# Lean Health Care

Eliminate Waste and Spend More Time with Patients

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# How will this module help me?

1. Describes common Lean methods and select the right ones for your practice.
2. Identifies six steps to implementing Lean improvements in your practice.
3. Provides answers to common questions and concerns about Lean thinking and methods.
4. Discusses case reports describing how practices are successfully using Lean techniques to organize workflows and provide better patient care.

# (i) Introduction

## What is Lean?

The principles of Lean are closely linked with flow of production concepts implemented by Ford, and later Toyota.[1] In the health care setting, Lean is both a mindset and a method to engage physicians and staff in improving their practices and organizations to run more smoothly. The focus of Lean is to minimize waste in every process, which improves efficiency and adds value for the patient.

# Six STEPS to Implementing Lean Health Care:

1. Identify a high-level champion.
2. Create an interdisciplinary improvement team.
3. Empower front-line workers.
4. Choose a starter project.
5. Celebrate and spread.
6. Sustain.

## 1 Identify a high-level champion.

Lean is fundamentally about process improvement through culture change, which requires the buy-in of a high-level champion, such as the Chief Executive Officer, Chief Medical Officer, or lead physician from the practice. This individual serves as the champion for Lean improvement, should be dedicated to leading the effort, and have sufficient authority and access to organizational resources to ensure that initiatives progress at the desired rate.

**Q&A**

### Why is there an emphasis on waste?

Waste causes physicians and the care team to spend time on activities that do not add value to the patient. Waste also causes physical and emotional fatigue and frustration for the team. Inefficiencies and duplications in care lead to patient frustrations, time lost from work or family, additional expense, and may drive decisions to change health care providers.

### Can you provide examples of waste that I might encounter in my organization?

Examples of waste include patient wait-times and patient and physician time spent waiting on the phone, walking down the hall to a printer, or moving in and out of the exam room to find information, other team members, or supplies.

#### How do we eliminate waste?

The core concept of Lean is to identify every step in a patient visit process and determine which steps add value and which steps do not add value (i.e., those that are a "waste"). The goal is to maximize value and minimize waste.

#### How can Lean improve the way my practice operates?

Lean thinking leads to a shift in culture by empowering team members to identify inefficiencies and offer innovative solutions to address these problems. Lean works best with the buy-in and involvement of everyone on the team.

#### I am already way too busy. Why should I consider Lean?

Lean improvements are small investments of time and resources which emphasize better workflows, eliminate waste, and pay big dividends.

#### Do organizations use Lean to transform their culture?

At its most fundamental level, Lean is about strengthening the culture in your organization. Lean is a quality improvement (QI) tool that provides techniques to help your practice or organization be more resilient and adaptable to future changes in health care.

## 2 Create an interdisciplinary improvement team.

For each Lean improvement initiative, bring together an interdisciplinary team from the areas of your practice. This may include reception staff, medical assistants (MAs), nurses, physicians, and representatives from pharmacy, lab, radiology, administration, information technology, and/or the business office. If your practice or organization has operations specialists, they will be a valuable resource as their role is to maximize the efficiency of processes that impact patients and physicians. It is important that everyone works together toward a common organizational goal.

**Q&A**

#### Should we include patients on the improvement team?

As part of the Lean improvement approach, some organizations create a patient advisory panel to help identify processes that need modification. Other organizations invite patients to be part of internal improvement committees. Seeing the care your practice provides through a patient's eyes can be incredibly valuable.

#### As a practice manager, I think this sounds great. How can I get my busy physicians to engage?

Ask one high-functioning team to identify an inefficient process and commit to trying a project. At the end, it would be unusual if other physicians and staff weren't intrigued and ready to engage after seeing positive results.

## 3 Empower front-line workers.

Successful Lean projects are usually chosen and designed by the people doing the work. The role of the champion and other leaders is to foster an environment where the practice can succeed. Projects are more likely to fail when managers jump in and try to do it all without all team members involved in each process. Staff can be

encouraged to view frustrations with systems as opportunities, and to use the following worksheet to submit improvement ideas.

### Team improvement idea worksheet
## You can use this document to identify process improvement opportunities in your practice.

