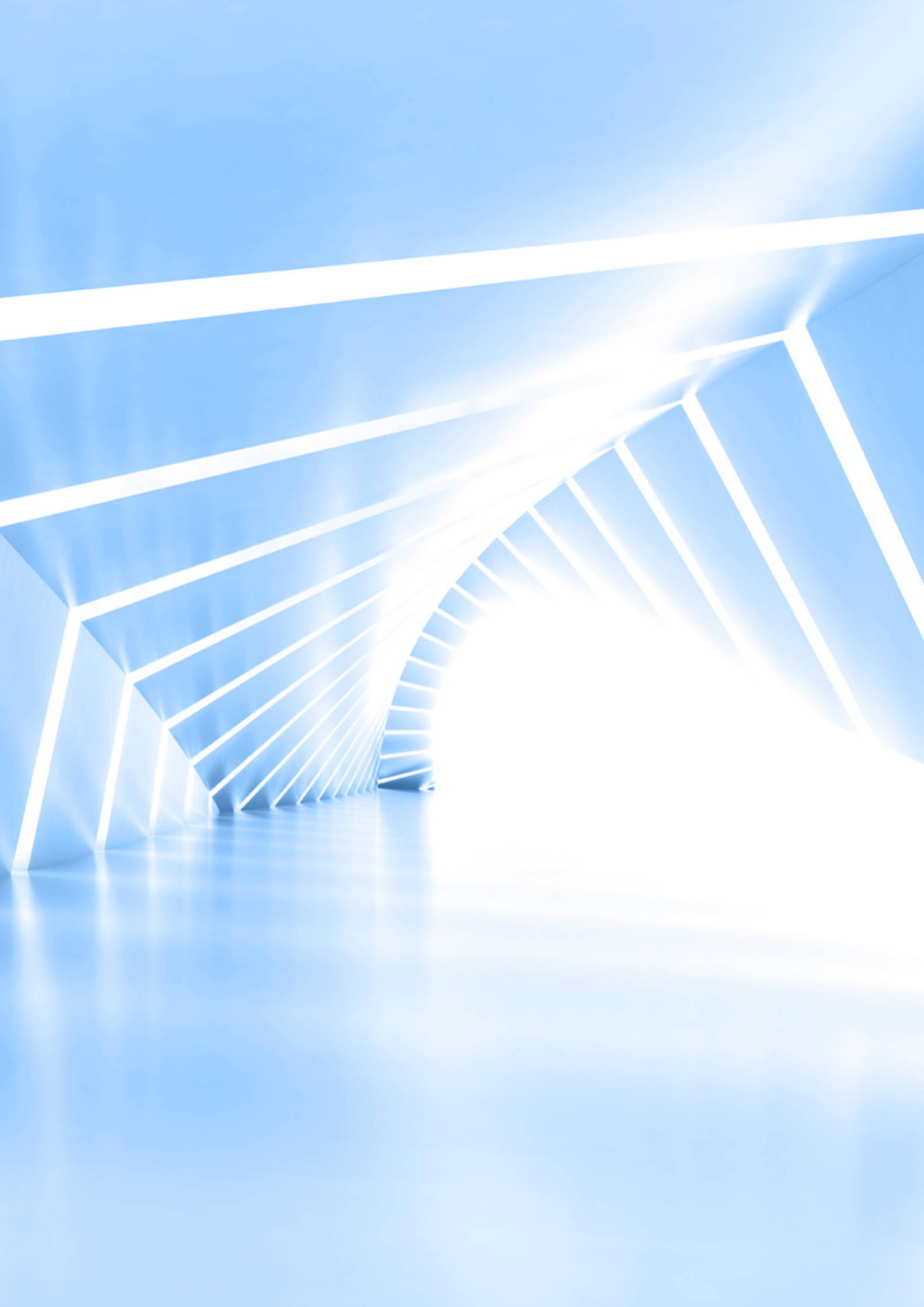
Judy Han is an international projects consultant with more than six years' experience in strategy and management consulting, mainly in the pharmaceutical and life sciences industry, and with a focus on organizational sustainability, commercializing business and digital health. Previously she has worked as strategic consultant for Accenture Strategy, supporting in international digital transformation and growth and innovation projects. Judy holds Bachelor's and Master's degrees in Business Administration from the Humboldt University of Berlin, for which she studied abroad at ESCP-Europe in Paris, Seoul National University and the International Summer School of Economics and Management in Havana. In addition, she holds a business strategy certificate from INSEAD.



