TOCICO Healthcare Annotated Bibliography
Updated June 7, 2023

Aoki, N. (2005). Thinking process for medical error reduction: Systematic improvement of hospital management using TOC. TOCICO Theory of Constraints International Conference: 3rd Annual Worldwide Gathering of TOC Professionals, Barcelona, Spain, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, case study, thinking processes, healthcare, three-cloud approach, current reality tree, evaporating cloud, core conflict cloud, future reality tree, injections, service industry, UDEs, medical errors,.

> This presentation discusses the scope of medical errors and compares the number of deaths from medical errors (98,000) to traffic deaths (43,000), deaths from cancer (42,500), and deaths from AIDS (16,500). Patient case studies are described illustrating the causes of medical errors. The thinking processes (TP) are used to analyze this medical error case, develop a solution to prevent the errors, and establish consensus among medical professionals. Several undesirable effects (UDEs) surfaced related to medical errors; the three-cloud approach was used to build a generic core conflict cloud. This cloud was comprised of objective (A) To provide high quality (e.g., timely and safely) care for each patient; (B) Respect the autonomy of each professional to maximize their activities; (D) Work independently and have the responsible physician manage patients; (C) Reduce the risk of medical errors and check the status during the process, and (D') Work as a team based on standardized processes. The current reality tree was built connecting all UDEs. The assumptions of the core conflict cloud were surfaced, and injections identified. Finally, the future reality tree was constructed to achieve the desirable effects based on the injections. Length: 40m. 57s. PDF: 49 slides.

Aoki, N. (2006). Critical chain for inpatient management of patients with diabetes mellitis. TOCICO Theory of Constraints International Conference: 4th Annual Worldwide Gathering of TOC Professionals, Miami, FL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, critical chain, healthcare, diabetes, case study, clinical path, electronic medical records, quality Indicators, measurements, service industry, .

> This presentation describes applying the theory of constraints (TOC) critical chain project management (CCPM) application to design a resource allocation and scheduling system for healthcare professionals. Diabetes is used as a case example for a project. CCPM provides a good solution to create a concrete schedule for each professional, which maximizes resource

utilization and reduces extra waste. Quality indicators were examined. A prototype information system is being implemented based on CCPM concepts. Length: 35m. 42s. PDF: 59 slides.

Arai, H., et al. (2009). Myths about product registration of medical devices in Japan. TOCICO Theory of Constraints International Conference: 7th Annual Worldwide Gathering of TOC Professionals, Tokyo, JP, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, Japan, critical chain, thinking processes, medical devices,.

Due to its rapidly aging population, Japan has been a very attractive market to medical device manufacturers. This presentation introduces organizational efforts for improving its performance using the concepts of TOC, such as critical chain project management (CCPM) and the thinking processes (TP). As a result, internal touch-time to register a product has been shortened by about 30-70% in a multiple projects environment with fewer people and without compromising compliance. Length: 46m 25s. PDF: 29 slides.

Bacelar, G. (2019). How a doctor implemented TOC and improved his ophthalmologic practice by over 50% in a few weeks. TOCICO Theory of Constraints International Conference: 17th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: five focusing steps, buffer management, drum-buffer-rope, ophthalmology, healthcare, case study, Brazil, measures,.

This case study describes a physician who leads TOC implementation to improve his ophthalmologic practice in a Brazilian hospital. The work consisted of performing 2 retinal imaging exams: fundus photography and fluorescein angiography. After applying the 5 focusing steps, buffer management, and drum-buffer-rope, the practice improved continuously. In 4 weeks, the practice increased the number of appointment slots by 50% and last-minute appointments by 150%. All stakeholders saw the benefits beginning on the first day. Patients flowed very smoothly through the system. More importantly, the quality of care improved after implementing TOC. Since fighting fires was eliminated, the provider and the assistant could focus on the current patient treatment, dedicate more time to each patient, and attend more patients per session. Video length: 26m 11s. PDF: 66 slides.

Bacelar, G. and J. F. Cox III (2020). How to achieve breakthrough improvement in healthcare services by applying TOC principles and tools. TOCICO Theory of Constraints International Virtual Conference: 18th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: five focusing steps, buffer management, change question sequence, patient flow, healthcare, primary care, specialty care, operating rooms, home care, hospital, emergency department,.

The last century was the stage of an impressive evolution in healthcare: we are living longer, and the population is growing. However, these improvements led to a higher and rising demand for healthcare services. Despite an ever-increasing investment in healthcare, lack of capacity and timeliness are still affecting every country. Current management methods are not providing an effective solution to this crisis. Frequently, the bad/outdated policies that healthcare

organizations are using to manage their resources and patient flow are the problem. Potential solutions, like Lean and Six Sigma, provide limited benefits and still incur in the same problems: high investments and long implementation time. Healthcare organizations that adequately applied the TOC achieved impressive results. A recent study about TOC in healthcare (based on academic articles and TOCICO video proceedings) reported improvements in productivity – more patients treated – and in the timeliness of care – which leads to better outcomes. Applying TOC basic principles and three POOGIs can be implemented in a few weeks and usually does not require additional cost. TOC principles and POOGIs can be applied in healthcare to address the core conflicts and undesirable effects. Examples include family medicine practice, imaging practice, emergency departments, inpatient bed management, and home care. Video length: 48:41. PDF: 60 slides.

Borghuis, T. (2009). Solving constraints to achieve ongoing improvement in hospitals. First European TOCICO Regional Conference, Amsterdam, The Netherlands, Theory of Constraints International Certification Organization.

Keywords: healthcare, hospitals, case study, lean, POOGI, multicase, TLS, external constraint, Netherlands, Jonah discharge procedure, measures, .

This presentation provides the results of a case study of three hospitals. What are the differences between lean, six sigma and TOC? When do you use each? I combined the TOC with the constraint of the hospital. All hospitals had difficulty with a process of ongoing improvement. One problem was that TOC was viewed as a nurse's thing. The nurse had to enter all the data. The nurses believed that the nursing home was the main constraint. What is in it for the nurses? The patients were not leaving the hospital on the due date (they were in the black). What was the problem in the Jonah discharge procedure? Nursing homes. The transfer process became the constraint. To exploit the constraint, we used the tools of TOC. The current situation at St. Antonius Hospital and how to achieve ongoing improvement are discussed. Conclusions include: TOC is more efficient and profitable as a system; ongoing improvement is difficult to achieve; users' resistance is high. Lengths. PDF: 19 slides.

Buwalda, P. E. and A. Gijs (2013). Increase quality, decrease stress in a hospital. International Public Sector Effectiveness Conference 2013, Vilnius, Lithuania, TELE2

Keywords: hospital, healthcare, Netherlands, clinical wards, case study, UDEs, measures, supply chain, .

This presentation demonstrates what management principles were applied in a general hospital that improved the quality of care and decreased the workload on nurses and doctors, while the same amount of patients was treated. This implementation took place in a Dutch hospital and is still in the process of completion. The implementation strategy is used in several hospitals in The Netherlands and abroad and delivers similar results over and over again. The problem is: Clinical wards in most hospitals, at least in The Netherlands, are usually occupied for more than 90% on average on a yearly basis. This average occupation means that from time to time wards are fully occupied, resulting in some major negative effects: patients cannot be admitted, operations are cancelled, patients are admitted on the wrong ward, nurses and doctors experience a lot of stress. Before our implementation started, the average occupation in this particular hospital was well over 90% and the amount of patients admitted on wrong wards was almost 1000 per year on a total of 8000 admissions for the concerning wards (5 in total in this case). On top of that, 10

to 15 times a year the hospital was completely full, resulting in patients being sent through to other hospitals in the region. The average length of stay was at the time of the beginning of the project (2010) 7.3 days per patient. What had to be changed? The goal of the implementation was to eliminate guest-admissions and to prevent a full-house situation during normal market demand (i.e. not taking into account winter crises or disasters). The way to achieve this was to reduce the length of stay for each patient by eliminating non-medical waiting times. These non-medical waiting times are often caused by mis-synchronization of resources inside and outside the hospital: diagnostic departments, such as Radiology, Physiotherapy and the like, also suffer from fully planned schedules, resulting in not being available at the right time for clinically admitted patients. But also nursing homes and rehab clinics tend to be occupied for almost 100%, also resulting in blocking patients to be discharged from the hospital. Implementation results include: Occupation of beds decreased by 20%. The occupation of beds throughout the 5 wards has decreased below 80%; the length of stay decreased by 15%; no more full-houses occur, almost no wrong admissions anymore and the overall average length of stay has decreased by almost 15% and is still going down. Ongoing improvement is on daily basis. The hospital has a process of continuous improvement installed, by using buffer management system during a daily stand-up meeting in which delayed patients will get the appropriate management attention in order to move forward again. Decisions are based on performance. On a monthly basis every ward measures the performance and decides where to improve even more, based on the delay-data derived from the buffer management system. Management focuses on improvement. On a board level the management observes hospital-wide obstacles and decides where to improve on a hospital level. Video Length: 1h 26s. PDF: 28 slides.

