

Healthcare solution guide

A practical guide to optimizing the digital care pathway through connectivity

Alcatel·Lucent



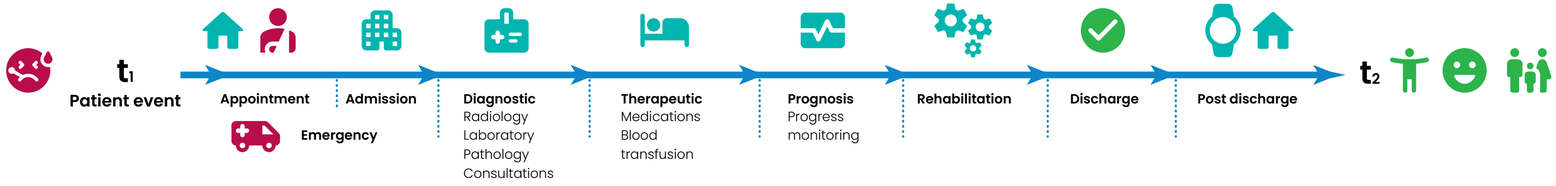
What is a care pathway?

A care pathway is a structured, integrated plan for delivering coordinated, multidisciplinary care. It clearly defines, optimizes and sequences the tasks and interventions undertaken by healthcare professionals, placing them within an appropriate timeframe. The goal of a care pathway is to support organized, efficient and evidence-based patient care.

In today's healthcare landscape, care pathways are increasingly digitized. Digitalization enables hospitals, clinics, senior living facilities and primary care teams to guide and support patients through their healthcare journey, before, during and after their hospital stay.
In addition, connectivity is also key to make the most of these digital care pathways by facilitating more streamlined, proactive and patient-centric care, ultimately supporting more consistent and effective outcomes.

These eight recommended elements will help you connect a patient's care pathway:

1. **Welcome:** Keep your organization connected 24/7
2. **Real-time communications and collaboration:** Support healthcare professionals in their daily work
3. **Virtual care:** Stay connected with patients at home
4. **Notification and emergency management:** Safeguard people and equipment
5. **Step-by-step evolution:** Modernize your communication system at your own pace
6. **High-performance IT network:** Maintain uninterrupted access to critical systems and applications
7. **Cybersecurity:** Protect your organization from cyber threats and breaches
8. **Healthcare ecosystem:** Enable connected healthcare



Recommendation 1

Welcome

Keep your organization connected 24/7

Patients, families, primary care physicians, medical transport providers and social care services rely on healthcare organizations to obtain information, schedule appointments and coordinate patient care.
A structured approach to managing incoming calls is essential to ensure a safer, more efficient high-quality response for patients and partners—24 hours a day, 7 days a week, at all levels. A poorly delivered welcome may place patients at risk, create frustration and negatively impact both the patient experience and the organization's reputation.

The following measures ensure patients and partners receive a seamless and reassuring first point of contact, whether onsite or remotely, at any time of day:

- **Attendant teams:** Centralize the call handling or/and strengthen decentralized call reception capabilities within care units by equipping them with advanced deskphones and communication applications
- **Automated call routing:** Minimize wait times and apply queuing strategies to ensure faster connections
- **Interactive menus:** Automate welcome messages and handle the most frequent requests (e.g., appointments, medical inquiries, administrative tasks) using voice recognition, speech synthesis and database queries to relieve teams from repetitive tasks
- **Contact center:** Manage high volumes of call interactions across voice, chat and social networks, engaging with patients on all channels
- **Call recording:** Enable audio recording on demand to monitor emergency communications
- **Web integration:** Create a connected portal that provide patients with support through chatbots, text messages, voice and video communications, helping them access the information they need more easily
- **AI-powered communication management:** Break language barriers through real-time transcription combined with automatic multilingual translation, as well as Real-Time Text (RTT) when voice communication is not possible



