



Clinical mobility and healthcare digitalization around the world: An approach to the Latin American context

In this document, we will learn about the benefits that clinical mobility has brought to healthcare organizations in countries where it has been implemented. Then, we will see the changes and evolution this trend has started to undergo around the world. Lastly, we will analyze the state of clinical mobility in the Latin American context, as well as the challenges and growth opportunities it faces, based on an analysis carried out in Brazil by several subject matter experts.

What is clinical mobility?

It refers to the use of mobile devices such as mobile computers, tablets and mobile printers by health professionals. Thanks to the adoption of clinical mobility, hospitals around the world are:

1. Improving workflow efficiency:

- a) Eliminating manual procedures
- b) Optimizing processes
- c) Reducing the margin of error

2. Improving the communication among healthcare staff.

3. Facilitating a quick access to information from any place.

4. Reducing costs.

5. Improving the service offered to patients.

6. Improving job quality for nurses and healthcare workers in general.

Clinical mobility innovation and better practical learning

Clinical mobility is transformational

By: Chris Sullivan, Global Healthcare Practice Lead, Zebra Technologies.

We see that digital maturity is progressively reaching healthcare organizations around the world. Although electronic health records (EHR) are in the core of this development, the next step should be to bring clinical mobility to the patients including them in the process. It may seem simple, but it is a very powerful idea: being able to get the patients closer to available technology by bringing it to the point of care or right next to their beds.

The main goal is to offer a better and more satisfactory patient care. When big part of the healthcare providers' work is invested in administrative issues and not in patient care, it can be frustrating for them.

Nurses walk around 8 kilometers a day during a 12-hour shift. Clinical mobility may help improve their efficiency and increase the time they spend with their patients.

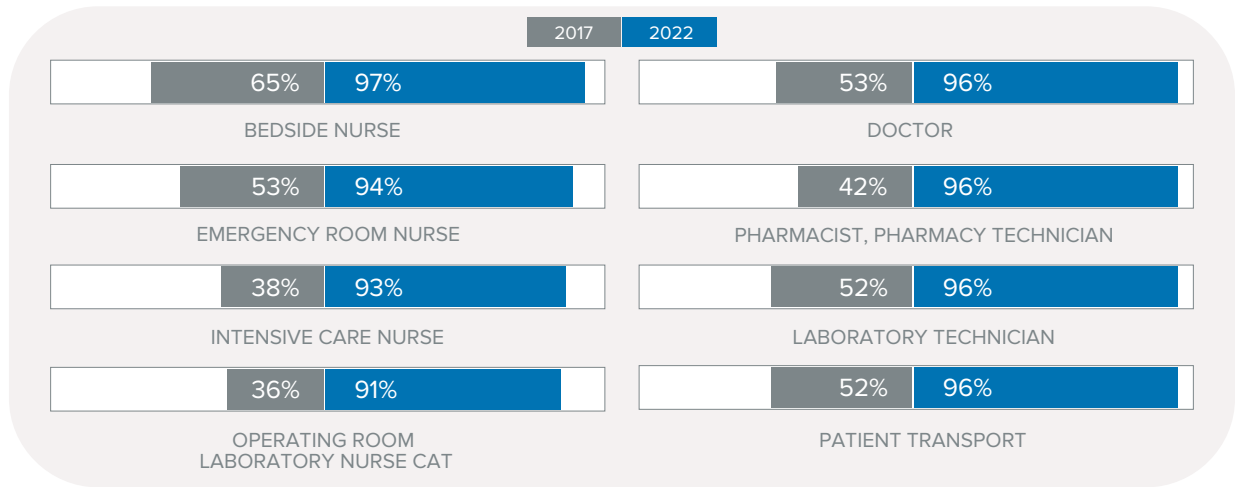
“Mobile devices allow nurses to spend more time with their patients”

CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT

Clinical mobility is becoming the new standard

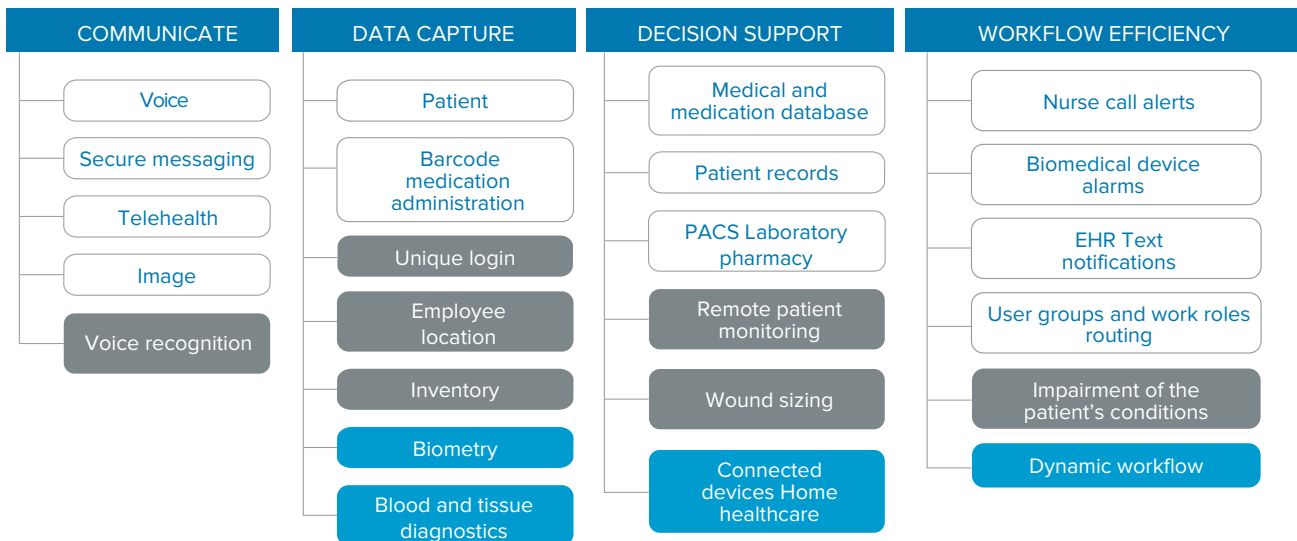
In a research carried out by Zebra in several countries around the world, it was found that for many healthcare providers, clinical mobility is not only important in the present but also looking into the future since it will have a use growth in different areas of the medical organizations. This shows us that the whole world will progressively adapt to changes and clinical mobility will become the new pattern.



Source: The Future of Healthcare: 2022 Hospital Vision Study - Zebra Technologies.

Diverse use applications

There are many use applications for clinical mobility, but it may take a few years to see their progress. In the study for the implementation of mobility in healthcare organizations, we see that best global practices are those with a long-term vision and whose use applications will be visible over time. In other words, it is utterly positive and assertive to understand all use applications and the benefit stages that a single device represents in the short, mid, and long term.



Current Mobile Technology Impact

Cost Reduction



Hospitals mention cost reduction in patient care.

Quality improvement



Hospitals highlight patient quality improvement.

Patient safety improvement



Hospitals highlight patient safety improvement.

Mobile technology delivers significant improvements for healthcare

Globally, clinical mobility is starting to deliver incredible results, as a consequence of its implementation. A significant majority of healthcare service providers see the multidimensional value in aspects such as cost reduction, quality improvement and an advance in patient safety.

When digitalization is taken to healthcare, you can automate tasks managing to have less daily operations done by humans, increasing the amount of time health professionals spend with patients; thus, improving the quality of the service. By implementing mobility in the organizations, many cost-reduction opportunities arise.

Work tools consolidation



One way to reduce costs is the ability to **consolidate several work tools in a single device**. Healthcare organizations are progressively seeking standardization by using a single medical information software, since it is not very effective to have fragments from different software, and it is much better to have just one system.

CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT

What you see on the screen is what you will see in Zebra devices.



When we think about the tools used by healthcare organizations, we think about computers, cameras, printers, telephones, monitoring stations, among many others. **With the new tools offered as a solution, between 5 and 8 can be consolidated into a single device.** This is highly effective from the point of view of the IT department and the health professionals using these devices, as well as from an economic perspective.