*Nicolò Olghi*

**International Projects Consultant  
at Roche Diagnostics International**  
[nicolo.olgh@roche.com](mailto:nicolo.olgh@roche.com)

Nicolò Olghi has been employed as International Projects Consultant at Roche Diagnostics International since 2017, specialising in Healthcare Transformation and economics analysis for Diagnosis Instruments and Solutions. Prior to joining Roche, he held the position of Chief Operating Officer at Salus Hospital S.p.a. in Italy, where he was responsible for managing the strategic, economic and operational aspects of the hospital. Nicolò graduated from SDA Bocconi with honors as a Master of International Healthcare Management, Economics and Policy, and he also has a degree in Management Engineering from the University of Bologna.



# Executive summary

In the 21<sup>st</sup> century, healthcare providers worldwide are challenged to meet increasing patient needs while payer pressure constrains revenues and scope for investment.

Updating processes, tools and infrastructure across the patient lifecycle is central to becoming a more sustainable organization (as defined in this paper).

This can unlock greater value for patients, from accelerating diagnosis, through facilitating more personalized treatment, to reducing the need for readmission.

By helping you to optimize the service that your clinicians can deliver to patients, Roche Healthcare Consulting can help your organisation to increase return on investment while providing better outcomes for patients and transforming the culture and ways of working to be more growth-focused and resilient.



120+ *years*  
*ago*



90.000  
PEOPLE



Working  
100+  
*countries*

## A heritage of expertise in sustainability

At the heart of every sustainable system is a smooth and optimal flow, whether it be clinical samples, information, finances or even patients.

Understanding a healthcare organization at all levels (from top to bottom, designing organizational structures and processes to deliver smooth flows) is the key skill that Roche Healthcare Consulting can bring to help make your hospital more sustainable. Roche Healthcare Consulting can provide hospitals with the guidance and tools to discover their own organizational and cultural insights. Roche, as one of the world's great research-based healthcare companies, has its own lengthy heritage in sustainability.

Founded more than 120 years ago, the company has more than 90,000 people working together in 100+ countries and follows a holistic approach when managing sustainability: in addition to improving access to products, the company's strategy also focuses on achieving continuous progress in areas such as social responsibility, environmental protection, supply chain sustainability, people attraction and retention.<sup>1</sup> For nine consecutive years, Roche has been recognized as a Group Leader in the Dow Jones Sustainability Indices (DJSI),<sup>2</sup>

which emphasized that Roche performed particularly well in the categories addressing the burden of healthcare costs, ethical marketing practices and climate strategy. Roche is also committed to supporting the United Nations Sustainable Development Goals<sup>3</sup> and has received numerous recognitions as a top workplace in many countries.<sup>4</sup>







# Dimensions of sustainability: An evolution over time

## Economic dimension

- › Codes of business conduct
- › Corporate governance
- › Innovation management
- › Marketing practices
- › Materiality
- › Product quality & recall management
- › Risk & crisis management
- › Supply chain management
- › Tax strategy

## Environmental dimension

- › Climate strategy
- › Environmental policy & management systems
- › Environmental reporting
- › Operational eco-efficiency

## Social dimension

- › Addressing cost burden
- › Corporate citizenship & philanthropy
- › Health outcome distribution
- › Human capital development
- › Labor practices & human rights
- › Social reporting
- › Strategy to improve access to drugs or products

**In a socio-political context**, “sustainable development” has historically emphasized economic activity that does not degrade or destroy natural and human resources.<sup>5</sup>

This definition is of limited relevance to healthcare service organizations in developed countries.

In the early 2010s, Lawler and Worley<sup>6</sup> argued that organizational management is entering a third age, replacing “command and control” and “high engagement” models with “agile sustainability”, intended to better adapt to accelerating change and enable a more balanced focus on social priorities alongside pure financial imperatives

and general environmental protection.

This couples the traditional business focus on operational efficiency with a broader outlook on culture as a lever to recruit and retain personnel who can develop into the next generation of strategic leaders.

Organizations across all sectors of industry have adopted this approach.

The “sustainability index” model used in the DJSI uses a combination of general and industry-specific criteria arranged in three dimensions.<sup>7</sup> The criteria used and their relative importance vary by sector and may change from year to year.

**At the same time**, increasing financial pressures around the cost of healthcare have grown, to an extent that has been described by the OECD as unsustainable for many global economies.<sup>8</sup> For example, in 2016, healthcare spending in the U.S. was equivalent to 17.9% of GDP.<sup>9</sup> There are many reasons for this increasing cost, including total population growth, increasing average age, lifestyle factors (poor diet, lack of exercise) and prevalence of chronic disease,

Figure 1 - Example criteria used to evaluate sustainability of pharmaceutical companies in Robecosam's corporate sustainability assessment methodology

as well as shifts in the cost of medicines and wider economics of healthcare.<sup>10</sup> The extent of the increase in costs, and the balance of causes, varies between regions but the general trend is widespread globally.

These factors have a profound influence on the relationship between healthcare providers and governments, insurers and other payors, and redefine the concept of sustainability for the modern healthcare delivery organization. In parallel, societal goals around health and well-being are also shifting from an “absence of pain and incapacity” to a “positive physical, social and mental state”.<sup>11</sup> These factors combine to define the specific value chain for healthcare service delivery, adding extra dimensions of complexity to achieving sustainability.