Quebec, Canada
Fertilys clinic

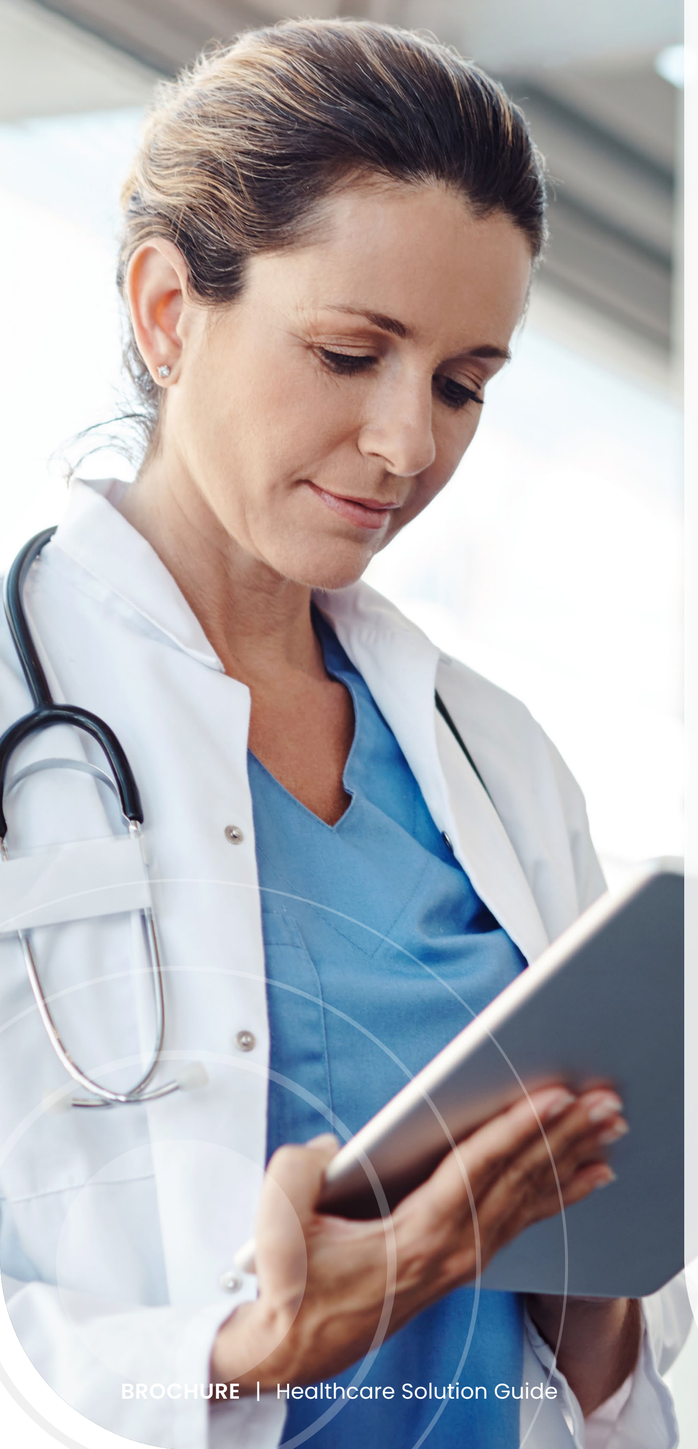
Providing quality patient experience and clinical services delivery
"Thanks to the OmniPCX Enterprise and its robust features, which have helped improve key clinical operations, I now have the peace of mind to focus more on the quality of service expected by our patients and on improving our practices."

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France
Mayotte Hospital Centre

Ensuring communications continuity essential to the future of healthcare in the region
"The Alcatel-Lucent solutions have modernized and stabilized the hospital operational capabilities, as they are entirely tailored to a hospital environment."

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Australia
WEHI

A hybrid communications solution delivers remote working from anywhere
"Alcatel-Lucent is a vendor with great solutions, supported by a network of trusted partners. We understand that innovation implies testing, proof of concept and where needed, redesign. Alcatel-Lucent is always up for the journey, and we value their support in creating a better, more collaborative ICT workspace."

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Italy
Azienda Socio Sanitaria Territoriale di Lodi

A secure, high-performance network and communications platform provides the right solution for healthcare innovation
"ASST Lodi implemented Alcatel-Lucent's cloud communications platform, which quickly provided the flexibility for staff to adopt smart working practices from any location using their mobile phones."

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Recommendation 2

Real-time communications and collaboration

Support healthcare professionals in their daily work

Doctors, nurses and other healthcare professionals need to collaborate, easily and quickly exchanging patient information during in-person or virtual meetings in various situations. These include care delivery at the bedside, transitions between morning and night shifts, planned and unplanned visits, second opinions and/or specialist advice, multidisciplinary meetings and training.