Cerveny, J. F. (2009). Managing (improving) back-office healthcare operations. 1st Annual North American Regional TOCICO Conference, Tacoma, WA, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, back office, hospital,.

Hospitals' back office (billing) phase is a source of challenge and low-hanging fruit. The volume of backlog to process charts accurately to ensure maximum reimbursement is vital to attaining throughput: the more errors, delays, etc., that expose hospitals to possible fraud and contribute to uncollectible revenues. This session demonstrates how the five focusing steps (5 FS) were applied to align the efforts of the back office of a Florida hospital. Length: 49m 5s. PDF: 35 slides.

Cox III, J. F. (2015). An examination of different perspectives to the same problem: The academic, practitioner, TOC and my perspectives of appointment scheduling in a family practice medical facility. TOCICO Theory of Constraints International Conference: 13th Annual Worldwide Gathering of TOC Professionals, Cape Town, SA, Theory of Constraints International Certification Organization.

Keywords: service industry, healthcare, appointment scheduling, Inherent Simplicity, optimization versus satisficing under uncertainty/chaos, buffers, buffer management, .

A clash of two worlds exists between academia versus practitioners. Academics are primarily measured and rewarded by their research contributions to their fields as recognized by publishing in top-tier academic journals. High-powered statistical analyses and mathematical programming techniques are the highly recommended research methodologies: the rigor of the research is of utmost importance. On the other hand, practitioners are interested in how to

solve their specific problem; the relevance of the research. Goldratt (TOC Journal) offered a different perspective on research (science) as developing in stages: classification, correlation and cause and effect. In 2012, Cox and Robinson presented a case study that solved many of the appointment scheduling problems of a large family practice clinic. Since that presentation, a literature search of the appointment scheduling area revealed the above divide. The appointment scheduling literature spans over sixty years dating back to the 1950s. No effective solution has been identified. Hundreds of academic articles have been published concerning how to "optimize" appointment scheduling. However, few solutions have been implemented. On the other hand, the practitioner literature is equally unimpressive. It is divided into three general groups: solutions addressing only one problem area, general guidelines (lean and six-sigma) for problem-solving in any practice, and others providing a different scheduling approach. These solutions offer some relief to some of the problems in some of the practices. However, a combined literature review reveals at least 14 major problems. These are studied from a TOC perspective in developing the Inherent Simplicity of the problem/solution. Video length: 1h 22m 58s. PDF: 104 slides.

Cox III, J. F. (2019). Using the theory of constraints to solve ill-structured (wicked, chronic) problems: An healthcare example. TOCICO Theory of Constraints International Conference: 17th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: ill-defined problem, ill-structured problem, messy problem, wicked, problem, principle of hierarchal decomposition, principle of time-based dependencies, chronic problem, healthcare, recidivism, education, solution process, .

Some problems are never solved and only worsen over time no matter the efforts expended. For example, look at the high and increasing costs of healthcare, government, and education and simultaneously the poor services provided. Researchers use different terms to describe these problems thought to be quite difficult or impossible to structure and solve: wicked (Rittel, 1973); Churchman (1967), ill-defined (Reitman, 1964), ill-structured (Simon, 1973), messy (Ackoff, 1979) and chronic Goldratt, 1995). These problem types have many stakeholders (for example in healthcare, common stakeholders are government, insurance companies, medical practices, hospitals, providers, patients, etc.) each with different and conflicting goals, measures and perspectives (frames) of the problem. In this presentation, a new and different methodology to structuring and solving these intractable problems is proposed and illustrated. The approach is a combination of concepts developed by Simon, Goffman and Goldratt. Simon's concepts of bounded rationality (1979) and decomposition (1962), Goffman (1974) concept of framing and Goldratt's concepts of inherent classification (2010), inherent simplicity ((2004), and the three processes of ongoing improvement provide the foundation for structuring and solving these problem types. This new approach for structuring and solving these problems and an application to the healthcare environment is provided. Video length: 1h 6m 11s. PDF: 100 slides.

Cox III, J. F. (2020). Using the Theory of Constraints to solve ill-structured (wicked, messy) problems: An extended healthcare example. 2020 TOCICO Webinar Series. TOCICO. Hamburg, NY, Theory of Constraints International Certification Organization.

Keywords: ill-defined problem, ill-structured problem, messy problem, wicked, problem, principle of hierarchal decomposition, principle of time-based dependencies, chronic problem, healthcare, recidivism, education, solution process, .

The world is faced with massive problems today: healthcare, government and education costs are skyrocketing while services are deteriorating. These problem environments have been termed as wicked (ill-defined, ill-structured, messy, chronic and chaotic) in the literature for over fifty years with no satisfactory solution methodology available for addressing them. Some say most problem environments are wicked. How does one solve these types problems? In this webinar, a direction for a solution for solving wicked problems is proposed and illustrated using healthcare as a detailed example. Other examples such as the education system and recidivism are also discussed. This webinar is a significant expansion of the 45-minute keynote address given on the same topic at the TOCICO annual conference. Video length: 2h 20m 28s. PDF: 143 slides.

Cox III, J. F. and L. H. Boyd (2016). An examination of the academic, practitioner, TOC & our perspectives of the provider appointment scheduling system: Part 2. TOCICO Theory of Constraints International Conference: 14th Annual Worldwide Gathering of TOC Professionals, Leesburg, VA, Theory of Constraints International Certification Organization.

Keywords: healthcare, appointment scheduling, scheduling, execution, rigor vs. relevance, design science, POOGI, inherent simplicity, inherent classification,.

The problem of appointment scheduling in healthcare has been researched by several hundred academicians and practitioners for over sixty years without any viable solution being identified. There is little overlap in the research by these two groups. Academicians are primarily measured and rewarded by publishing in top tier academic journals, which generally requires theory development, sophisticated statistical analyses, or optimization techniques. In academia, the rigor of the research is of utmost importance. On the other hand, practitioners are interested in how to solve specific problems, so the relevance of the research is the primary concern. In 2012, Cox and Robinson presented a case study that solved many of the appointment scheduling problems of a large family practice clinic. Since that presentation, a literature search of the appointment scheduling area has revealed the above divide between the academic and practitioner approaches to the appointment scheduling problem. This review of the combined literature also revealed 14 major "problems" (undesirable effects or UDEs in TOC terminology). In a preliminary study presented in South Africa in 2015 these UDEs are analyzed from a TOC perspective using the three processes of ongoing improvement (POOGI): the change question sequence, buffer management, and the five focusing steps. We then use (inherently) classification (the first stage of science) to sort through the causal relationships (the third stage of science) in moving from the chaos of the problem environment to the harmony of the TOC solution environment and approach. In this research we will review those findings and present some illustrations of the scheduling solutions. We also discuss two possible approaches to bridging the academic – practitioner divide, design science and TOC as theory development, that may help TOC be accepted in top-tier academic journals. We hope the solution-development process of using the POOGI and classification of TOC will provide an approach to addressing other chronic problems and will find acceptance in top academic journals. Video length: 1h 33m 28s. PDF: 105 slides.

Cox III, J. F. and T. M. Robinson (2012). The use of TOC in a medical appointment scheduling system for family practice. TOCICO Theory of Constraints International Conference: 10th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, case study, healthcare, appointment scheduling, holistic, thinking tools, buffer management, drum, private practice, family practice, services, measures,.

> The use of TOC in healthcare is an emerging field. This presentation describes the use of the five focusing steps (5FS), throughput accounting (TA), drum-buffer-rope (DBR), buffer management (BM), the engines of harmony, and the thinking processes (TP) in a family practice organization. Many medical providers use a patient appointment scheduling system based on fixed appointment times to schedule patient flow; the use of TOC in this type of scheduling system is a new and significant area of study. The TOC tools (the TP) and BM were used to improve scheduling, execution, and patient flow by eliminating the major causes of interruptions, thus providing a smoother flow of patients to and from the provider. The attendee benefits from understanding: 1. The application of each TOC tool to the medical practice through various examples in an actual practice. 2. The use of BM to proactively improve appointment scheduling and execution systems. 3. The major causes of poor organizational performance across a medical practice. Length: 30m 43s. PDF: 45 slides.

de Kiewiet, M. (2012). Solid gains throughout an acute hospital. TOCICO Theory of Constraints International Conference: 10th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, holistic, case study, hospital, healthcare, services, change matrix, mermaid, .