*Cost of healthcare has grown to unsustainable levels in many countries. In 2016, U.S. healthcare spending was equivalent to 17.9% of GDP.<sup>9</sup>*



The primary duty for any Chief Executive is to ensure the sustainability of their organization through the development and execution of an appropriate growth strategy

### Balanced strategic approach

The primary duty for any Chief Executive is to ensure the sustainability of their organization through the development and execution of an appropriate growth strategy.<sup>12</sup> In the healthcare delivery sector, this takes an organization from ensuring its financial survival to the development and growth required to become a future leading healthcare provider on a national, regional or global scale, delivering valuable health benefits to expanding patient communities.

The nuances of this strategic approach to deliver sustainability depend on local market conditions, as each segment has a unique balance of pressures including from government regulations, market constraints on pricing, differences in funding models (i.e., private vs. public insurance models of healthcare resourcing), potential for consolidation through M&A etc.

In any sector of business, many experts believe this is best achieved by taking a “balanced scorecard” approach<sup>13</sup> to set priorities for economic success and profitability alongside goals around the satisfaction of stakeholder groups (e.g. particularly patients, and also payers, employees and investors etc.), building a resilient, growth-oriented culture, optimizing operating efficiencies, and long-term development (e.g., strategic planning, investment etc.).



Figure 2 - A “balanced scorecard” approach sets economic success in the context of other strategic goals, including value, development and culture

The prioritization of these aspects depends on the precise situation of the business, but all must be considered to ensure that the organization is both strategically and commercially sustainable.

For healthcare organizations, it is important that the concepts of economic success and adding value balances short- and long-term health benefits for patients along with cost containment for payers (e.g. government, insurers etc.). Similarly, some aspects of long-term development are linked to progress in the wider environment around the development and regulation of new treatment paradigms.





# Culture, growth and development

*“We have achieved a form of enhanced involvement of all the staff”*

*University Hospital of Padua, Italy*

## Forward-looking culture to support transformation

To support transformation in other aspects of its business, a sustainable hospital needs to build a culture that is resilient to the high stress levels and emotional burden often seen in the healthcare environment, and focused on growth and development.<sup>14, 15</sup>

A development-focused working environment is one in which:<sup>15</sup>

- Staff feel **safe in acknowledging vulnerability**, taking responsibility for mis-steps, rather than expending energy to preserve their reputation with colleagues
- **Continuous learning is the norm**, driven by the individual and supported by line managers and leaders throughout the organization
- The status quo is regularly challenged with **manageable experiments in behaviour and process**, that can be rolled out more widely if successful or otherwise concluded without significant impact on patient care
- People throughout the organization share a commitment to helping each other to improve, by providing **continuous, constructive feedback**

In the healthcare environment, resilience is widely acknowledged as a vital characteristic for patients and their loved ones.<sup>16</sup>

Alongside this, fostering a culture of resilience for healthcare professionals can help personnel to deal with routine stresses and acute shocks in their working life, reduce personnel turnover, and improve their ability to cope with change.<sup>17, 18</sup>

In terms of prioritizing areas for transformation, successfully addressing cultural change can create an environment that is more adaptable and in which other aspects of the hospital's workflow can be transformed more easily.<sup>19</sup>

## Operating efficiency vs long-term staffing

Pursuing organizational efficiencies to the exclusion of all other metrics can also be counter-productive.<sup>20, 21</sup>

Implemented in isolation, drives to optimize workflow, shorten cycle times and maximize active uptime of equipment can be detrimental to the morale and wellbeing of staff. As a result, turnover of personnel might increase, leading to reductions in levels of experience, commitment and, ultimately, productivity and quality. Long-term sustainability while maintaining the highest





Cultural change is often more difficult to achieve than procedural change in an organization.

quality standards depends on attracting, developing and retaining skilled staff balanced with operating efficiency. Both during the process of implementing change and the ongoing use of new structures and processes, it is vital to maintain a cultural identity dedicated to patient outcomes and wellbeing, that will sustain the motivation and enthusiasm of personnel.<sup>19</sup>

As such, the outsourced resourcing model frequently used in other large service sector organizations may be of limited value in healthcare.