(MS WORD, 40 KB)

## 4  Choose a starter project.

Although it may seem daunting, the best way to learn Lean methods is to dive in. Work as an interdisciplinary team to identify an important process to improve. This first project should be small but meaningful.

Visually map a process from beginning to end using a process map to help the team identify what work is being done, and where opportunities for improvement may exist. Process mapping is most frequently used to identify key steps, sources of waste, and changes that could result in creating the ideal workflow.

### Process Map Toolkit
## Use this toolkit to learn easy ways to create a process map for your practice.

(PPT, 2,134 KB)

You may want to consider a 5S starter project. The 5S method stands for: *Sort, Straighten, Shine, Standardize,* and *Sustain*.

One example of a 5S project is outlined below, and focuses on having clean, organized workspaces to improve productivity and efficiency while minimizing stress. When tools and supplies are in a reliable location, fewer errors are made and less time is spent looking for misplaced supplies or missing information. You might be surprised by how much more work gets done when the workspace is uncluttered and reliably organized. Use *5S* to reorganize a supply room, team documentation area, or workroom.

**Table 1. Use the 5S method to increase productivity and eliminate waste within your practice.**

| | |
|---|---|
| **Sort** | For each item in the workspace ask:<br><br>• Does this have a function in this area?<br><br>• If we remove it, will it matter?<br><br>One tip is to tag each item with a colored sticker to indicate how often you use it. Green tags identify items that won't be used in the next 48 hours, but are used at least monthly. These items could be moved to a nearby storage area. Yellow tags are for items used occasionally, but less than once a month. These could be moved to more remote storage. Red tags are for unused, broken, or obsolete items that should be discarded. |
| **Straighten** | Organize materials so that they are easy to find and close to where they will be used. The goal is to not waste time looking for supplies or performing unnecessary steps.<br><br>For example, it is helpful to have all exam room supplies in the same place in each room. Strategically place printers in exam rooms and nearby hallways to eliminate |

time spent entering and exiting the exam room to pick up printouts. Small boxes, trays, and label makers are handy tools to assist with organizing.

| | |
|---|---|
| **Shine** | Make sure all the materials in the workspace are clean and in optimal working condition. |
| **Standardize** | Make it easy to keep the workspace organized. Place all supplies in the same labeled location in each office. |
| | For example, standardized procedure trays can be created daily and brought into the room when needed. Post clear instructions where the trays are assembled so the standard set up is simple for anyone to follow. |
| **Sustain** | Identify team members who are responsible for ordering and stocking. Develop routines to make the 5S activities a habit for all team members. |

**Q&A**

**We are spinning our wheels in our clinic. What sort of workflow processes might we tackle?**

Ask your team where they would like to start. Examples of small but meaningful starter projects include: decreasing the number of steps in the patient registration process, decreasing wait times for appointments, reducing faxes between different offices or departments, and improving inbox management.

**Do we need to hire a Lean consultant?**

Many organizations hire a Lean consultant to assist with organizational culture change and large-scale improvements. The consultant makes sure all employees are taught the language and the methodology of Lean, are engaged, and are prepared to participate in change events. It is not necessary for every practice to hire a consultant or facilitator to begin to develop a culture of Lean thinking. This module was intentionally created for practices and organizations wanting to move to Lean thinking while using their existing resources.

**How can we find time to do a 5S project?**

Many groups will close their office for a half day or bring their staff in on a Saturday morning to rigorously clean and organize their workspaces. This is often accompanied by some fun team-building activities. Others will conduct Lean improvement on a weekday morning or evening. Hopefully, the time investment will be worthwhile because your team will be able to work more efficiently.

**How many changes should be made at a time?**

It is usually best to start small and implement one change at a time. This is the only way determine if the change has had the desired effect.

Additional common Lean tools and tactics:

- An ***A3*** is a one-page visual display of the process improvement project being undertaken. The *A3* document provides a snapshot of the activity to keep all stakeholders and supporting leadership informed. *A3* can be used to track the progress and success of a Lean project or initiative.
- ***Gemba*** means "the real place" in Japanese.[2] It reminds Lean thinkers and leaders that work is constantly happening in exam rooms, waiting rooms, and on the practice floors. *Gemba* encourages and supports team-oriented improvements.
- ***Go and see*** is a tactic that allows leaders to observe the processes and tasks involved in the practice team's daily workflow. *Go and see* can help you apply *Gemba* principles. Learning from team members

who most often perform the work often yields practical solutions to interdisciplinary challenges. Leaders who *go and see* observe a process and understand how the outcome is really achieved, rather than simply trusting what the written procedure says.