> This presentation provided a blended, holistic approach to operational excellence in an acute hospital - A case study. The hospital services a population of about 260,000 residents and 5 million tourists. The presentation goal and key learning points relate to sharing practical experience of what can be gained within a year by using the implementation of a blended approach to operational excellence of an acute hospital. The key learnings are: a two-pronged approach works, involve everyone, resistance to change has a lot to do with the mermaid syndrome (taking comfort in not changing), learning to see, pathway integration, the speed of implementation is important, project management and sustained results are vital. Length: 28m 26s. PDF: 19 slides.

Ferguson, L. A. (2011). Achieving win-win-win in U.S. healthcare reform. TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, reform, change sequence questions, healthcare reform, CQS, .

> This presentation provides the case for how to achieve a win-win-win solution for all stakeholders of the U.S. healthcare system. Dr. Ferguson explains the key components of the analysis from a paper she wrote. The answers to the questions (What to change?, To what to change?, and How to cause the change?) are presented for each type of stakeholder, in addition

to how to overcome resistance to change. Professor Ferguson also explains how to improve healthcare in the world as well as an analysis that addresses all of the stakeholders of the U.S. healthcare system. Each stakeholder is addressed with respect to the questions of 'What to change?' and 'To what to change?' in the paper. With respect to the second question, a summary of any known successes of implementing TOC in healthcare in the world is shared. The question of 'How to cause the change?' is answered as well to some extent. The full answer to the third question would need to be presented in a strategy and tactics (S&T) tree written specifically for how to implement the change in the U.S. A roadmap is described in this presentation as well. Length: 51m 57s. PDF:28 slides.

Ferguson, L. A. and A. van Gelder (2010). Strategy and tactics for hospitals. TOCICO Webinar Series. TOCICO, Theory of Constraints International Certification Organization.

Keywords: healthcare, S&T tree, strategy and tactics tree, hospital,

We present the generic Strategy and Tactics tree for hospitals for how to implement TOC to improve healthcare quality, provide a more rewarding environment and improve financial performance. Then, we share experiences of implementing TOC in both public and private hospitals.

Goldratt, E. M. (2005). Success through simplicity. TOCICO Theory of Constraints International Conference: 3rd Annual Worldwide Gathering of TOC Professionals, Barcelona, Spain, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, TOC for Education, healthcare, India, China, templates, .

Eli responds to questions previously submitted by the audience. Goldratt discusses the difference between simplifying a system and identifying the inherent simplicity of a system. He discusses the use of industry templates as a means of getting the company to use the TP. He discusses movement into the services, including knowledge work. Templates have to be developed for these areas. Templates in healthcare will be vastly different from the previous 8 templates. Bill West discussed the introduction of TOC in healthcare and his six-year journey. Emergency departments (ED) were the first application; the target was to get someone into the ED and treated in 4 hours. Discharge planning was next, a simple application of the critical chain. Theater scheduling was next. The core cloud was A To run an effective healthcare system, B You must treat the patient in front of you, and D You must manage and deliver treatment of the patient in front of you. C You have to be able to treat everybody in the system. D You must operate within the finances of the system. Another venue is how you debug a huge computer system. Goldratt then discussed the market economy; China is a massive, powerful manufacturing force today, and a labor shortage is emerging; salaries went up 25% last year; China will soon be the largest consumer market. The same is happening in India. A discussion of TOC in education included using the TOC TP to solve discipline problems, using the TP to teach any content, and using TOC to manage the school better. Goldratt discusses his failure to identify how to measure individuals in a company. He thought the answer was a fully developed S&T tree, but it failed because you have to be a genius to write an S&T tree. Templates were then discussed: 1. VMI 2. Rapid Response (Zycon) 3. Distribution 4. Projects (bonuses - penalties) 5. Gain sharing (selling a product for a percent of the outcome when you do your business) 6. Availability insurance (charging for making something available to the client: spare parts.) 7. Pay

per click (you do not buy the machine; you pay for the use of the machine) 8. Guarantee throughput per shelf (valid for chains). Viable Visions support the elevation of the market, not the resources. Eli then conducted a question-and-answer session. (no slides used). Length: 1h. 53m. 45s. PDF: 92 slides.

Halaby, D. (2009). Dealing with the nursing shortage: An overview of how the Rio Grande Valley successfully employed the concepts of TOC to increase the throughput of locally trained nurses and allied health professionals. 1st Annual North American Regional TOCICO Conference, Tacoma, WA, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, hospital, nursing, scheduling, service industry,.

In 2001, 10 area hospitals, four higher education institutions, and 10 related NGOs agreed to work collaboratively to outline the process for training in nursing and allied health occupations in the Rio Grande Valley (RGV) and develop a strategic plan to increase the throughput of locally trained professionals. The effort led to the creation of the RGV Allied Health Training Alliance and the centralized clinical scheduling system. Length: 57m 47s. PDF: 31 slides.

Hudson, J., et al. (2014). Healthcare's "adaptive design" and TOC. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: adaptive design, A3, .

The argument: Several TOCICO members read MD John Kenagy's 2009 book describing "Adaptive Design" with interest. It maintains that Toyota's decisive competitive edge is sharpened mostly by their DNA that empowers supervisors as teachers and leaders and employees as problem-solvers. It recommends the scientific method of problem solving with A3, for use at healthcare's frontlines to guide and document improvement "experiments" with discipline and structure. It also advocates the why of "Ideal Patient Care" with the how of improving healthcare - one problem at a time, as close in time and place to its initial occurrence as possible. For many TOC practitioners, this approach appears to have potential conflicts with fundamental TOC principles. Our argument is that it's both feasible and advantageous to adopt Adaptive Design's attributes, while maintaining the TOC advantages. Possible counter-points are provided. The conflict is provided and can be broken by recognizing an erroneous assumption. Video length: 30m 7s. PDF: 21 slides.

Inozu, B. (2010). Injecting TOC with lean / six sigma into process improvement in healthcare. TOCICO Theory of Constraints International Conference: 8th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NV, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, TLS, lean, six sigma, hospital, emergency room, service industry, .

A new best-of-the-breed approach to combine TOC concepts and tools with lean and six sigma in healthcare is shared. This approach is used when jump-starting a new continuous process improvement program or reenergizing an existing one. Strategies and tactics to overcome resistance are also presented when introducing TOC to lean and/or six sigma cultures. Examples

are provided from interventional radiology, advanced cancer treatments, and laboratory turnaround times in emergency departments. **Length: 5. PDF: 34 slides.**

Inozu, B. (2011). Implementing constraints management with lean / six sigma: Lessons learned at Anadolu Medical Center. TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, continuous performance improvement, thinking processes, operating room, case study, Turkey, hospital, lean, six sigma, policy constraints, outpatient appointment system, service industry, TLS, Anadolu Medical Center,.

The first twelve months of deploying a continuous performance improvement program, called Super, at Anadolu Medical Center in Turkey is discussed. The 201-bed hospital has begun implementing lean and six sigma with constraints management in an integrated manner. Examples are provided from improvement project selection that incorporates the thinking processes (TP), addressing policy constraints in the outpatient appointment process, the magnetic resonance imaging (MRI) repair and maintenance preparing process, the operating room (OR) process, and the inpatient medication order process, as well as results of a pilot study on dynamic replenishment for medical supplies. **Length: 5m. PDF: 23 slides.** DVD H-1, 53 minutes

Inozu, B. (2013). How to achieve superior performance improvement by integrating constraints management with lean and six sigma: Examples from government, public services and healthcare. International Public Sector Effectiveness Conference 2013, Vilnius, Lithuania, TELE2

Keywords: government, healthcare, public service, lean, six sigma, .

It has been demonstrated that low organizational productivity stems from a variety of root causes such as poor project due date performance, prolonged lead times, de-scoped or cancelled projects, and cost and budget overruns. At the same time there are task overloads, poor coordination, severe and chronic multitasking, unclear and conflicting priorities as well as very complex processes. These problems lead to overloaded resources, burn-out and high turnover levels, causing general dissatisfaction, high stress levels, the general feeling of dissatisfaction and low morale of civil servants. Governments worldwide are beginning to see that leading management methodologies, which helped some innovative organizations develop effective solutions, can now produce the results that taxpayers are demanding. Today's leading performance improvement methodologies are Lean (a systematic approach to eliminate waste), six sigma (a rigorous, data-driven process to eliminate defects), and constraints management (a.k.a. theory of constraints – a breakthrough methodology to identify and manage a system's constraints). Proper integration of these methodologies results in a very structured, focused approach to process and performance improvement with system-level impact. Constraints management provides the missing element of where to focus improvements which is critical to maximizing the return on investment. In fact, the integration of lean and six sigma with constraints management often yields 10 to 20 times greater returns than by implementing lean and six sigma in isolation. Video length: s. PDF: slides.