### Creating a growth-focused culture

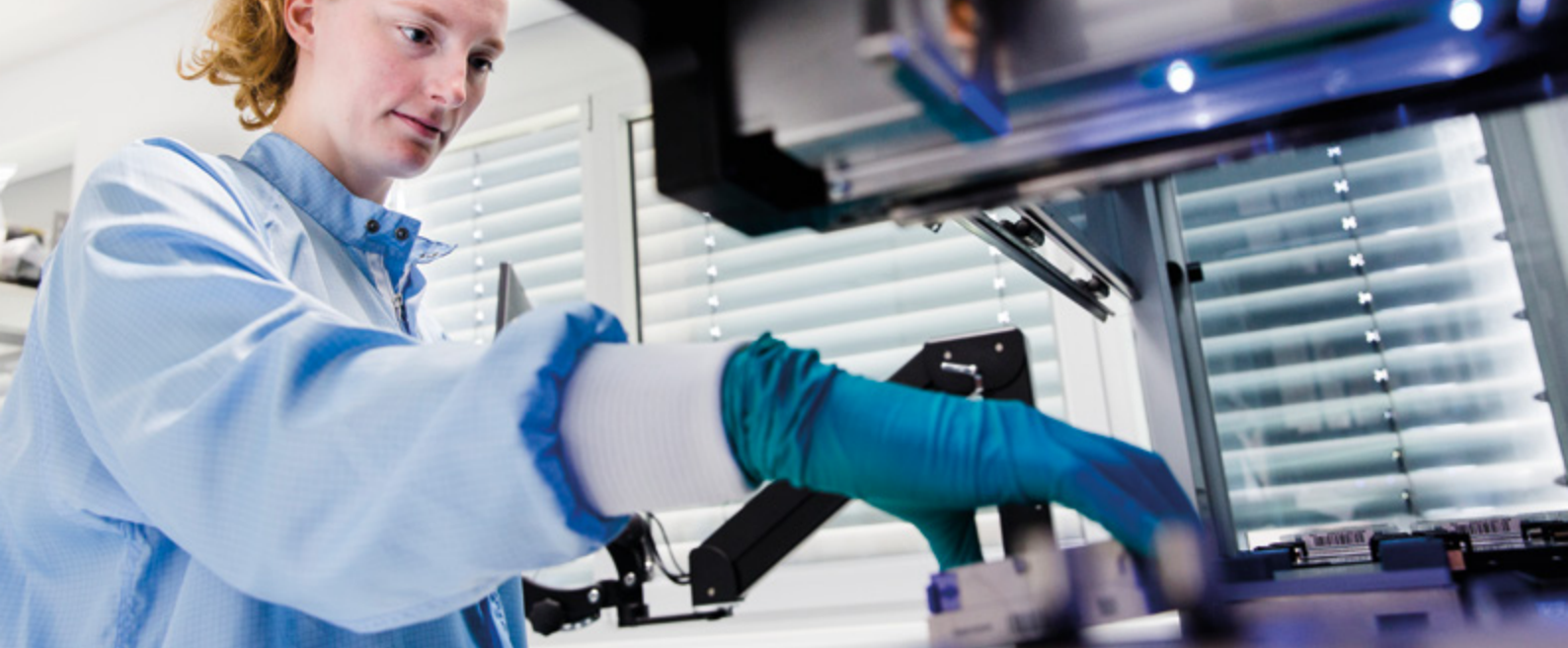
Even the most technologically-focused piece of change management, such as replacing one piece of analytical equipment with another, must also include consideration of cultural aspects, and metrics around personnel retention and motivation are central to any CEO's dashboard to ensure the balanced running of their organization.

Cultural change is often more difficult to achieve than procedural change in an organization. This is because it is impossible to impose "top-down" and relies instead on an interlocking network of communications and interactions to encourage new behaviours and demonstrate shared values. The importance of hospital leaders cannot be understated because they set a very visible example that, if perceived as authentic, will be modelled by staff at all levels. This is why change requires a wide-ranging plan and a dedicated project manager,<sup>22</sup> often strongly leveraging contributions from both HR and Internal Comms functions.<sup>23</sup>

RHC has consultants representing a wide range of backgrounds within healthcare provision and can provide this cultural dimension. Working alongside technical and economic innovation and knowledge, RHC can also help organizations embed new ways of working that reduce personnel turnover while increasing staff satisfaction and mutual trust. This can also improve agility throughout the business and increase the likelihood of success of all other change management processes.

### University Hospital of Padua - Project overview

 Activities	 Achievements
Workshop to design and align purpose, goals and strategy	10% reduction in operational costs
Value stream analysis to create a plan for improvement	100% improvement in ER and Routine lab staff competencies
Rapid improvement event to deliver process optimization	28:1 return on investment



# Optimizing operations

## Transforming the diagnostic function

For more than 50 years Roche has been a leader in in vitro diagnostics. Roche Healthcare Consulting builds on this heritage of innovative advances to address patient needs. The consultants combine their deep technical expertise with the company's decades of hospital-based experience with the goal to help healthcare leaders improve the efficiency of their operations in the lab or throughout the hospital care environment. Consultants at Roche can help hospital managers to optimize their equipment for in vitro diagnostics, information management, standard operating procedures (SOPs) and logistics. These changes can increase efficiency, resulting in lower costs and improved financial performance. Moreover, in vitro diagnostics (IVDs) in modern healthcare goes far beyond simply telling a doctor whether a patient has a certain disease or not. Today, diagnostics and

related insights are an integral part of decision-making at every step along the continuum of a patient's health or disease. These insights can enable physicians to make full use of IVDs to improve the health of patients and the care environment overall. IVDs are the "silent champion" of healthcare, influencing over 60% of clinical decision-making, while accounting for only about 2% of total healthcare spending.<sup>24</sup>