Uses of clinical mobility

Vital signs monitoring

The capacity to interoperate the mobile device along with the vital signs monitoring equipment is one of the most appealing advantages offered by Zebra's mobile devices. This allows monitoring patients even when the nurse or doctor are far from them. This advantage becomes tangible as a result of the ability to control and follow-up on patients remotely from a single device, since health professionals must look after several patients at once in addition to time-related pressure.

Medical prescription and electronic treatment

This process can be performed in a mobile and remote manner. It is very useful for pharmacy professionals and medical staff to be able to respond in a quick and reliable manner with the prescription required for their patients.

Electronic prescription and administration of medications

- Scan the patient and the medication in every action
- Verify the 5 RIGHTS:
 - Patient
 - Dose
 - Time
 - Drug (type and date)
 - Route
- Real time medication information and recalls.



Bedside sample collection

70% of the decisions regarding patients are made based on blood tests results. However, 1 in 18 tests have some kind of error during the process and the sample does not match the patient. With the digitalization of these experiences, healthcare institutions can automate the process, thus reducing or eliminating errors. Consequently, cleaner processes are created.

Due to the implementation of this technology, one of the leaders in clinical information form a large medical organization reported to the board that it was the first time in 30 years that he was able to report a margin of error equal to 0 in blood sample collection.

Bedside sample collection

- **Access to bedside records and processes:**
 - Sample taking
 - Sample labeling
 - Sample recording
 - No errors.
- **Confidence when taking multiple samples in a single visit.**
- **Possibility to take pictures for wound management.**
- **Clean devices between patients.**



Infusion pumps management

Another appealing value proposition is the management automation of infusion pumps, which allows not only adjusting the equipment remotely but also leveraging human experiences resulting from the management of these mechanisms, in order to achieve safer processes. This is why with the digitalization of this process a triple authentication can be done: patient, authorized person and medication; thus providing a much safer process and offering the possibility to do so in situ or remotely.

- **Boost to patient safety through 5 rights verification.**
- **Control interfaces with TC52-HC.**
- **BoM for every procedure.**
- **Accurate cost calculation.**



Nurse call system

Even though communication with the patient using nurse call systems has been used for years, it is much better to use this system digitally and remotely.

Being able to communicate digitally with nurses using a chat, call or remote video call has greater advantages, without having them visiting them face-to-face.

- **Advanced IP nurse call systems.**
- **Directly to adequate infirmary equipment by:** Equipment and location, and Responsibility.
- **Voice response.**
- **Multirequest platform.**
- **Integration with other systems:** Food ordering, door attendant and cleaning requests.



Asset and personnel location

Many times, organizations are so big that it is difficult to have control over the location of assets and people. This includes samples, equipment, healthcare personnel and patients.

Through mobile technology, geolocalization of these assets and people is possible. Healthcare professionals can go to their device and instantly identify the location of an asset or a person, and in turn, with the use of the device, they can report or see if they have any kind of issue.

A medical organization that implemented the technology reported a 50% reduction of the healthcare personnel steps. This translates into less time lost in hallways and more time next to the patient.

- **Continuous inventory per department.**
- **Location and alert within the department.**
- **Close contacts tracking for infection or virus management (COVID 19)**
- **Asset status.**



Pandemic response

When digital platforms are built in healthcare organizations, very flexible systems are created. In the midst of this transformation, it can be seen that patient experience is progressively leaving hospitals and moving towards the community, inside homes or parking lots.

We can even see it in temporary tents where mobile digital applications are used for testing (drive-thru). All these transactional medical care methods conveniently arrive as a response to the pandemic. In this way, mobile devices may, to a certain extent, help control infectious diseases and manage the increase of patient traffic, highlighting its capacity to integrate to systems as a fast temporary solution. Digital mobility provides that capacity to take the patient to new, unplanned places.