Inozu, B. (2018). Key leverage points to become a high reliability organization. 2018 TOCICO Webinar Series. TOCICO. Denver, CO, Theory of Constraints International Certification Organization.

High Reliability Organization (HRO) is an effective way that organizations can respond to crisis, chaos, and adversity. HRO gives leadership, management, and all levels of an organization a way to process challenges and overcome them as a single unit. HRO can help large teams adapt to potentially threatening and time-sensitive situations while they are still developing; it has literally been a lifesaver for those trapped in a chaotic environment. Following Naval Aviation, other high-risk industries started implementing HRO such as nuclear power plants, civil aviation, including air traffic control, and firefighters. HRO is now being widely embraced by the US healthcare industry.

Inozu, B. and C. Doucette (2018). High reliability for a highly unreliable world. Theory of Constraints International Conference: 16th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NV, Theory of Constraints International Certification Organization.

Keywords: Highly reliable organization, HRO, high risk industries, safety,.

"High Reliability Organization" (HRO) is commonly used to describe organizations that avoid catastrophes in environments in which accidents might be expected. HRO describes a dynamic, interactive style of engagement that is effectively used in these situations and for operations in these environments. HRO is an effective way an organization can respond to crisis, chaos, and adversity. It gives leadership, management, and all levels of the organization a way of processing challenges and overcoming them as a single unit. HRO can help large teams adapt to potentially threatening and time-sensitive situations, where it can literally be a lifesaver in a chaotic environment. Leaders in various situations and industries—from nuclear power plants to US Navy aircraft carriers—have gained new insights into their organization's performance through HRO for over 15 years. Its implementation in healthcare recently gained momentum with the Joint Commission's endorsement of HRO as the Gold Standard in healthcare. Formed in 2008, Joint Commission Center for Transforming Healthcare is focused on transforming healthcare into "a high reliability industry by developing highly effective, durable solutions to healthcare's most critical safety and quality problems in collaboration with healthcare organizations, by disseminating the solutions widely, and by facilitating their adoption." HRO implementations of this center started in earnest in 2013. In addition, Secretary of Defense's mandate to transform the Military Healthcare System (MHS) further grew HRO implementations, following a review of safety, access, and quality in 2014. This review stated that, "The foundation for improving performance in the MHS rests on combining the concepts of an integrated healthcare system with those of high reliability organizations." Besides healthcare, High Reliability Organizing has been spreading to many industries including chemical process safety, communications, manufacturing, dams, defense industrial base, emergency services, energy, financial services, food and agriculture, government facilities, information technology, transportation systems, water and wastewater systems, railroads, school systems, wildland and urban firefighting. The HRO principles become counterintuitive in application or operation. In this presentation we will first describe the basics of HRO and the limits of logic and rationality in these environments. Then we will describe a different logic of operations developed from combined affective-cognitive thought to create a flexible and agile individual and organizational response and an adaptive program for growth and resilience with examples from healthcare and other high-risk industries. Subsequently, we will discuss, how TOC can assist in elevating organizations to become HROs. Specifically, applicability of buffer management techniques will be described for HRO implementations using TOC thinking processes framework: Why Change? What to Change? What to Change to? Video length: 45m 35s . PDF: 36 slides.

Kitabayashi, A. (2011). Operational excellence by a TOC-armed IE. TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, manufacturer, healthcare products, natural disaster, Japan, case, Omron, disaster, meaures,.

> OMRON Healthcare is known around the world for its consumer-oriented medical devices, such as blood pressure monitors and thermometers, and its factories have been showcased as success stories for the Toyota Production System (TPS). In this presentation, Atsushi Kitabayashi shows how OMRON Healthcare is reaching new heights of performance. He also discusses how OMRON Healthcare used TOC to effectively manage itself in the aftermath of the recent earthquake in Japan. Length: 28m 59s. PDF:52 slides.

Kitagaki, M. and O. Katsumi (2014). Omron Healthcare Ltd.: All for healthcare innovation by work-style innovation for all. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: supply chain, viable vision, Omron Healthcare, healthcare, TOC Excellence Award, .

> Omron is the recipient of the TOC Excellence Award and they share their journey to excellence. In more than 110 countries throughout the world, Omron Healthcare provides healthcare products that can measure virtually any indicator of lifestyle diseases. These products range from home-use devices such as blood pressure monitors, digital thermometers, and body composition monitors with scale, to professional medical equipment capable of detecting hardening of the arteries and analyzing visceral fat. In 2010, they faced the following challenges: - making continuous growth in harsh price competition in the market. - meeting the variety of each regional demand in the global market with limited resources. - breaking through the stagnant performance improvement after years of Kaizen efforts and TPS (Toyota Production Systems) efforts. Operation breakthrough by TOC and the result: Omron Healthcare started the VV in 2010 based on the consumer goods S&T template by focusing on "flow" in every aspect of its operation not only within the company but also all stakeholders in the supply chain by diligently following each box of the S&T tree. Several highlights, stated by the company, are: - R&D productivity doubled. - Almost of all categories got the No. 1 share without lowering price. - Lead time reduction from 13 weeks to 1 week. - Capacity up 60% within 6 days in TPS (Toyota Production System) line. - People motivation/collaboration up. Video length: 46m. PDF: slides.

Knight, A. (2006). Achieving mindset and behavioral change. TOCICO Theory of Constraints International Conference: 4th Annual Worldwide Gathering of TOC Professionals, Miami, FL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, behavioral change, mindset change, human relations, leadership, value-based leadership, practical visionary,.

> This lead presentation is a facilitated session on creating a mindset and behavioral change. Alex Knight gave some of his experiences and thoughts on changing mindset and behavioral change. The first thing we have to do is pick up a mirror and look at ourselves. Alex described his

professional and consulting background (Ashridge School, Goldratt Consulting, and QFI) as related to the topic. His learning from the difficult moments includes: When experiencing difficulties in mindset and behavioral change, consider the following: 1. Start by assuming the other person is right (Ask yourself: what is it that you are not hearing?); 2. Look inside yourself to discover what behavioral / mindset change you need to undertake (what is the block in my understanding that makes me think I know more than that person) first in order to help others with their change (the leader within). Understanding why that person thinks they are right can be approached in two ways: 1. Assume they are wrong and you are right and find the gap between their logic and your logic OR 2. Assume they are right (what does that mean in terms of my logic?). The best way to achieve the mindset and behavioral change in others is to start the journey with an examination of yourself. For example, one-third of the time, someone blames others for the healthcare problem. You do not have the right to blame someone else until you prove you are 'squeaky clean.' A route to achieving mindset and behavioral change is mastering the following qualities: value-based leadership and practical vision. The characteristics of each of these are discussed. Length: 39m. 19s. PDF Dead link to pdf

Knight, A. (2009). Theory of constraints: Proven beyond doubt in reality. First European TOCICO Regional Conference, Amsterdam, The Netherlands, Theory of Constraints International Certification Organization.

Keywords: healthcare, United Kingdom, healthcare evaporating cloud, hospitals, healthcare supply chain, thinking processes, service industry,.

Alex Knight describes his first meeting with Dr. Eli Goldratt at a senior-level seminar. He then describes his experiences in different environments (healthcare, legal, and universities). TOC (Eli) uses the question, "Why?" very effectively. Managing complex systems like healthcare involves managing health and social environment systems. What we did to improve the system: We took what the theory (related to production) said and did it! The chain of activities in the health and social care system is explained. The patients that stay the longest in any part of the system are not the sickest, but the patients who had the most delays in the process. The evaporating healthcare cloud is presented and discussed. The cloud is (A) Run an effective healthcare system; (B) Medics/managers are required to give the best (appropriate) medical treatment to those they are now treating; (D) Medics/ managers should act only upon medical considerations; (C) Medics/managers are required to treat all patients in a more timely manner; (D') Medics/managers should act more and more within budget considerations. Medical technology is improving rapidly, and as it improves, the costs of buying and operating new equipment are increasing significantly. The costs of running a hospital are defined and discussed. The truly variable cost is about 20%, while 60-70% of hospital costs are related to medical staffing. If you try to save money, then you reduce Throughput. Achieving a breakthrough in healthcare consists of five elements: achieving consensus, operational breakthroughs, finance and measures, market breakthroughs and sustainability. Length: 42m 47s. PDF: 54 slides.