By placing an efficient diagnostic function at the heart of a value network of patient flows and treatment pathways, such as a single hospital or wider network of community care, Roche consultants can help a hospital unlock greater short-term value for patients. Further, modern diagnostics can add value and reduce costs through the patient's lifetime by diminishing subsequent health problems, reducing hospitalization and avoiding unnecessary treatment.<sup>24</sup>

## Tips to increase effectiveness and sustainability of diagnostic analyses



Direct value of diagnostics	Surrounding patient value-chain
Automate sample handling to minimize manual intervention and reduce scope for quality issues	Review operating processes and scheduling to maximize usage rate
Integrated sample management software to optimize scheduling of assays across analyzer platforms	Review administrative and logistical arrangements to minimize patient time before/after scan
Improved Laboratory Information Management System reporting to deliver results to physicians more efficiently and in a more usable format	Reduce time to optimal personalized treatment, improving health outcomes and reducing long-term costs (complications, re-admittance etc.)

*“We have managed to create a sustainable work environment for the staff and find time for research and development with reduction of manual work and smoother workload distribution during the week”*

*Gälvé Hospital, Sweden*



**Gälvé Hospital - Project overview**

 <b>Activities</b>	 <b>Achievements</b>
Goal to create a sustainable work environment for the staff	Smoother distribution of workload throughout the week
Rapid improvement event to deliver process optimization	90 minutes per day released by eliminating non-value adding steps

**Indeed**, the rapid and effective use of the right diagnostic technique early in a patient’s diagnostic journey can bring new added value for the patient and his or her care. Some examples here include: getting patients

onto a personalized treatment regimenearlier,<sup>25, 26</sup> avoiding deterioration in a patient’s condition or avoiding the potential additional complications associated with delaying the right treatment.



*“By consolidating tests onto a single automated platform, we have reduced night shifts by 60% and enhanced staff satisfaction”*

*Helix Laboratory Chain,  
Russia*



Helix Laboratory Chain - Project overview

Activities	Achievements
Lab audit and data analysis to redesign the workflows	60% fewer staff needed on night shifts
Rapid improvement event to deliver process optimization	79% reduction in process steps

 *Workflow audit*

 *Value stream analysis*

 *Rapid process optimization*

 *Change management*

 *Cultural transformation*

Transforming wider operational and business models

Being part of a company that is a leader in healthcare, Roche Healthcare Consulting can help hospital executives enhance sustainability in every aspect of their operations by providing a range of options which include: workflow audit, value stream analysis, rapid process optimization, change management and cultural transformation, etc.

In addition, Roche consultants can bring in best practice examples from hospitals around the world, and work in partnership with hospital executives to identify and implement the solution that makes most sense for the specific local health and cultural needs, and still set in place a strategic approach or roadmap that enhances all aspects of an organization’s sustainability.

A smooth and optimal flow, whether of clinical samples, of information, of finances or, indeed, of patients is essential for a sustainable healthcare system. When designing a new hospital or planning major changes to existing infrastructure, there is an opportunity to improve the efficiency of flow throughout the hospital.

This can be something as simple as putting functions or departments that are frequently used together in close proximity. In the same way that modelling approaches can be used to optimize the design of a diagnostic laboratory, a similar process can be used to minimize transit time between key parts of the organization, leading to increased throughput and reduced waiting times.

### Rethinking financial arrangements for sustainability

Roche consultants can help healthcare executives consider a variety of innovative financial arrangements to better distribute the economic risks and rewards between stakeholders. Several models for Value-Based Payment have been developed and piloted in different countries,<sup>27-29</sup> sharing the cost between payors (e.g. health insurers, state-funded healthcare) and suppliers (e.g. pharmaceutical and device manufacturers) based on the proportion of patients who achieve key outcome targets.