They also need to manage time-sensitive interruptions and stay connected on the move, inside or outside the healthcare facilities. To deliver more efficient and coordinated care, they need to stay in touch with patients, peers and suppliers in these ways:

- **One number:** Be reached through several devices inside and outside the healthcare facilities through a unique professional number
- **Collaborative workspace:** Interact through dedicated group "bubbles", quick and easy to create, enabling contact management, presence awareness, chat, audio and video calls, screen and file sharing as well as call recording
- **Efficient team coordination:** Improve information sharing (e.g. night shift handovers, multi-disciplinary teams) by accessing recorded reports, notes and any useful files or images
- **Remote working:** Work efficiently from anywhere while maintaining high-quality professional communications and collaboration capabilities
- **Constant social link:** Enable close interaction between healthcare professionals, onsite or remotely, and help reduce burn-out and turnover
- **Flexible training and knowledge sharing tools:** Deliver interactive training through virtual and multimedia sessions, organized for small or large groups
- **Integration into existing business/ healthcare applications**: Use flexible APIs, connectors and developer tools

Recommendation 3

Virtual care

Stay connected with patients at home

In the context of constrained healthcare budgets, an aging population, a shortage of caregivers and a rise in chronic diseases, technology must be adopted to keep patients connected to their point of care—from home or elsewhere.

Cloud-based communications and collaboration can narrow the gap between patients and healthcare providers. They connect individuals, services and organizations across and beyond the walls of healthcare facilities. They enable remote consultations, monitoring and follow-up through secure, reliable virtual solutions such as:

- **Seamless communication across devices and locations:** Connect patients and healthcare professionals instantly, regardless of location, even in remote and underserved areas, across their existing devices such as desktops, smartphones and tablets
- **Flexible deployment and scalable subscription models:** Expand the capacity to serve patients without costly physical expansion
- **Secure and sovereign data management:** Prioritize cybersecurity, protect sensitive personal and medical data and ensure data sovereignty by hosting in a highly privacy-conscious country or a private cloud
- **Integration into existing remote care applications:** Add communications and collaboration services without redevelopment or major change

Alcatel-Lucent Certifications

ISO 27001 Certified · GDPR · HDS 123456 Certified · ANSSI · C5 · Bundesamt für Sicherheit in der Informationstechnik · HIPAA COMPLIANT · AgID Agenzia per l'Italia Digitale · ens Esquema Nacional de Seguridad





Switzerland
Triaplus AG

Increasing process efficiency and employee safety
"With the open platform and the modern applications that fully meet our requirements, we are well positioned for the future."

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Australia
John Flynn Private Hospital

Investing in technology to improve patient care and support
One important objective was to better categorize and prioritize alarm codes to help reduce the time nurses needed to access and respond to emergency codes.

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Recommendation 4

Notification services and emergency management

Protect people and assets

Healthcare organizations face a wide range of incidents and emergencies that can affect patient care and overall operations. Notification services play a key role in detecting these situations, analyzing alerts and triggering appropriate responses. These services need to be connected to the network and communications infrastructure to allow a quick, coordinated response. Notifications include clinical emergencies, such as a sudden deterioration in a patient's state, as well as internal incidents like a fire, system failure or IT outage.

Healthcare organizations must also be prepared for external emergencies including natural disasters, pandemics, mass casualties and security threats such as acts of violence or terrorism. They are also experiencing an increase in violent acts, risking the safety of staff, caregivers and patients, as well as jeopardizing assets through theft, destruction and intrusion into protected zones.

Notifications—whether emergency-related or not—need to be carefully orchestrated:

- **Integration of third-party notification systems:** Ensure interoperability with nurse call systems, fall detection solutions and real-time location services
- **Lone worker protection:** Secure clinical staff through DECT or Wi-Fi handsets or smart phone applications, providing alarm button, man down and geolocation capabilities
- **Technical alarms:** Connect IoT devices such as fire sensors, contact-type detectors and video surveillance cameras throughout the buildings
- **Audio alerts:** Manage a secure, priority-based messaging system with persistent audio alerts
- **911/112 emergency calls:** Localize the calling device in the facility
- **Mass casualty incidents (MCI):** Deploy MCI plans that combine emergency conferencing and team mobilization
- **Targeted or mass notifications:** Reach specific individuals or large audiences—internally or externally—through public address systems, conference calls, emails, SMS or HTTP interactions with other applications
- **Automated workflows:** Define scripts including triggers, rules and actions, via an intuitive interface without the need for programming skills

Recommendation 5

Step-by-step evolution

Modernize your communications system at your own pace

Many healthcare organizations are still held back by outdated, complex and costly communication infrastructures. By modernizing—through IP standardization, centralization and cloud readiness—they can unlock agility, reduce costs, improve resilience and enable seamless collaboration across locations. But modernization needs to be a strategic evolution, not a complete rip-and-replace:

- **Standardization (IP and SIP):** Unify voice and data on a single network, improve interoperability, reduce duplicate infrastructure and enable cloud and remote work
- **Data and power over a single pair:** Connect modern VoIP and DECT equipment without the need for re-cabling
- **Centralization:** Consolidate multi-site communication systems into one platform, simplifying management and significantly reducing operational complexity and costs
- **Virtualization:** Optimize resource usage by decoupling software from hardware, increasing efficiency and flexibility in how communications systems are deployed and managed
- **Cloud connectivity:** Extend communications capabilities with scalable, flexible cloud services, enabling hybrid work and easier access to innovation
- **Resilience:** Guarantee operational continuity when your primary communication system fails
- **Automation (AI-driven management):** Streamline operations and improve efficiency through automated processes and intelligent system management

Germany

Kaiserswerther Diakonie

Sustainable communications solution for a complex critical infrastructure

“In Alcatel-Lucent, we have found a reliable partner that shares ideas for improving our processes, making valuable contributions to our continuous optimization.”