Knight, A. (2011). Fifteen year progress report on achieving breakthroughs in health and social care using the theory of constraints. TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, hospital, emergency care, discharge management, outpatient management, elective surgery, social care, service industry,.

This presentation reviews progress to date in the application of the theory of constraints (TOC) to achieving a breakthrough in performance in health and social care systems. These developments address how to improve emergency care, discharge management, out-patient management, elective surgery management and how to turn improvements in the operations into a decisive competitive edge. The presentation assesses progress to date, current limitations, together with future opportunities and challenges. Alex Knight also reflects on lessons learned in applying TOC to a new industry. Length: 40m 24s. PDF: 30 slides.

Knight, A. (2012). TOC in healthcare: Broadening the shoulders of our giant. TOCICO Theory of Constraints International Conference: 10th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, service operations, production management, project management, healthcare industry, service industry,.

Healthcare is accelerating towards a crisis of affordability. The likely outcome is deterioration in both access and quality of care. It explains how and why a TOC-focused approach is the only option. This presentation establishes 1. The conceptual similarities and differences between what was so dramatically improved by TOC production and project management approaches and the impact of these approaches on the healthcare environment. 2. The broader conditions under which TOC has been successful in healthcare, its applications and the boundaries of its applicability. 3. New knowledge to accelerate the impact of TOC in healthcare worldwide is the core of the presentation. Length: 57 minutes. PDF: 18 slides.

Knight, A. (2013). Achieving a breakthrough in healthcare. TOCICO Webinar Series. TOCICO, Theory of Constraints International Certification Organization.

Keywords: healthcare, performance criteria,

The presentation outline includes: Understanding the core problem in healthcare systems; criteria against which any solution should be judged; the theory of constraints (TOC); and bring pride and joy back into the hearts of healthcare workers. The core problem relates to costs rising much faster than revenues throughout the world. In this predicament, the ability to do more with current resources answers a significant need. Any solution must simultaneously: Increase the quality and timeliness of care; improve the affordability of care; without simply asking staff to work harder; and bring pride and joy back into the heart of everyone working in the health system. The theory of constraints (TOC) provides the basis of a simultaneous breakthrough in the quality and timeliness of care and the financial performance of the healthcare system. The four pillars of TOC (inherent simplicity, every conflict can be removed; people are good; and never say I know) and the four concepts of flow are discussed with respect to healthcare. Typical results of acute, community, children's, mental health hospitals and in the community setting are: Length of stay reductions of 20% - 50%; more patients treated within current resources; improved quality of care; improved staff morale; and improved access to care. Additional detailed results are provided. Alex explains an example showing the impact of a reduction on length of stay on number of patients serviced and throughput.

Knight, A. (2013). The development of TOC applications for the service sector. TOCICO Theory of Constraints International Conference: 11th Annual Worldwide Gathering of TOC Professionals, Bad Nauheim, Germany, Theory of Constraints International Certification Organization.

Keywords: healthcare, services, hospitals, service industry, .

This presentation highlights some of the core developments over the last thirty years and in particular focuses on areas where modification of the standard applications was not sufficient and a different approach was required (one that remains firmly rooted in the underpinning theory). In each instance Alex Knight demonstrates that the breakthrough has come purely from the derivation of the underlying theory and has never required the addition or integration with other theories. In particular, Alex highlights the following points: 1. There are many examples where the assumptions upon which the generic TOC applications for manufacturing were built are not valid in the service environment. As an example, the concept of choking the release to help identify the constraint is a core first step in all of the operations, project and distribution / supply chain environments and yet this is often simply not a valid option in most services. The implications of this are far reaching and require a rethink in the development and adaptation of the TOC applications for the service sector. 2. The distinction between an operations and project environment are also not always valid in a service environment. Alex exposes a number of examples where 'both and neither' of the conditions can exist. As a result, this basis of distinction is no longer really very helpful. Alternative criteria for establishing the position and size of buffers are required. 3. The whole concept of developing a schedule for resources to follow is often redundant. Demand emerges alongside frequent and major changes in both mix and volumes in extremely short time scales. Creating sufficient protective capacity at very short notice becomes a key issue. Establishing the processes for this require a different perspective to the traditional applications. Some of the lessons learned in this environment may have implications for changing the way schedules are developed for other environments. 4. It is inferred from standard TOC processes and the transformational strategy and tactics (S&T) trees that initiating the analysis and eradication of underlying causes of delay should be embarked upon once the system is being guided by buffer management. In many of these service environments, it is more appropriate to initiate this analysis and supporting actions before any attempt to introduce buffer management. The process of on-going improvement (POOGI) is more of a driving force than DBR (the TOC production/ operations application) or CCPM (the TOC project management application). 5. In many service environments, the un-desirable effect (UDE) of 'too early' is just as valid as 'too late'. As a result, there has been a need to invent a new buffer system and associated algorithms. 6. Exposing excess capacity can often happen in a matter of hours, days or weeks. This means that the synchronization of sales efforts to increase sales is very important. With staffing as a major part of the operating expense (OE) of many service industries, it is very tempting to cut OE the moment excess capacity has been revealed. In some industries, the very first steps have to be to plan and start the processes to increase sales even before the decisive competitive edge (DCE) has been achieved. 7. Many service industries have high levels of front-line professional staff who must be bought in to the approach. The number of people who can threaten the implementation's success if they do not believe in it is typically a magnitude of order higher. Many are very skeptical about anything to do with management. This has major implications for the approach and intensity of the buy-in that is required. 8. The customer is often an active participant in the delivery of the service and cannot be treated like a piece of work-in-progress. Also, exploitation of the constraint to maximize throughput per constraint minute may be inappropriate. We cannot reduce the lead time for someone to die to free up capacity. 9. Changing the mind-set of a TOC professional to

work in the service industry has often taken significantly longer than starting with new recruits who have no knowledge of TOC. Video length: 1h 21m 43s. PDF: 37 slides.

Knight, A. (2014). Improving global healthcare with the theory of constraints. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: keynote address, healthcare, change questions, core problem, solution criteria, S&T tree, case study, measures,.

Healthcare is a fundamental necessity of all societies. Yet most countries struggle with increasing demand and costs. Medicine continues to advance at a rate faster than we can afford to pay for. The management of healthcare delivery systems has not kept pace; we manage by instinct and not evidence. Fire-fighting endless crises and poor patient safety have become the norm. This presentation will follow the format of answering the following questions: 1. How can we get agreement on the need to change? This will start with a short summary of the trends in expenditure on healthcare across the globe. 2. What should we change? From this research I will derive the common core cloud and how it is playing out in different countries. 3. What to change to? I will then highlight the criteria for any solution, provide an insight into why TOC is a valid contender above many others for helping to resolve these issues and how alone it will be insufficient. I will then show the proposed direction of the solution through the high levels of a healthcare S&T tree and the results that have been achieved. This will be augmented by the personal story of a leading CEO in the NHS in the UK using the approach for over twenty years and the spectacular results that have been achieved in the UK and elsewhere. Video length: 55m 56s. PDF: 80 slides.

Knight, A. (2017). Developing TOC breakthrough solutions: Health and social care as an example. 2017 TOCICO Webinar Series. E. Schragenheim. Denver, CO, Theory of Constraints International Certification Organization.

Keywords: healthcare, social care,

This is a live interview of Alex Knight by Eli Schragenheim on the topic of "how-to" develop a TOC breakthrough solution for an industry. Healthcare will form an example of the process but the webinar will not just be about healthcare. The discussion will cover what is necessary and sufficient to create a breakthrough solution and how to bring it to market. This will include new insights into his book 'Pride and Joy', the development of a strategy and tactics tree for an industry, the development of supporting software and the importance of educational materials. Alex was first introduced to the theory of constraints when he met Dr Goldratt at a three-day workshop in 1983. That meeting was the start of a long mentorship and friendship lasting up to Dr Goldratt’s untimely passing. Over the last thirty years Alex has taken the TOC principles into a number of different industries, including financial services, insurance, tourism, IT, manufacturing and healthcare. Throughout this period Alex has written a number of articles in both business magazines and academic journals. He has also taught on many leadership and management development programs.

Knight, A., et al. (2003). Making TOC the main way of managing the health system (pdf). TOCICO Theory of Constraints International Conference: 1st Annual Worldwide Gathering of TOC Professionals, Cambridge, England, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, hospital, emergency department, UK, case studies, UK,.