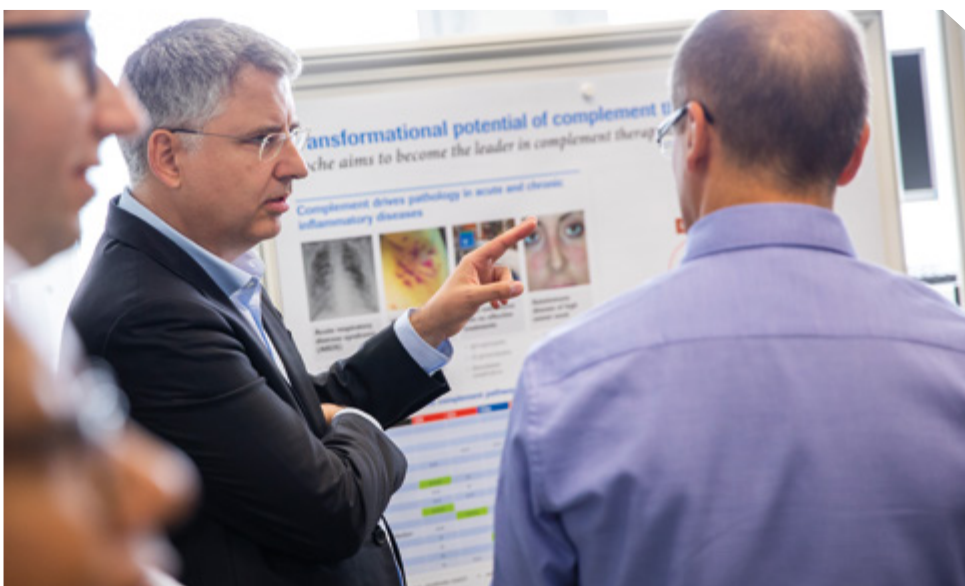
These could be modified to also include the indirect costs associated with treatment and monitoring, as discussed above. As such, while a profitable organization generates short-term value from its customers, a sustainable organization must also generate long-term value for its customers (i.e. not only for patients but also for payers and for society overall).

When assessing the value of a health intervention, or the incremental value created by changing an aspect of the healthcare delivery pathway, it is important to use a methodology that captures all facets of the costs and benefits. Healthcare executives can use this information to adapt patient flows and economic models to optimize performance across the entire care pathway, and also to play an active role in wider debates around value and reimbursement for new treatments and approaches to healthcare delivery.

There is also both the potential and the desire to drive down costs or unlock additional value at the hospital level as a result of disruptive innovation. A 2017 survey published in NEJM Catalyst<sup>30</sup> highlighted the opportunity for disruptive innovation at the hospital level; and when willingness to pay was also considered, IT solutions encompassing Electronic Health Records and clinical decision support were also identified as a lever for transformation.

### Tips to increase efficiency of hospital logistics and operations

Reducing costs	Unlocking value
Explore value-based pricing arrangements to reduce direct and indirect spending when patients do not achieve desired outcomes	Deep analysis of electronic health records to identify likely responders to treatment
Better integration with out-patient and external healthcare to reduce re-admission and minimize indirect costs around admission	Accelerated diagnosis leading to optimal treatment and prevention of long-term complications



Roche consultants can help healthcare executives consider a variety of innovative financial arrangements to better distribute the economic risks and rewards between stakeholders.



# Commercial sustainability

## Reimbursement and indirect costs

One area where hospitals face increasing pressure is offering innovative treatments to contribute to a healthy population while remaining economically viable. With the new generation of drug-device hybrid products, the price is high but so are the indirect costs, such as the use of an operating theatre for fitting. In this scenario, the reimbursement determined at a national level might cover the price of the device itself, but not fully cover the additional costs to the hospital surrounding the procedure, such as use of the operating theatre, staffing costs and general in-patient overheads. This can result in a scenario where using the latest technology to deliver greater value to the patient increases costs by more than the current reimbursement system can accommodate. One example is the reimbursement of innovative trans-catheter heart valves treatments in Italy, where reimbursement of the entire procedure is between €17,000 and €24,000, of which the price of the valve itself can be as much as €18,000.

In an environment such as the U.S., this cost is transferred to a health insurance provider, or directly to the patient as out-of-pocket charges. So, the challenge is no longer borne by the hospital, but instead becomes a wider societal issue.

Whether for a hospital, an insurer or society in general, this disconnect between the price of an intervention and how its value to the patient is realized is at the heart of the challenge facing healthcare. As yet, varying political climates in different parts of the world are leading to different approaches, but no solution has yet proven successful. What is clear is that the triple trend around healthcare is unsustainable: a global population that is ageing while still growing; increasing expectations around health and treatment; and continuing pressure on pharma companies to maximize their return for investors.<sup>31</sup> In simpler terms: more people are demanding more treatments, often using more expensive treatments. Pharmaceutical companies, who develop these treatments, are simultaneously under customer pressure to provide them at a lower price and under investor pressure to deliver a return on investment that matches levels seen decades ago. Again, these demands are directly in conflict.<sup>32</sup>

No single stakeholder could hope to solve this conundrum, but it is the duty of every hospital executive to do what they can to increase operating efficiency throughout their organization, to enable sustainability gains to be made in other aspects of the organization.