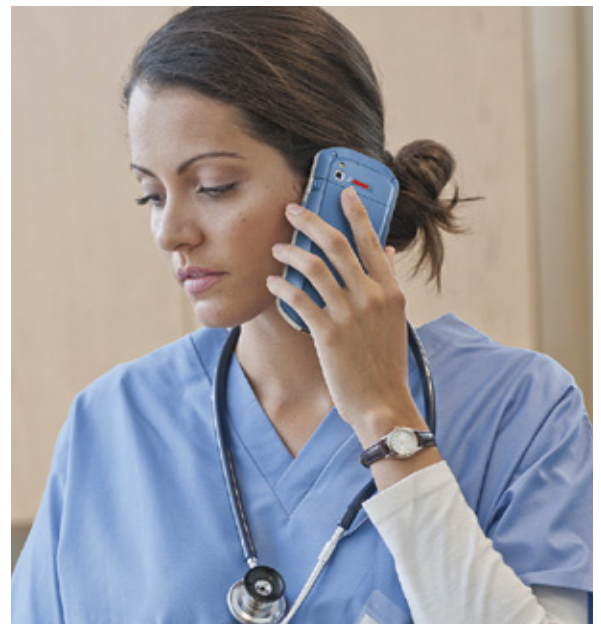
	INFECTIOUS DISEASE CONTROL	PATIENTS OVERLOAD MANAGEMENT
IN CRISIS	<u>DRIVING TESTS</u> Personnel contact with patient: Free platform.	<u>TEMPORARY SHELTERS</u> Digital and mobile platform for smart patient rooms.
	<u>PATIENT REMOTE MONITORING</u> ICU: Nurse-patient interaction via video.	<u>PEOPLE IDENTIFICATION</u> Admission and mortuary requests.
	<u>SAMPLE MANAGEMENT</u> Mobile devices and software specially designed for the sector.	<u>N95 MASK</u> Follow-up capacity and reprocessing localization.
	<u>SOCIAL DISTANCING</u> Proximity alert notification.	
POST CRISIS	<u>CONTACTS LOCATION</u> Follow-up on patients with staff and visitors.	<u>PATIENT PROGRESS</u> Admissions and discharge...
	<u>HAND HYGENE</u> Control of frequency and time of the staff.	<u>INVENTORY MANAGEMENT</u> Automatic follow-up of support areas inventories.
	<u>STAFF'S ELECTRONIC DEVICES</u> Special products for the healthcare sector.	

Factors that drive investment in clinical mobility

It is clear that medical digitalization has arrived and it will continue to grow and expand all over the world, as it is also clear that once the existing infrastructure is settled, the next step is to make it mobile.

Naturally, organizations that are working on this change will be able to see several benefits in their organizations. These benefits are a mix between economic advantages and service quality, which can be summarized in the following image:

- 1 Improve patients' results.
- 2 Increase staff workflow efficiency.
- 3 Reduce patient assistance cost.
- 4 Comply with new laws and regulations.
- 5 Patient-centered assistance.



Main challenges

There is something that cannot be ignored; the implementation of mobility is not an easy subject, quite the opposite, it poses several complications for the process. Globally, there are many stories of organizations that have successfully implemented clinical mobility; however, it is likely that behind every success story there is at least a disappointing one, where perhaps the implementation process did not go as expected.

This shows that challenges, **in terms of security and protection of clients' health information as well as data interoperability**, come along with the implementation of mobility.

The fact that a link between all of the systems has been created is very powerful and valuable, but this will only be successful if it is done in a safe and reliable manner, which is why we see several suppliers creating strategies to face this reality.

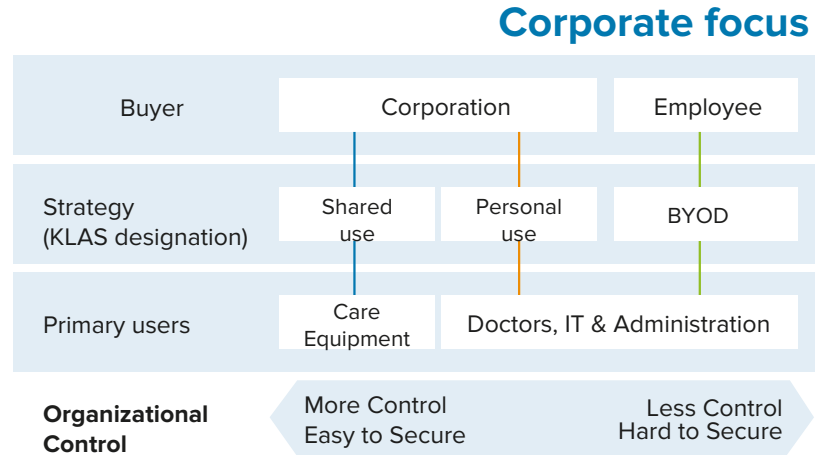
CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT

Reality is that we are currently seeing a mixed approach to mobility from a BYOD method (Bring Your Own Device) to integration, with devices specifically designed for corporate purposes, because personal devices have some difficulties escalating all the above-mentioned benefits mobility has to offer.

In summary, when the implementation is done properly, mobile devices become a patient management platform due to their capacity to unify healthcare information systems, integrate medical devices, and even more communication and security systems.

They have the capability of integrating many types of systems, turning them into a personal tool for the healthcare professional in order to consolidate all information in a single place, and as a result, impact efficiency and the care of health.



Clinical mobility and digitalization in Latin America

Latin America does not want to miss the innovation train and it strives to keep up to date offering quality health services in the region. This is why the region has created several dialogue scenarios where awareness regarding the importance of the progressive implementation of clinical mobility in the region is raised.

Even though nowadays Latam has much less medical technology available than the OECD, and its clinical mobility development level is not optimal; the region acknowledges the need for a change as well as the mass and progressive digitalization implementation.

In the framework of the current circumstances, the healthcare sector felt obliged to implement digital tools in order to continue providing remote patient assistance. In Latin America, before the pandemic, several countries had been implementing telemedicine and teleconsultation, others had to adapt to the technological measures as the health emergency advanced.

Among the different subjects addressed within the digital transformation, one of the most popular is interoperability. These interconnected systems that handle different types of information in each institution have managed to bring greater efficiency to hospital management in terms of data handling and human resources. Pablo Orefice, Health Director at Agestic and Digital Health Senior Advisor at IDB, Uruguay, stated that “if a hospital is adapting to interoperability and medical equipment gather clinical data in order to process it, the construction of these digital transformation services can start”.

CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT

The digital transformation process in the healthcare sector is challenging, but not impossible. It is a worthwhile effort that represents the future of healthcare services.



FIGURA 1: Representación del ecosistema de la transformación digital

Brazil’s outlook and its application in the Latin American context

Claudio Giuliano, CEO of Folks (HIMSS Digital Health Technology Premier Partner), explains about his company and shares the analyses and approaches they have had with the healthcare sector in Brazil, and how can they be applied to the Latin American environment.

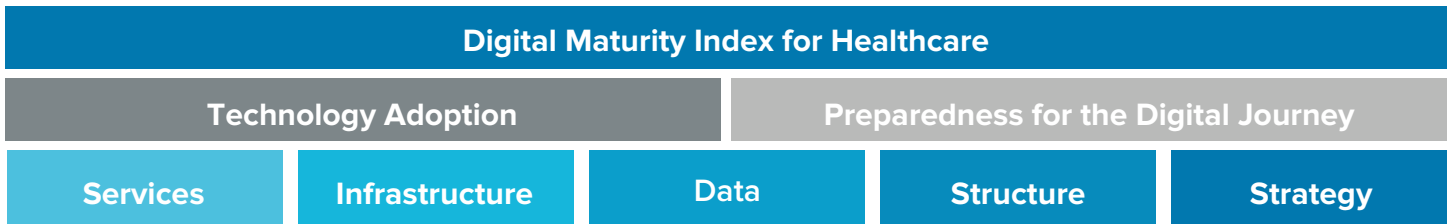
DRIVING DIGITAL TRANSFORMATION

Folks is a company specialized in healthcare digital transformation with offices in Sao Paulo. FOLKS is the HIMSS Digital Health Technology PREMIER Partner for Latin America. In the last years, FOLKS has been responsible for assessing healthcare centers using the maturity models of HIMSS Analytics, preparing them for stage 6 or 7. FOLKS has also worked very hard to train healthcare centers, IT companies and professionals in broader aspects of digital health.