> This presentation provided the health context: UK healthcare is the largest employer in Europe with a workforce of over 1.3 million people, many of whom operate as highly qualified front-line staff (doctors and nurses); the largest London teaching hospital employs more staff than, for example, the whole of Hewlett Packard Europe; in a typical teaching hospital, there are more than 400,000 visits to outpatient clinics per year; 60,000 inpatients; 25,000 operations and 75,000 attendances to the accident and emergency department; the 'Number One' pledge of the UK government at the last election was to deliver a breakthrough in performance in healthcare; in the last three years, the national budget has been increased by over 30% and the number of patients treated has increased by 3.7%; there are backlogs of between 9 and 18 months for operations; and many chief executive / senior management posts remain unfilled. The chain of activities in healthcare includes inputs from ambulances, general practitioner referrals and elective surgery patients to admissions and emergency, acute, community hospital, residential and nursing care, and social and healthcare activities. Buffers were placed in the emergency department to identify and eliminate problems through weekly multi-team one-hour buffer management meetings. Results include: hospital '1' treated over 95% of patients in less than 4 hours; hospital '2' achieved 100% performance at 4 hours; therefore, it shifted its goal to three hours and achieved over 95%. Buffer management has been implemented across the full system to identify and eliminate problems, thus reducing task time averages and standard deviations associated with patient care. **Video length: No video. PDF: slides.**

Knight, A., et al. (2004). Making TOC the main way - The health and social care environment. TOCICO Theory of Constraints International Conference: 2nd Annual Worldwide Gathering of TOC Professionals, Miami, FL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, services, healthcare, service industry, elective surgeries, planning vs. execution, uncertainty,.

> This paper summarizes the lessons learned so far in opening up the health industry to TOC and provides the details of our latest work in reducing the queues for elective operations. Key learning points include 1. Dealing with current policies to challenge and what to leave to the future. 2. A better understanding of the critical distinction between planning and execution. 3. Reducing uncertainty by limiting the horizon of the planning. Benefits to attendees: 1. Exposure to a challenging project in the middle: being able to participate in dilemmas that are active now. 2. Getting ideas that could work in other service organizations. 3. Widening one's perception of using TOC in non-profit organizations. Length: 41m. 25s. PDF: 40 slides.

Knight, A. and R. Stratton (2010). Managing patient flow using time buffers. TOCICO Theory of Constraints International Conference: 8th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NV, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, time buffers, control function, healthcare, social care, kanban,.

This presentation demonstrated how the common control functions underpinning simplified drum buffer rope (SDBR) and critical chain project management (CCPM) applications have been successfully applied to managing patient flow across health and social care. The presentation showed how this approach had been practically delivered, together with an assessment of the current limitations. The presentation concludes by using the control functions to explain why attempts to use kanban control in the management of patient flow have not proved to be fruitful. Length: 1h 10m 5s. PDF: 40 slides.

Knight, A. and B. West (2014). Level 1 basics workshop: Healthcare: Applying TOC in healthcare-The practical applications. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: healthcare, work shop, focus, priority,.

In this presentation, we: 1. Demonstrate the core TOC-based application behind several health environments and show the common underlying methodology used. 2. Demonstrate how to establish the answer to the two prime questions: a. Of all the patients I could treat next, which ones should I treat next? b. Of all the areas I could improve, which area(s) will give me the greatest breakthrough in performance? Video length: 1 h 29m 42s. PDF: 46 slides.

Knight, A. and B. West (2014). Level 2 basics workshop: Healthcare: Achieving ongoing improvement-The importance of analysis and the scientific approach. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: healthcare, work shop, strategy and tactics tree, dice game simulator, implementation,.

In this session, we will: 1. Highlight several key assumptions in the overall strategy and tactics tree for healthcare. 2. Demonstrate how to expose, challenge and upgrade these key assumptions using the dice game and dice game simulators. 3. Introduce our new healthcare simulator and some of the early learning. 4. Summarize the key steps to follow when starting an implementation. Video length: 1h 19m 50s. PDF: 42 slides.

Knight, A. and B. West (2014). Level 3 basics workshop: Healthcare: Gaining agreement to implement TOC in healthcare-The practical approaches to stakeholder engagement in a healthcare environment. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: healthcare, work shop, hospital, implementation, .

In this session, we will: 1. Explain how to introduce this approach to a new hospital or wider health system. 2. Talk through the do's and don't's of working in this area. 3. Share the experiences of the most experienced CEO in the world of implementing these ideas. 4. Try and answer any unanswered questions throughout the three workshops. Video length:1h 1m 18s PDF: 19 slides.

Lambert, C. and A. Nestsiarovich (2018). Core conflicts in bipolar disorder mental health care. Theory of Constraints International Conference: 16th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NV, Theory of Constraints International Certification Organization.

Keywords: bipolar disorder, change matrix, thinking processes, mental health, healthcare,.

> In partnership with the National Alliance on Mental Illness (NAMI) Montana, NAMI New Mexico, and NAMI Westside Los Angeles, and funded by a $2.4M Patient Centered Outcomes Research Institute (PCORI) award, we conducted focus groups with individuals with bipolar disorder as well as family members around the central theme, "What do you wish you had known in advance or over the course of treatment for bipolar disorder?". The objective of this study was to engage with our patient partners to understand the challenges faced in managing bipolar disorder, to elicit questions of concern to patients, and to propose models that highlight root causes where limited resources can be deployed to achieve the highest impact. Our NAMI patient partners directly participated in building models with the focus group data. We used the Theory of Constraints change matrix, evaporating cloud, communication current reality tree and future reality tree tools to both diagnose systemic challenges and pose directions towards solutions. Video length: 44m 9s. PDF: 39 slides.

Mabin, V. (2019). Using TOC to improve the delivery of chemotherapy for cancer treatments in a large public hospital. TOCICO Theory of Constraints International Conference: 17th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: healthcare, hospital, thinking processes, CRT, EC, FRT, NBR, PRT, patient wait times, staff overtime, case study,.

> Public health care providers typically struggle with the need to meet demand for services, within a limited budget. This paper describes an analysis of a large public hospital, using the Theory of Constraints (TOC) comprehensive set of mapping tools to logically represent a problematic situation and investigate options for resolution. Based on the symptoms present, root causes and conflicts were identified, along with potential solutions. Further TOC tools were used to check for possible side effects of the solution, and identify obstacles that might impede successful implementation. Based on the TOC analysis, a trial project was implemented with significant benefits for two departments. Outcomes included dramatically reduced patient wait times and staff overtime, increased patient satisfaction, increased efficiencies, smoothed workload, and improved staff morale and retention, while maintaining patient safety and integrity of treatment, and staying within defined cost parameters. Video length: 32m 5s. PDF: 34 slides.

Mabin, V., et al. (2020). How TOC dramatically improved the delivery of chemotherapy treatments in a large public hospital. TOCICO Theory of Constraints International Virtual Conference: 18th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: healthcare, chemotherapy, case study, thinking processes, hospital, services,.

> Public health care providers typically struggle with the need to meet demand for services, within a limited budget. This paper describes an analysis of a large public hospital, using the Theory of

Constraints' (TOC) comprehensive set of mapping tools to logically represent a problematic situation and investigate options for resolution. Based on the symptoms present, root causes and conflicts were identified, along with potential solutions. Further TOC tools were used to check for possible side effects of the solution, and identify obstacles that might impede successful implementation. Based on the TOC analysis, a trial project was implemented with significant benefits for two departments. Outcomes included dramatically reduced patient wait times and staff overtime, increased patient satisfaction, increased efficiencies, smoothed workload, and improved staff morale and retention, while maintaining patient safety and integrity of treatment, and staying within defined cost parameters. Video length: 50:32. PDF: 38 slides.

Masuda, K., et al. (2013). Holistic management in a pharmaceutical company. TOCICO Theory of Constraints International Conference: 11th Annual Worldwide Gathering of TOC Professionals, Bad Nauheim, Germany, Theory of Constraints International Certification Organization.

Keywords: healthcare, pharmaceutical industry, holistic, project management, replenishment, critical chain, R&D projects, research, supply chain, case study, measures,.