- A ***Kaizen event*** brings the practice team and leaders together to map and analyze a process, then create a plan to redesign the process. Involving all stakeholders helps to ensure that the new process is initiated after the *Kaizen event*. The purpose of these events is to make proactive, incremental changes, leading to greater sustainability and ongoing improvement.

- ***Quick wins*** can be accomplished locally by a single person or a team that identifies waste and makes a change to reduce or eliminate it without a *Kaizen event*, in-depth Lean analysis, resources, or the support of the Lean champion. *Quick wins* can energize and involve any member of the team. Celebrate even the smallest *quick wins* that are accomplished by the team.

## 5  Celebrate and spread.

Share how you've improved processes with others in your practice and organization. This helps build strong team culture and strengthen connectedness. Small celebrations of success will contribute to an atmosphere of camaraderie within the practice.

It's also important to note that not all solutions will work in every setting. It is okay to try an improvement and discover that it doesn't work or is not a good fit for your practice. This is not a failure. If a team does not succeed in an improvement, celebrate the problem-solving and learning process. Many practices have a bulletin board or other visual display to keep the team updated on successes and to acknowledge the work of team members.



## 6  Sustain.

The final step in Lean improvement is to maintain the success. You can encourage lasting change by naming the new process. Use visual systems to reinforce the new process, such as a checklist or flow diagram. For example, if the improvement was creating an expanded rooming process for the nurses or MAs in the practice, name the new process "Advanced rooming." Make sure that every clinical assistant's computer has a list of the advanced rooming tasks to remind them how to properly perform each step. Team meetings can also be used to reinforce new processes by providing opportunities for regular check-ins, identify additional improvements, and celebrate continued success.

How much baseline and post-intervention data should we collect to assess the impact of change?

Ideal tests of change should have multiple measurements from a variety of times, such as days of the week or am and pm shifts, to understand normal variations in your processes. For example, exam room supplies might be depleted by Friday, and only measuring the supplies on Mondays might not identify this. Post-intervention measurements also ideally sample multiple points over time. More specific projects (e.g., moving printers) may not require these data measurements.

We are a small organization without a budget for data analysts. How can we do all of this measurement and still take care of patients?

Small and informal measurements are often sufficient. Having patients take a simple survey can give you a lot of information. For example, if you want yes or no feedback from patients about a new process, give each patient a poker chip and have them place it in a "Yes" or a "No" basket on their way out of the office.

A white board in a breakroom can be easy way to track data while involving staff in visualizing their successes.

# Conclusion

Lean approaches can bring about cultural change. Becoming a Lean organization has several advantages, including: reducing or eliminating waste of time and/or resources, improving overall efficiency, and fostering team cohesion. The information in this module will help you identify opportunities for Lean improvements, and teach you how to enact them in your practice or organization.

# AMA Pearls

**Leaders as facilitators.**

Lean improvement requires that leaders shift their approach from being managers who design new processes to facilitators who support problem-solving and encourage staff to take action. Successful facilitators ask, listen, and support the team. Lean thinking shifts leaders from a stance of "command and control," or "design and deploy," to one of discovering and empowering.

**Common vision.**

Develop a common vision for Lean improvement that rallies leaders and employees around a shared purpose. Examples of unifying statements include, "The needs of the patient come first" at Mayo Clinic[3] and "Our promise to patients: We will know who you are and will be ready for you" at Borgess Health[4]. To set their common vision, ThedaCare™ in Appleton, WI,

developed a guiding narrative around a fictional patient named "Lori," a middle-aged woman caring for her aging mother, her husband, and her children.[5] When making Lean changes, team members at ThedaCare™ consider how their decisions will impact Lori's patient experience.

### Common language.

The counterpart to a common vision is a common language. In crafting a common language, some organizations coin their own terms that suit their Lean improvement activities. For example, "flow-stopper" could be used to describe any activity that impedes patient flow. Many organizations adopt the nomenclature of Lean, including the tools that are outlined in this module, such as *5S, A3, Gemba*, and *Kaizen event*.