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India

KIMS Kingsway Hospital

Supporting 24x7 critical communications for hospital staff, with real-time communications infrastructure to improve patient care delivery

“The Alcatel-Lucent solutions modernized and stabilized the hospital operational capabilities. It provides connectivity for staff, patients, and a partner ecosystem, enabling them to connect to multiple devices and services.”

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Belgium
AZ Rivierenland

Hospital campus interconnection ensures a safe, stable experience for staff, patients and visitors
"We have been a customer of Alcatel-Lucent for a very long time. We chose this solution for its robustness, its ability to scale with the needs of our hospital and to keep pace with technological trends."

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France
EDENIS Group

Offering secure, high-quality Wi-Fi connectivity to users
"We can look to the future with confidence, with a clear operational mode and technological developments such as Wi-Fi 7."

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United Arab Emirates
Medcare

Offering patients a 5-star experience
"By facilitating access to information for doctors and medical personnel, Alcatel-Lucent solutions support staff productivity and help our team make the right decisions every time."

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Recommendation 6

IT network

Maintain uninterrupted access to critical systems and applications

Modern healthcare environments run on data and, when lives are at stake, downtime is not an option.

They depend on the fast, reliable and continuous transfer of large volumes of critical data across many systems, devices and locations. A high-performance network helps ensure patient safety, operational efficiency and uninterrupted clinical care through the following key attributes:

- **Autonomous network:** Automates service provisioning and routine tasks—such as configuration, deployment and moves/adds/changes—with minimal manual intervention to simplify and accelerate network operations
- **LAN and Wi-Fi 7 WLAN:** Securely identifies and connects a wide range of users, devices, applications and IoT devices (fixed and mobile) to their respective domain
- **Private 5G:** Provides the ultra-low latency and high-bandwidth connectivity required for robotics, remote surgery, digital twins, virtual reality (VR) and augmented reality (AR)
- **High-performance connectivity:** Delivers instant, simultaneous access to patient records, medical imaging, prescriptions and test results across multiple locations and care teams, supporting faster, better-informed clinical decisions
- **Zero Trust Architecture:** Ensures that every user, device and application attempting to access the network is continuously authenticated, authorized and validated whether it is inside or outside the network
- **Video surveillance integration:** Streamlines security management by integrating with leading Video Management Software (VMS) platforms, making surveillance infrastructure easier to deploy, monitor and maintain
- **Unified network management:** Combines complete network visibility, AI-driven intelligence, native security enforcement and flexible deployment—giving IT teams the control they need without sacrificing autonomy or compliance
- **AI-driven preventive and predictive maintenance:** Continuously monitors networks, identifies anomalies and alerts OT and IT teams in real-time, triggering automated actions or guided remediation workflows to prevent issues before they impact care delivery

Recommendation 7

Cybersecurity

Protect your organization from cyber threats and breaches

Healthcare has long been one of the primary targets for cyberattacks, and the threat continues to intensify. Cybersecurity breaches in this sector go far beyond data theft: they can disrupt critical operations, compromise patient safety, damage the reputation of healthcare providers and expose organizations to significant financial penalties. Regulatory frameworks such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States and the General Data Protection Regulation (GDPR) in the European Union further amplify the stakes, as non-compliance can lead to substantial fines and legal consequences.

Essential measures must be taken to protect your infrastructure:

- **Minimize security risks** with products and solutions designed with built-in security
- **Reduce the attack surface** for cloud, communications and network infrastructure with software and hardware built using a security-by-design approach
- **Conduct ongoing security evaluations and risk assessments** to enable implementation of effective avoidance and mitigation measures
- **Gain a holistic approach to digital security** with solutions, processes and services designed with in-depth knowledge of OT and IT operations and security requirements
- **Improve response time to digital and physical security threats** with converged cloud, communications and network technologies that provide real-time, context-enhanced alerts

Regulatory compliance and security certifications

As a recognized security expert, Alcatel-Lucent contributes to the European Union's proposals for cybersecurity directives. In addition, Alcatel-Lucent follows the best practices and recommendations of the National Institute of Science and Technology (NIST), ANSSI, BSI and others when performing risk assessments on new features and when implementing cybersecurity features, such as native encryption, in our solutions.