### Unlocking new value for patients

It is also imperative to be part of a wider socio-political discussion about the value of healthcare, and explore new ways to add value in a sustainable, cost-effective way. For example, use of cutting-edge technology, “big data” and analytics can go some way to addressing this trend. Coupled with the exponential increase in availability of data around healthcare interventions, costs and outcomes, expert software systems could use detailed diagnostic data to predict the treatment that a specific patient is most likely to respond to.<sup>33</sup> This could result in more cost-effective use of healthcare delivery resources, with better long-term outcomes and lower long-term costs. For a hospital that is effectively in a business-

to-business environment (B2B), it is important to shift to a model that more explicitly recognizes the value to patients, who are the ultimate customers for the services offered.

This may involve working with payers to clarify and transform the value chain throughout the patient’s journey<sup>34</sup> to minimize costs/inefficiencies and enhance value at each step:

**As part of these conversations,** it is important to also shift the focus from the value/cost of episodic care to include consideration of value to the patient across their lifetime, whether in terms of Quality-Adjusted Life Years (QALYs) or another appropriate health economic measure.<sup>35</sup>

<b>Awareness</b>	Emphasis on public education and awareness to encourage earlier presentation
<b>Diagnosis</b>	Efficient diagnosis can enable earlier diagnosis & treatment
<b>Therapy</b>	Personalized therapy based on detailed diagnostic information can ensure use of optimal treatment
<b>Persistence</b>	Patient support programs can encourage persistence on treatment
<b>Monitoring</b>	Closing the loop with after-care and monitoring outcomes can demonstrate clinical success and minimize re-admittance

**Figure 3 - Altering the business model can add value for patients at all stages of their treatment pathway.**

# Conclusion

**While the sustainability of healthcare is a societal issue, there is much that can be done at an organizational level to improve sustainability, patient care and return on investment, and much that can be done by working in partnership across healthcare organizations, and more widely with political and technical stakeholders to achieve a shared vision of a better tomorrow.**

Whether examining potential efficiency gains stemming from the diagnostic function, or how enhanced diagnostics can unlock greater value for patients and reimbursement bodies, concrete actions can transform the operation of the diagnostic laboratory and its integration with the wider healthcare organization. With a broader scope, the right changes to hospital operating process and business models can also enhance economic sustainability.

At the same time, it is vital that these changes are implemented with deep consideration of maintaining the highest quality standards for patient care. In addition, to make any change in organization or process sustainable, it must be supported by reinforcing the culture to welcome, develop, support and retain personnel who are committed to agile working, transparent communication and continuous professional development, to remain at the forefront of their field and make the most valuable contribution, and lead the change together across the organization.

Combining its leadership in IVD, pharmaceuticals and the hospital environment with expertise in optimizing wider patient flow, health outcomes and business models, the team at Roche Healthcare Consulting offer a wealth of practical experience and can work in partnership with hospital executives to conceive practical solutions. These are based on best practices shared by healthcare organizations around the world, and customized to specific needs of each client, and implemented thoroughly, with wide-reaching cultural, financial and organizational elements to ensure success. In this way, Roche Healthcare Consulting provides a uniquely balanced service that uses all these levers to enhance both the economic and the cultural sustainability of any diagnostic laboratory or hospital.



The image shows a futuristic, curved interior space. A prominent feature is a spiral staircase with a glass railing, illuminated by a series of small, glowing lights. The walls and ceiling are smooth and curved, with several bright, starburst-like lights. The floor is polished and reflects the light. In the background, there are glass-walled rooms and a table with chairs, suggesting a modern office or laboratory environment.

*A comprehensive approach  
to transforming diagnostic-  
driven healthcare*



- 
1. Roche. Our approach to sustainability 2018. Available from: <https://www.roche.com/sustainability/approach.htm>
  2. RobecoSAM. Sustainability Leaders - Pharmaceutical Industry. 2018.
  3. Roche. Sustainable Development Goals 2018. Available from: <https://www.roche.com/sustainability/un-sdgs.htm>
  4. Roche. Workplace awards & rankings 2018. Available from: [https://www.roche.com/careers/global\\_service/awards.htm](https://www.roche.com/careers/global_service/awards.htm)
  5. International Institute for Sustainable Development, Business Council for Sustainable Development, Deloitte & Touche.  
Business strategy for sustainable development: leadership and accountability for the '90s.  
Winnipeg: International Institute for Sustainable Development; 1992. 116 p. p.
  6. Lawler EE, Worley CG. Management Reset: Organizing for Sustainable Effectiveness: Jossey-Bass; 2011.
  7. RobecoSAM. Measuring Intangibles: Robecosam's Corporate Sustainability Assessment Methodology. 2016.
  8. OECD. Fiscal Sustainability of Health Systems 2015.
  9. National Health Expenditures 2016 Highlights In: Services USCfMM, editor.: U.S. Centers for Medicare & Medicaid Services; 2016.
  10. Marino, A., *et al.* (2017), "Future trends in health care expenditure: A modelling framework for cross-country forecasts", OECD Health Working Papers, No. 95, OECD Publishing, Paris, <https://doi.org/10.1787/247995bb-en..>
  11. Ling T, Pedersen JS, Drabble S, *et al.* Sustainable Development in the National Health Service (NHS): The Views and Values of NHS Leaders. *Rand Health Q.* 2012;2(1):12.
  12. Kaplan RS, Norton DP. The Office of Strategy Management. *Harvard Business Review.* 2005(October 2005).
  13. Kaplan RS, Norton DP. The strategy-focused organization : how balanced scorecard companies thrive in the new business environment. Boston, Mass.: Harvard Business School Press; 2001. X, 400 p. p.
  14. Schwartz T. Create a Growth Culture, Not a Performance-Obsessed One: *Harvard Business Review*; 2018 [updated March 7, 2018; cited 2018 June].  
Available from: <https://hbr.org/2018/03/create-a-growth-culture-not-a-performance-obsessed-one>
  15. Schneider B, Ehrhart MG, Macey WH. Organizational Climate and Culture. *Annual Review of Psychology.*