It takes about 10-15 years to launch the new drug medicines after pharmaceutical companies discover the promising compounds. This means that pharmaceutical companies tend to accept the dilemma of not releasing new products immediately even though there are promising active agents at hand. Pharmaceutical companies also tend to have a large stock of inventory because the shortage of products supporting good health is not permitted. Senju Pharmaceutical Co., Ltd. (based in Japan) is faced with the same problems as other drug companies. Since 2012, we have started a holistic management with TOC to pursue 'harmony' and to build a 'well-muscled' operation. Through the company-wide TOC implementation, timelines of R&D projects were shortened aggressively, and delays of the schedule were recovered in close coordination and cooperation. The stocks of raw materials and products were kept at a low level by making win-win relationships with partners. Work itself became a learning environment and is helping our staff grow rapidly. The staff within and outside the company has begun to perform in harmony with each other. Although our challenge has just begun, we would like to share small successes which would lead to a large change in the pharmaceutical industry by this holistic approach. Video length: 31m 7s. PDF: 27 slides.

Pass, S. (2013). Enhancing the performance of public healthcare systems: Achieving more with existing resources. International Public Sector Effectiveness Conference 2013, Vilnius, Lithuania, TELE2

Keywords: healthcare, hospital, operating room, emergency room, public health, healthcare,.

Public healthcare systems experience difficulties in dealing with ever increasing demand, higher life expectancy and the shrinking budgets. Increased the throughput (20-40%) with concurrent reduction in lead times (30-50%) were achieved in Israeli hospitals and clinics by focused implementation of effective managerial concepts and tools. Our experience shows that the performance of Emergency Rooms (ERs), Operating Rooms (ORs), laboratories and imaging clinics as well as the synchronization of ERs and Internal Medicine wards can be significantly enhanced, using the existing resources. It became evident that reduction of lead times (e.g. the length of stay in the internal medicine wards) and the reduction of direct expenses does not

endanger the quality of medical care – it is actually improved. This is especially true since the reduction in lead times and expenses is achieved by cutting wasted times as well as unnecessary hospitalizations, consultations and tests. The implementation aspect is obvious very important and it will be deliberated along with means for assuring the long-range sustainability of the improvement steps. Dealing with the complexity of the full-scale hospital is discussed. How can we better synchronize the in-coming stream of patients (from the ER to the internal medicine wards) with the release of patients from wards? How do we eliminate the wasted time of physicians and nurses? The complete kit concept in ORs, imaging clinics, admission processes and requests for expert opinion is described. Time-based control over the progress of the treatment plan is described. How do we eliminate unnecessary (and risky) waiting times of patients? Video length: 54m 59s. PDF: 48 slides.

Pass, S. and B. Ronen (2011). Throughput enhancement in operating rooms: Doing more with existing resources. TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, operating room, hospital, case studies, focused management, five focusing steps, service industry, measures, .

The presentation describes the implementation of theory of constraints (TOC) and focused management principles to the management of operating rooms in hospitals and clinics in order to achieve enhanced throughput and quality along with reduced lead times. The presentation objectives are: 1. To present case studies that demonstrate the use of simple and practical tools to significantly increase throughput, reduce lead time and enhance quality in operating rooms, 2. To present the implementation process of TOC and focused management techniques, philosophy and tools in operating rooms. Material covered: a) The implementation of TOC focusing steps and focused management tools for increasing throughput, enhancing quality, and reducing lead time; b) The implementation of the complete kit concept in operating rooms; c) Application of strategic concepts and tools to improve operating rooms' value; d) To present cases in which the methodology was applied resulting in double digit throughput improvement, while enhancing clinical quality. **Length: 5m.** PDF: 56 slides.

Reid, R., et al. (2005). Applying the TOC thinking processes in a healthcare organization: A case study. TOCICO Theory of Constraints International Conference: 3rd Annual Worldwide Gathering of TOC Professionals, Barcelona, Spain, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, case study, thinking processes, Planned Parenthood, UDEs,.

James Holt made the presentation for Richard Reed. He added his comments to the overheads. The purposes of this presentation are to provide a framework for the analysis of a system; the background of the organization being studied; what to change: the UDEs, conflict clouds, core conflict cloud (CCC) and current reality tree (CRT); to what to change, the tabular analysis, strategic injection (Inj.) and future reality tree (FRT) and some management implications. The case study is the Planned Parenthood of New Mexico (PPNM), which performs medical services including annual exams, sexually transmitted diseases (STD) testing and treatment, pregnancy testing, abortion, tubal ligation, and vasectomy, etc. to 21,943 patients in 2004. They also provide educational services. The presentation focuses on what to change and what to change to. The goal and four necessary conditions (quality medical services, safe and secure work

environment, remaining financially solvent and maintaining PPFA accreditation) are discussed. The prerequisites for each requirement are provided. UDEs include: long wait times for some patients; clinic financial viability is threatened; many personnel (clinicians, support staff and clinic managers) are highly stressed; clinic staff turnover is higher than desired; some patients leave the clinics dissatisfied, and the physical appearance of some clinic facilities is shabby. The storylines for the first five UDEs were converted to evaporating clouds (ECs) with assumptions and then to a core conflict cloud with assumptions. The CRT is provided. Injections to the core conflict cloud are provided. James provided his assumptions: There is no way to improve the patient per-hour rate; we cannot improve the patient show-up rate; the quality of service is equal to the time with the doctor; there is nothing we can do to improve our processes. Richard's two strategic injections are: The PPNM clinics' managers and clinicians align their personal as well as their professional goals with the new overall clinic goal of a balanced approach of delivering quality medical services while maintaining financial viability; and The PPNM clinics have a new appointment scheduling system that satisfies most needs of managers, clinicians, support staff, and patients alike. Length: 33m. 59s. PDF: 30 slides.

Richards, R. and H. Robinson (2010). Critical chain: Short-duration tasks. TOCICO Theory of Constraints International Conference: 8th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NV, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, short-duration task times, task times, critical chain, project management, healthcare, manufacturing,

This presentation introduces the issues and solutions of short-duration-task critical chain project management (CCPM). Short-duration-task CCPM deals with projects in which a significant portion of the activities have minutes or hours and where status updates are needed on sub-day intervals. In addition, how to deal with the injection of new tasks or whole projects is addressed. Application areas include certain healthcare and manufacturing applications. Length: 31m 56s. PDF: 12 slides.

Robinson, H., et al. (2014). Taming the chaos in the annual capital budgeting process with multi-project critical chain. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.
Keywords: construction, case study, project management, critical chain, case study, engineering, healthcare,.

St. Alexius Medical Center is over 100 years old, but you would not be able to tell from touring its facilities. They spend millions in an annual capital program to keep the buildings in great condition. In addition, as the health services offered changes to mirror the changing and expanding needs of the served population, it has been necessary to reconfigure and add to the buildings accordingly. The annual construction budget has been growing over the last several years, but contractors operate in one of the tightest labor markets in the country. As a result, projects had been taking longer and longer to complete, due dates were notoriously unreliable, and more hospital beds were out of commission at any given time. The pressure to start more projects before others were complete was intense. This situation, in turn, made it very difficult to maintain any discipline over the annual capital budgeting process as committed funds would be re-directed in mid-project to accommodate emergent needs. The case study explores how CCPM was applied in an environment where almost none of the resources were owned yet were

managed as an aggregated resource pool across several general and sub-contractor teams. Video length: 30m. PDF: 44 slides.

Ronen, B., et al. (2014). The three-one-one focused value creation model for public and private hospitals. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: value creation, model, healthcare, hospital, .

The presentation describes a focused model that aims at significantly enhancing the value of hospitals, i.e., improving their performance. The managerial environment of hospitals is very complex mainly because there are couplings and dependencies among many different departments and units. One approach to hospital management harnesses CCPM for managing fluctuations. Other managerial models propose treating every unit independently. In the first approach, we may end up with a complex model, and the other models may result in local optimizations. Based on our experience and analysis, we suggest that during every performance improvement project in a hospital, complex as it is, one should focus on improving mainly three+one+one units of the hospital. Video length: 31m 28s. PDF: 31 slides.

Roth, J. (2021). Addiction and the theory of constraints. TOCICO Theory of Constraints International Virtual Conference: 19th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: addiction, denial, systemic disease, intervention, recovery, boundaries,.