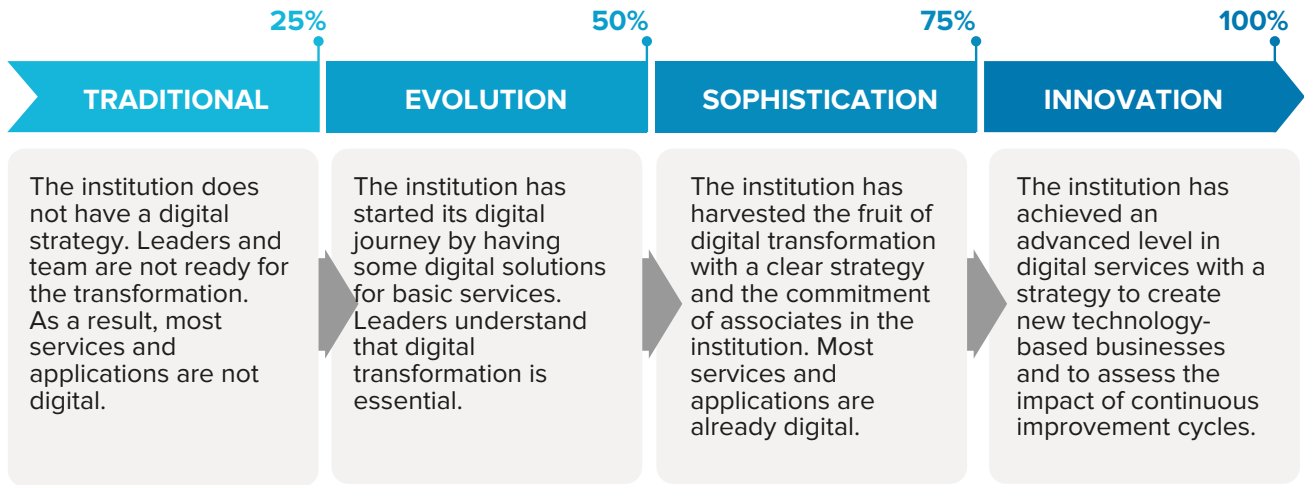
Digital maturity index in healthcare

Folks has developed an own methodology in order to easily measure medical care digital maturity of healthcare organizations. The tool measures two dimensions (Technology adoption and preparedness for the digital route) in 5 segments (services and applications, infrastructure and architecture, data and information, structure and culture, strategy and governance) whose result is a percentage index that indicates the maturity of the organization.



Digital transformation phases

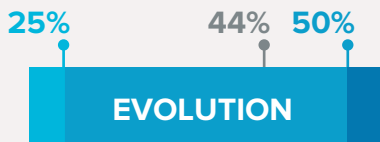
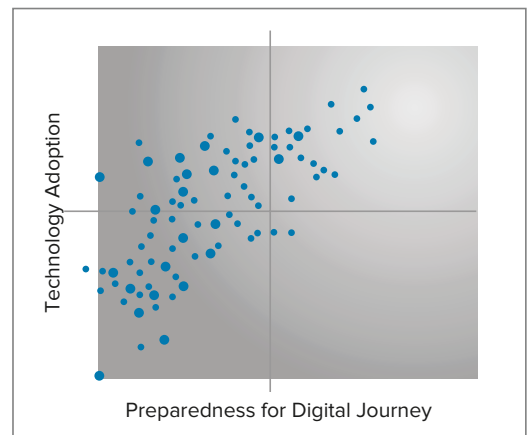
According to the DMI-H, the digital journey can be divided into the following phases:



This self-assessment methodology that measures digital maturity of the medical organizations allows giving an idea of the condition of the healthcare sector in Brazil.



44%
General
average



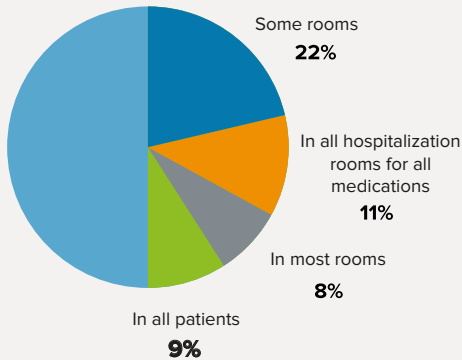
This image reveals that the healthcare sector in Brazil has a maturity average of 44%, which indicates that, in general terms, Brazil is in an EVOLUTION stage.