### Flow stations.

Several clinics have developed "flow stations" as a result of their Lean analysis. In a flow station, the physician, nurse, and/or MA sit next to each other rather than in individual workspaces, in separate rooms, or down a hallway. The nurse or MA is the "flow master", responsible for directing non-visit-based work to the physician in manageable batches. Forms, phone calls, and emails are broken down into small blocks that can be addressed in the short intervals between patients throughout the course of the day. This "in flow" Lean approach reduces the inherent waste in unused down time, and enables the physician to finish work earlier. Some organizations report that their physicians finish their work 30 minutes earlier when using the flow station configuration.

### Workload balancing and cross-training: team- rather than task-orientation.

Workload balancing means optimizing task distribution and maximally utilizing the people in a system to improve workflow. Cross-training of roles allows flexibility; therefore, when the demand varies, workers can "flex," or adapt, to prevent breakdowns in the flow of work. For example, if three nurses on a team can room patients and do phone work (e.g., triage, advice calls, etc.), they can quickly shift work to meet the needs of the practice. When the need to room patients is high, all three could focus on rooming. If the phones are unusually busy, they can adjust from one nurse to two nurses answering phones.

Work conceptualized as team-oriented rather than task-oriented is easier to flex. In the team-oriented example above, all three nurses are able to support the work of the entire team. In a task-oriented approach, one of the nurses may see herself as the desk nurse who is only responsible for triage and advice, whereas the other two may see themselves as responsible for rooming patients. Team-oriented work allows practices to function more efficiently and with greater cohesion, so the team can focus on meeting patient needs.

### Stop the line.

Front-line team members see hazards in the system that may not be apparent to leadership. For example, in a Lean environment, an assembly worker who sees a defect is empowered to "stop the line," or to shut down the whole assembly line system. The line does not start again until supervisors come to the scene and address the issue.

This "stop the line" concept is crucial when procedures are being performed. The language of "stop the line" can be a transformative way for team members to communicate when a medical error is about to happen. Errors related to misidentified patients, unrecognized allergies, and incorrect medications can be prevented if every team member is empowered to use this common language and "stop the line."

### Group recognition.

Recognition and reward in a Lean culture is often at the group level, rather than at the individual level. With Lean improvements, the focus changes from producing volume (e.g., the number of patients seen), to producing value (e.g., the number of patients who have all their needs met).

### Situational awareness.

Just as pilots need to see all the essential data on their control panel at a glance, health care professionals need to be able to view all crucial clinical information. Line-of-sight and visual cues are ways for practices to access crucial information to

improve a clinic's efficiency. For example, when nurses can see the status of each exam room from their station, they will know when a room is free and can act on this information by rooming another patient.

### Visual management system.

A *visual management system (VMS)* is a tool to promote situational awareness. A VMS uses symbols, colors, and pictures instead of text to quickly and reliably create situational awareness. With this type of system, team members can unmistakably view visual cues so standards and activities are obvious, and a high level of performance can be maintained.

**Example 1: A clinic call center**

A VMS at a call center might include a yellow screen if an incoming call hasn't been answered in 30 seconds, and a red screen if the call hasn't been answered in 60 seconds. This alerts all team members, including managers, that someone should pick up the call.

**Example 2: A clinic**

In a clinic, a VMS might be a whiteboard listing physician schedules, staff schedules, and roles. The whiteboard can also include how many patients are on each physician's schedule, and any indications that a physician is falling behind and may need assistance with patient visits. Similarly, a patient's status can be flagged outside of an exam room door or within the electronic health record (EHR). Colored flags outside of the exam room door or colored dots in the EHR can represent where the patient is in the process of their visit, and which service they are waiting for.

**Example 3: An office setting**

In a clinic administration office, a VMS might be a list of key problems and the status of work on each item. In a storage room, a VMS would include labeling what supplies belong where and, when applicable, the label will have a corresponding picture of the item. Some clinics and organizations line their halls with data about every aspect of their work, including financial, quality, and satisfaction metrics. These data are regularly reviewed and used to drive further improvements. For example, leaders and their direct reports make weekly data rounds in these hallways to talk to front-line workers and strategize how to make processes better.