Germany
Diakonissen Speyer

Modern voice communication for a forward-looking organization with 165 years of tradition

"Our project has developed very positively and our multimedia communication solution is functioning perfectly. We are extremely satisfied with the status quo and feel well-equipped to meet future requirements."

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Philippines
Asian Hospital and Medical Center

A high-speed, secure network ensures reliable connectivity for staff, patients and guests

"Alcatel-Lucent knows the healthcare industry and have delivered a cost-effective, easy-to-operate and easy-to-manage network solution that provides the high-speed, reliable connectivity the Asian Hospital needs."

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South Korea
Korea University Medicine

Modernize network infrastructure for smarter care

"The superior performance of the new network has significantly improved our operational efficiency and enabled us to deploy advanced medical technologies that were previously constrained by our network limitations."

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Italy
Istituto Ortopedico Rizzoli

Improve patient services through more efficient and reliable communication

"Thanks to the digital transformation with Alcatel-Lucent, we have improved the reliability of our communications, simplified mobile working and made patient care more efficient and accessible."

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Recommendation 8

Healthcare ecosystem

Enable connected healthcare

Digital transformation has the power to redefine how people, technologies and processes interact within healthcare environments, enhancing the quality of care, reducing operational costs and improving patient outcomes.

Through advanced, open APIs and connectors, network, communications and collaboration solutions can seamlessly interoperate with technologies across the broad healthcare ecosystem, enabling the delivery of new and improved services for both patients and healthcare professionals, such as:

Secure access to clinical and medical applications:

- Telemedicine and remote consultation platforms
- Portals for patients and staff

Third-party patient care systems integration:

- Nurse call systems
- Fall detection solutions
- Real-Time Location Services (RTLS) for patients, staff and assets
- Notification and alerting platforms

Enhanced security and safety processes:

- Video surveillance (CCTV)
- Access control and identity management
- Emergency communication systems

Facility and smart building management integration:

- Smart building systems (HVAC, lighting, energy management)
- Building Management Systems (BMS)
- Asset tracking

Innovation through digital applications and intelligence:

- Artificial Intelligence (AI) and Machine Learning (ML)
- Workflow automation tools and bots
- Advanced data analytics and reporting platforms

Optimizing the digital care pathway

Connecting the care pathway requires a holistic approach that brings together continuous patient engagement, effective collaboration tools, resilient communications and network infrastructure, robust cybersecurity and the right technology ecosystem to support sustainable digital transformation.

Alcatel-Lucent solutions are designed to optimize the care pathway for both patients and healthcare professionals. By delivering reliable, high-performance and resilient environments, they empower caregivers to stay focused on what matters most—delivering high-quality care to their patients.



Alcatel-Lucent products, solutions and services are general-purpose communication, collaboration and networking technologies that have been developed to the highest quality standards. They can be used in a healthcare environment, however they have not been developed specifically as a Medical Device or Medical Device accessory within the meaning of regulation 2017/745 and therefore do not have the corresponding certifications.

The following Alcatel-Lucent solutions can help you connect your patients, staff and healthcare ecosystem:

Recommendation 1

- OmniPCX® Enterprise Communication Server
- Desk phones
- Attendant Console
- Automated Attendant
- Contact centers
- Recording
- Rainbow™ by Alcatel-Lucent Enterprise

Recommendation 2

- Rainbow™ by Alcatel-Lucent Enterprise
- Rainbow CPaaS Communication Platform-as-a-Service

Recommendation 3

- Rainbow™ by Alcatel-Lucent Enterprise on premises, hybrid and cloud
- Rainbow CPaaS Communication Platform-as-a-Service

Recommendation 4

- Third party notification server integration
- OmniAccess® Stellar for WLAN infrastructure and handsets
- DECT infrastructure and handsets
- Rainbow Alert for technical alarms
- Visual Notification Assistant for orchestration
- Recording

Recommendation 5

- OmniPCX® Enterprise Communication Server
- Rainbow Guardian

Recommendation 6

- OmniSwitch® for the access and core network infrastructure
- OmniAccess® Stellar for WLAN infrastructure
- Network management

Recommendation 7

- Security

Recommendation 8

- DSPP Developer and Solution Partner Program
- Spacewalkers Network Community
- Rainbow CPaaS Communication Platform-as-a-Service
- Rainbow connectors

For more information, visit:

www.al-enterprise.com/en/industries/healthcare

www.al-enterprise.com

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