2013;64(1):361-88.

16. Joyce S, Shand F, Tighe J, *et al.* Road to resilience: a systematic review and meta-analysis of resilience training programmes and interventions. *BMJ Open*. 2018;8(6):e017858.
17. Yu M, Lee H. Impact of resilience and job involvement on turnover intention of new graduate nurses using structural equation modeling. *Jpn J Nurs Sci*. 2018.
18. Barasa E, Mbau R, Gilson L. What Is Resilience and How Can It Be Nurtured? A Systematic Review of Empirical Literature on Organizational Resilience. *Int J Health Policy Manag*. 2018;7(6):491-503.
19. Wellman J, Hagan P, Jeffries H. Leading the lean healthcare journey : driving culture change to increase value. New York: Productivity Press, Taylor & Francis Group; 2011. XIV, 279 pages p.
20. Marcinko DE. Business of medical practice : advanced profit maximization techniques for savvy doctors. 2<sup>nd</sup> ed. New York, NY: Springer Pub.; 2004. XXIII, 494 p. p.
21. Zuberi D. Cleaning up : how hospital outsourcing is hurting workers and endangering patients. Ithaca: ILR Press, an imprint of Cornell University Press; 2013. XI, 182 pages p.
22. Schwartz S. Creating a greater whole : a project manager's guide to becoming a leader. New York: CRC Press; 2018. pages cm. p.
23. Curry LA, Linnander EL, Brewster AL, *et al.* Organizational culture change in U.S. hospitals: a mixed methods longitudinal intervention study. *Implementation Science*. 2015;10(1):29.
24. Roche. About Roche Diagnostics 2018 [cited 2018 June]. Available from: <https://www.roche.com/about/business/diagnostics/about-diagnostics.htm>
25. Wang H-Q, Zhou T-S, Tian L-L, *et al.* Creating hospital-specific customized clinical pathways by applying semantic reasoning to clinical data. *Journal of Biomedical Informatics*. 2014;52:354-63.
26. Abrahams E, Balch A, Goldsmith P, *et al.* Clinical Pathways: Recommendations for Putting Patients at the Center of Value-Based Care. *Clinical Cancer Research*. 2017;23(16):4545-9.
27. Chien AT, Rosenthal MB. Medicare's Physician Value-Based Payment Modifier — Will the Tectonic Shift Create Waves? *New England Journal of Medicine*. 2013;369(22):2076-8.
28. Claxton K, Briggs A, Buxton MJ, *et al.* Value based pricing for NHS drugs: an opportunity not to be missed? *BMJ : British Medical Journal*. 2008;336(7638):251-4.
29. Miller HD. From Volume To Value: Better Ways To Pay For Health Care. *Health Affairs*. 2009;28(5):1418-28.
30. Dafny L, Mohta NS. New Marketplace Survey: The Sources of Health Care Innovation. *NEJM Catalyst*. 2018 February 16, 2017.
31. Borgonovi E, Compagni A. Sustaining Universal Health Coverage: The Interaction of Social, Political, and Economic Sustainability. *Value in Health*. 2013;16(1, Supplement):S34-S8.
32. Masters B. A frenzy of dealmaking in pharma points to cost pressure. *Financial Times*. 2018 April 25, 2018.
33. Baitman F, Karpay K. 3 Health Care Trends That Don't Hinge on the ACA. *Harvard Business Review*. 2017.
34. Trebble TM, Hansi N, Hydes T, *et al.* Process mapping the patient journey: an introduction. *BMJ*. 2010;341.
35. Gold MR, Stevenson D, Fryback DG. HALYs and QALYs and DALYs, Oh My: Similarities and Differences in summary measures of population Health.



**Doing now what patients need next**