Find out your digital maturity level in this link: <https://es.folks.la/dmi-h>

The self-assessment survey methodology also has 28 subdomains that seek to measure to what extent some of the existing mobility technologies are being adopted. One of these subdomains specifically analyzes the use of bedside scanning devices. In Brazil, with a sample of 212 medical organizations, we have the following results:

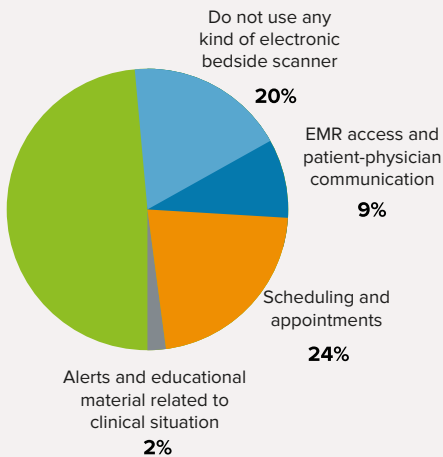
CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT



50%

Do not use any kind of electronic bedside scanner.



43%

Do not have any kind of mobile application.

In this image we can see the growth opportunity clinical mobility has, since 50% of hospitals do not have any kind of patient bedside scanner. This situation is repeated in many Latin American countries, showing the great opportunity clinical mobility has in the region.

Another of the assessed subdomains confirms the great growth opportunity there is in Brazil and Latin America, since nearly 45% of hospitals have not implemented any kind of application or mobile technology.

Hospitals vision

In Brazil, awareness is being progressively raised regarding digital transformation; hospitals are talking more and more about the subject, and therefore they are connecting more around the development towards clinical mobility.

Rafaela Maciel Guerra, Digital Transformation Leader in the Sao Camilo Hospital, states, **“one of the main obstacles hospitals are facing nowadays is that medical information lies inside static desktop computers with little connectivity, in a world that is becoming increasingly mobile through the use of mobile devices. Today, almost 80% of online information is consumed through mobile devices. This is why it is important to develop clinical mobility and systems interoperability, where healthcare staff is able to share information using mobility through handheld computers, tablets and smartphones.**

Several EMR leaders already have some medical mobile devices, but there is still **a big gap in their use by medical staff in the point of care.**

Challenges in Brazil and Latin America

Latin America does not want to miss the innovation train and it strives to keep up to date offering quality services in the region. This is why the region has created several dialogue scenarios where awareness regarding the importance of the progressive implementation of clinical mobility in the region is raised.

Rafaela Guerra, Digital Transformation Leader. Sao Camilo Hospital.

- 1 It is important to deliver intuitive and user-friendly devices. It is also important that the medical staff does not have any issues using technology, on the contrary, these devices should be user-friendly and have several use options such as voice and dictation commands; applications that help users avoid typing in case they can't do so.
- 2 Offering mobile devices and solutions with a software that allows integration and interconnection with medical information systems.
- 3 Due to the economic crisis, further affected by the pandemic, device cost should be taken into account, which may be a disadvantage. It is important to try offering organizations inexpensive solutions. Rafaela points out that one of these solutions may be the implementation, initially for some profiles, of the BYOD format, seeking the most assertive way to use personal devices as tools to facilitate clinical mobility.

Leandro Costa Miranda, CMIO Hospital 9 de Julho, Sao Paulo.

- 1 The implementation of the BYOD format represents a challenge in itself, since it is paramount to find a way to provide security and avoid the leakage of strictly private medical data.
- 2 It is also important to have tangible metrics, where the actual benefits in the areas of finance, operations, clinics and security can be visible. If it is possible to prove that each one of the strategies and processes to be implemented in the organization will yield a real, easy-to-see and measurable benefit, investors and decision-makers will most likely be convinced to implement new technologies.
- 3 It is of the essence to know the specific needs of the organizations. Only in that way, it will be possible to understand which solutions best fit such needs and, as a result, implement strategies and devices that help solve these specific problems.