# STEPS in practice

**1** ## Lean Health Care Case Report: Taubman Urology Clinic at University of Michigan Health System

The Taubman Urology Clinic at University of Michigan Health System has been using "Lean in daily work" for over three years in clinics and call centers. Interdisciplinary teams at all levels of the organization are invested in "Lean in daily work." Teams huddle daily with their supervisors to call attention to and solve problems. The medical director's "standard work" includes weekly leadership walks to engage with staff and support their progress. Clinical and clerical staff members can actively engage in this culture of continuous improvement by using "Everyday Lean Ideas" (ELI) worksheets to propose improvement ideas.

**Team improvement idea worksheet**

You can use this document to identify process improvement opportunities in your practice.

(MS WORD, 40 KB)

Using ELIs has required a shift in the manager's role from primary problem solver to coaching the team to solve problems. The ELI system works because of the assumption that the workers actually doing the work are in the

best position to improve it. With ELI, front-line workers identify problems and waste, investigate root causes, and propose solutions to test.

The ELI form is quick and easy to submit. Department managers are committed to giving rapid feedback on proposed ideas. Many suggestions are endorsed on the spot as "Just Do It;" others may still need manager involvement or Lean intervention to resolve and implement a solution.

Electronic tools are used to document and track the ELIs. This allows the information and learning points to be easily shared within the Urology Clinic as well with the wider University of Michigan Health System.

Examples of ELIs that have been implemented include:

- Placing a list of physicians' glove sizes in each procedure room, enabling the medical assistant to set up the room with the correct gloves for the specific provider each day.
- Creating a "concierge card" that travels with the patient during their visit. The card lets the provider know who (family member, friend, neighbor, etc.) has accompanied the patient to the visit; after the visit, the card serves as a reference for the patient by listing the name and role of everyone from the practice team who participated in his/her care that day.
- Posting signage on restroom doors near the entrance to the multispecialty facility to alert Urology patients to report directly to check-in before using the restroom. This makes it easier to collect urine samples needed for a visit.

Many of the ELI suggestions are simple and low cost, but collectively they have contributed greatly to the effectiveness and efficiency of the clinic's operations.

## 2   Lean Health Care Case Report: ThedaCare™

Walk into any clinic in the ThedaCare™ system in central Wisconsin and you will see walls lined with data that is organized around the True North compass. Unlike other compasses, the points of the True North compass indicate quality, employee engagement, productivity, and the customer experience. Metrics on these four points are captured at every level, from the work area (lab, call center, provider) to the clinic, to the division, and through to the corporate level.

Each zone of the clinic has its own 6 feet by 6 feet data board that displays run charts of metrics under each of these categories of the True North compass. Even patients are part of the measurement focus. The percentage of no-shows and patients who arrive on time are tracked and reported on graphs in the waiting area.

Once a week the clinic leadership team does walking rounds to review metrics and discuss improvement strategies within a particular area. Each data set is rolled up to the clinic manager who reports data to regional leadership along the True North framework. In addition, once a month the physicians, nurses, medical assistants, reception members, and quality improvement specialists meet to review quality data and identify improvement strategies within their area.

## 3   Lean Health Care Case Report: Mercy Clinic Family Medicine

Ask Randall Huss, MD, President of Mercy Clinic, Rolla Division, what he thinks about Lean and he will tell you, "Lean workflow and workspace redesign are the most progressive and innovative initiatives we have accomplished in the last several years."

Before Lean, the team at Mercy Clinic Family Medicine in Rolla, MO, knew their current processes were broken, but it was hard to visualize changes they needed to make to the way they did their daily tasks in their work environment. During a retreat, providers, managers, and nursing staff went through a Lean value stream mapping exercise for each process that makes up a patient care episode. This helped the team see the waste and inefficiencies in the way they were used to practicing.

After redesigning their practice workflow in their original work environment, the team had the opportunity to move to a new building intentionally designed with Lean principles, including just-in-time inventory, standardized

room designs, and pods to eliminate wasteful steps. At first there was some resistance to the new layout, such as co-location of provider and care team. Resistance disappeared once everyone moved into their new workspace. Providers were able to contrast the quiet environment with their former noisy offices and experience the ease with which they could turn around and talk to their nursing team and get things done rather than having to text everything back and forth.

The new clinic layout included a printer in every exam room. Despite initial concerns, it has not been a problem for IT to support so many additional printers. The nurses particularly appreciate having printers in the exam rooms because it saves them time entering and exiting the exam room to retrieve patient orders and visit documentation.

The team designed the clinic layout to make it easy to walk back and forth between the different clinical areas to talk to a colleague or get a curbside consultation. Clinician lounges offer another opportunity for providers to interact with each other, especially at lunch, which helps strengthen Mercy Clinic's culture.

## 4 Lean Health Care Case Report: Harvard Vanguard Medical Associates

At Harvard Vanguard Medical Associates in Boston, MA, "measurement *is* the magic." The appropriately named "Mission Control"—the location for the 7:30 a.m. weekly clinical operations meetings—is covered wall-to-wall with whiteboards filled with diagrams, metrics, workflow analyses, ongoing project status reports, and overall schedules. During these interdisciplinary team meetings, improvement specialists, physicians, and nurses tackle a list of open improvement issues—reviewing the status of each, and identifying barriers to improvement, responsible parties, and expected due dates. They review the status of recent "Rapid Improvement Events" (one- to two-week intensive Lean activities) as well as long-term projects.

One Rapid Improvement Event involved optimizing the automated phone triage system. Formerly, the only option was "Press 1 for medical advice." The team reviewed data and quickly learned that most calls were for refills, followed by appointments and then medical advice. As a result of this review, the team decided to reorder the automated options accordingly; now "option 1" connects the patient to someone who can assist with refills, "option 2" is for appointments, and so on. This enables Harvard Vanguard to more quickly get the right calls to the right people to better and more efficiently meet their patients' needs when they call.

The pursuit of standard work is the cornerstone of Harvard Vanguard's Lean philosophy. For every work process, there is a clearly defined series of steps completed by those who do that specific work. For example, patient form completion starts with medical secretaries when the patient arrives in the clinic, moves to licensed practical nurses when the patient is taken to the exam room for their visit, and goes ultimately to the physician, who completes any final work and signs off. To help all team members standardize their processes, members periodically observe each other in an informal peer-to-peer audit. If the worker gets the process right, the auditor shows a green card. If the standard work is completed incorrectly, an orange card is shown. The purpose of the audit is not to scold workers but to identify how consistently a process is completed and whether a member of the team needs assistance or additional training.

Harvard Vanguard's commitment to Lean process improvement has benefitted the whole team. They have achieved greater efficiencies by eliminating waste, and they are able to provide better, safer care to patients.

**Learning Objectives**
1. List ways to identify a high–level process improvement champion and create an interdisciplinary improvement team
2. Explain how to utilize Lean tactics to identify sources of waste in clinic workflows
3. Describe steps to empower front–line staff to identify an improvement project and make improvements
4. Identify Lean methods of improvement

# Article Information

**Credit Designation Statement:** The American Medical Association designates this enduring material activity for a maximum of .50 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**Target Audience:** This activity is designed to meet the educational needs of practicing physicians, practice administrators, and allied health professionals.

***Disclaimers:** Individuals below who are marked with an asterisk contributed towards Version 1 of this learning activity.

**Statement of Competency:** This activity is designed to address the following ABMS/ACGME competencies: practice-based learning and improvement, interpersonal and communications skills, professionalism, systems-based practice, interdisciplinary teamwork, quality improvement and informatics.

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**About the AMA Professional Satisfaction and Practice Sustainability Group:** The AMA Professional Satisfaction and Practice Sustainability group has been tasked with developing and promoting innovative strategies that create sustainable practices. Leveraging findings from the 2013 AMA/RAND Health study, "Factors affecting physician professional satisfaction and their implications for patient care, health systems and health policy," and other research sources, the group developed a series of practice transformation strategies. Each has the potential to reduce or eliminate inefficiency in broader office-based physician practices and improve health outcomes, increase operational productivity and reduce health care costs.

**ABMS MOC Statement:** Through the American Board of Medical Specialties ("ABMS") ongoing commitment to increase access to practice relevant Maintenance of Certification ("MOC") Activities, this activity has met the requirements as an **MOC Part II CME Activity.** Please review the *ABMS* Continuing Certification Directory to see what ABMS Member Boards have accepted this activity.

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