Benefits for the region

Time efficiency.

- If the tools can be used to improve and reduce the time it takes to carry out an operating process such as patient data collection, then we will have a benefit that can be easily measured and, therefore, understand the advantages that will positively impact time management by healthcare professionals.
- Bringing operating processes that in the past had to be performed in other departments of the organization to the bedside, turns such processes into faster and safer tasks.

It improves communication between healthcare professionals and workflow efficiency.

- Being able to monitor patients and keep in touch with them remotely, even when they are at home. Being able to see if patients are eating well, sleeping well, as well as to send them health-related information is something that can greatly benefit organizations; but it is, at the same time, a challenge for Brazil and Latin America to get to that point.

• **Leandro Costa**, , told us that it is key to improve the communication with patients by showing them, with the help of mobile devices, information regarding their health such as: test results, progress processes and medication. This represents more trust, security and peace of mind for users.

• **Francisco Neri, CMIO of the Santa Joana and Promatre Hospitals** points out the importance of facilitating a good communication and a better use of the hospital resources and staff, because in many cases hospitals cannot easily find a nurse or a specialist; in some occasions, patients even have to wait inside an ambulance for the required specialist.

By improving processes and having better control over them, it is possible to measure and control the organization's expenditures.



- It is appropriate to analyze the expenditures incurred during the implementation of new technologies versus the future benefits. Due to the concern regarding the high costs that the implementation of new technologies may represent for the organizations, and the limited economic resources, it is important that organizations understand that despite the fact that such investment is high, benefits in terms of cost reduction resulting from the efficiency increase and a better use of resources will be equally valuable. In many cases, these benefits exceed the initial investments.

CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT



- Chris Sullivan mentions that many times hospitals think about investing in bigger buildings and increasing their medical staff headcount, justifying such investment by saying the available resources are not sufficient to respond to the demand; but perhaps the problem is not related to the demand but to the offer, maybe the investment should not be in infrastructure and staff, but in solutions that help improve efficiency, processes and resource leveraging in the organization, thus optimizing the offer so that it fully complies with all the requirements.

- Many healthcare organizations have good Electronic Health Records (EHR), but these systems are not mobile and they are not integrated with other systems within the organization, therefore, it is not easy for any member to the staff to consult said information. It is important for organizations to understand the importance of investing in mobility and start integrating their information systems.

- **Rafaela Maciel** insists on the importance of creating dialogue scenarios with peers, leaders and authorities to discuss the importance, the need, and the benefits of clinical mobility in the region.



Truman Medical Center, a success story

The Truman Hospital, located in Kansas City, United States, is a level 7 care center that has a technological implementation in the medical area. Truman is a clear success case, in which all benefits that arise from implementing clinical mobility across the organization can be easily identified.

Kassandra Mcknight, Informatics Nurse at Truman, mentions that, during her daily activities, she faced several issues that affected the optimal operation of the organization.

- ❶ **Deficient communication channels.**
- ❷ **Many machines carrying out independent processes.**
- ❸ **Workflow inefficiency of nurses and physicians.**

The implementation of these new technologies not only solved the issues identified by her team, but also many other administrative problems of the organization. Among them, we find problems of economic, recruitment and staff leveraging nature.

CLINICAL MOBILITY

CLINICAL MOBILITY AND HEALTHCARE DIGITALIZATION:
AN APPROACH TO THE LATIN AMERICAN CONTEXT



With the handheld devices, medical staff can check orders, patient information, medical histories, patient-related changes, among many others. All the applications that have been developed to be used in a single device is what makes it so powerful.



Zebra TC21 Device

- Smart device with touchscreen.
- Calls, video calls, alerts and text messages.
- Wristband scanning.
- Medication scanning and dose control.
- Sample scanning.

Although paperwork is an important aspect of nursing, nurses do not want to spend most of their time in front of a computer entering information. With the implementation of this technology, the time consumed by operating processes was streamlined and improved; now time is better used. Nurses still perform administrative tasks, but now these take much less time. As a result, they can spend more time with the patient, providing a better-quality service.

For more information, go to www.zebra.com/healthcare



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