Why Change? Addiction continues to be considered a disease of the individual in many healthcare and corporate settings. Denial of such disease may create a powerful constraint in the organization. This denial is not limited to the individual who most immediately suffers from the disease. Members of the organization who report to the impaired executive may become part of the dysfunctional constraint in their attempts to fix, manage and control the disease process while the impaired executive is covered with ongoing denial of the disease. Indeed, the ability of these members to cover for the impairment may be highly valued both by the impaired executive and the organization. What to Change? Recognition of addiction as a family and systemic disease may be essential to identifying the constraint as an organizational dysfunction, which may be usefully addressed by engaging both the impaired executive and the system which has sustained the impairment in the process of organizational recovery. What to Change To? Therefore, recovery may involve addressing the dysfunction of the impaired executive and the structures in the organization that promote the process of fixing, managing and controlling the dysfunction of others. If these structures are not addressed, the system is likely to fill the vacuum left by a recovering executive with another impaired C-suite executive. This replacement does not necessarily duplicate the exact impairment that has been explicitly expressed. For example, an organizational culture that supports the use of alcohol to maintain its connection to its client network may turn a blind eye to an alcoholic executive. This executive invariably uses co-workers and subordinates to minimize the damage resulting from the dysfunctional use of alcohol. Intervention in the organizational culture engages the whole system in an open examination of the upside and downsides of maintaining the executive's impairment and the upsides and downsides of using alcohol to maintain its client network. How to Cause and Implement the Change? Intervention is often misunderstood to be directed only toward

changing the behavior of the explicitly impaired member of the organization. This misunderstanding may result in scapegoating or punishing the impaired member while leaving the organizational dysfunction intact. In particular, an ongoing culture that views its use of alcohol as essential to its business is likely to attract and enable the dysfunctional use of alcohol in its organizational structure. These dynamics are not limited to the dysfunctional use of alcohol. Similar dynamics may be operating in the dysfunctional use of sexual relationships, particularly when these relationships cross lines of authority. While sexual relationships between consenting adults in the same organization who are not in an authority relationship may complicate the workplace environment, such relationships may be manageable when transparency does not result in enlisting others in fixing, managing and controlling the feelings of others about such a relationship. When sexual relationships are practiced across lines of authority, raising questions about the realistic ability of both parties to consent, giving the power differential truly, the resultant impulse to hide the relationship generates a dynamic similar to that found for the executive impaired by using alcohol. Finally, the constraints imposed by the dysfunctional use of alcohol or sexual relationships may also be found in the dysfunctional uses of other drugs, both legal and illegal, money, such as gambling, food, such as overeating, purging or restricting, among other forms of compulsive behavior. The sensitivity of the organizational consultant to discovering such constraints, understanding them as systemic issues rather than locating them exclusively in an individual, and framing interventions designed to allow the entire system to flourish is vital to the consultant's success in supporting recovery from the constraint. Length: 12m 27s. PDF: 20. Q&A Length: 44m 2s.

Round, M. and A. Barnard (2016). Anecdotes and anxiety: In search of logical understanding in the nutrition industry. TOCICO Theory of Constraints International Conference: 14th Annual Worldwide Gathering of TOC Professionals, Leesburg, VA, Theory of Constraints International Certification Organization.

Keywords: education, change, fear, paradigm, logic, health, nutrition, change matrix cloud, .

The presentation will analyze the state of the nutrition industry relative to unsustainable healthcare costs and increasing disease rates and how mounting evidence threatening to overthrow existing nutrition paradigms clashes with the status quo. The change-matrix cloud will be used to understand apparent irrational behavior. The works of Thomas Kuhn will be used as a model to understand how paradigms shift – or not, and how a lack of scientific rigor can be the driving cause of fear – not of change, but of uncertainty. New insights into the “System A / System B” distinction will be explored, and how “blame” can be an acknowledgment of “cause-effect” reversal. A “Little Logic Book” will accompany the presentation, going into great logical detail on the history of the nutrition movement, the operation of the body and the proper nutrition necessary for that operation (and any accompanying boundary conditions), and the causal connection between improper nutrition and burgeoning diseases. Video length: 1h 59s. PDF: 70 slides.

Sandford, C. (2021). COVID-19 vaccinations using the five focusing steps of TOC. TOCICO Theory of Constraints International Virtual Conference: 19th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: The Goal, constraints, healthcare, covid, five focusing steps, throughput, COVID, vaccinations, vaccine,.

In late 2019, news stories about a new disease out of Wuhan, China, began to circulate. By March 2020, a pandemic had been declared, and within a week, many parts of the United States and the world had been placed on lockdown. For the year, we watched as tens of millions became infected worldwide with the novel coronavirus, with over 3 million dead of the new COVID-19 disease. At the same time, scientists around the world were working at unprecedented speeds to develop a vaccine. By the end of 2020, the first of several vaccines had been authorized for use, promising over 95% effectiveness in combating the disease. In the United States, one of the fortunate countries to obtain a significant amount of vaccines, a significant challenge quickly became apparent: How to vaccinate more than 200 million people. To put this challenge into perspective, less than 100 million adults in the USA receive the annual influenza vaccine each year, which still puts a strain on the healthcare system as people rush to get vaccinated. Adding millions of vaccine doses for COVID was nearly impossible for many healthcare organizations. The problem became even more challenging due to supply chain difficulties, weather disruptions, a patchwork of difficult-to-understand and ever-changing eligibility criteria, and political machinations that resulted in lackluster demand in certain demographics within the country. For Tiburcio Vasquez Health Center (TVHC), a small community health center in the Bay Area of California, the COVID vaccine initiative became a life-and-death case study in Constraint Management. Using the Five Focusing Steps, first made famous by Eli Goldratt in his best-selling business novel, "The Goal," TVHC provided over 50,000 vaccine doses in just 90 days, becoming one of the first organizations to begin vaccinations in Alameda County back in January 2021. In this presentation, you will hear how the Tiburcio Vasquez vaccine team used the Theory of Constraints to 1. Identify the Constraint that limited how many vaccine doses could be administered (not to be confused with the many bottlenecks that had to be overcome) 2. Exploit the Constraint to ensure vaccination resources were never idle. 3. Subordinate Everything Else to the Constraint to deliver a constant stream of patients and doses to vaccinators. 4. Elevate the Constraint to enable more vaccinators to administer doses. 5. Prevent Inertia from Becoming the Constraint when supply and capacity become greater than demand. In this textbook use case of the fundamentals that Eli Goldratt created in "The Goal" to allow organizations to produce more throughput, the audience will see and hear how the Theory of Constraints can be applied to any situation, why it is common sense to try (though not always common practice), and how powerful the results of TOC initiatives can be. Length: 18m 59s. PDF: 9. Q&A Length: 31m 34s.

Scheinkopf, L. (2012). Hyde Park: Standing on the shoulders of giants. TOCICO Theory of Constraints International Conference: 10th Annual Worldwide Gathering of TOC Professionals, Chicago, Il, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, SOSG process, DBR, CCPM, time buffers, touch time,.

The standing on the shoulders of giants process (developed by Eli Goldratt) is discussed in detail. The first necessary condition is that you care enough about the subject to really put out the effort to use this process. Once you identify the subject then next learn as much as you can of the subject and what is going well and how much is not covered. Recognize the good that is there. Recognize what else is left to work on. Third, really understand what has been done. Fourth, identify the conceptual difference of what exists for the initial environment and the new environment. Fifth, what is the wrong assumption that exists in the new environment and the initial environment. What is the difference in the two environments that causes the solution to the old environment not to work in the new environment. Sixth, analyze and study this wrong

assumption and how the solution must be modified to accommodate this change in environment. You must conceptualize the solution and broaden the solution. The steps are more iterative than linear. You learn from one step then have to move to a previous step to expand your understanding. Lisa discusses her journey of using this process on her research with Eli Goldratt, Yuji Kiri, and Amir Schragenheim to study linear touch time. Philip Marris ponders why we have not formed teams of experts to move knowledge forward in a given topic area. The discussion continues on the application of the SOSG process not to TOC but to vastly different areas: healthcare, government, etc. DVD xx, 29 minutes Length: 32m 44s. PDF: 29 slides.

Sierraalta, M. C. (2015). Transformation of the flow of patient-centered care in the emergency room. TOCICO Theory of Constraints International Conference: 13th Annual Worldwide Gathering of TOC Professionals, Cape Town, SA, Theory of Constraints International Certification Organization.

Keywords: healthcare, emergency department, buffered flow time, buffers, buffer management, measures, notes,.

Healthcare systems appear complex. Each patient is different and requires the efforts of many different resources. The traditional response to this apparent complexity is to divide the system into parts and manage and measure each part separately to improve the whole. This approach is only successful when the number of variables is relatively predictable and small, which is not the case in health systems. The TOC solution is based on the belief that inherent simplicity exists in any goal-oriented flow system: only a few places have the power to affect the rate of output/performance – the system's constraint(s). The methodology allows focusing on these constraints by tackling the waiting times in the emergency department with the patient at the center of decision-making. By establishing a buffered flow time target for the system, with a traffic light color system, we create the visual awareness of delays and blockages to flow in order to prioritize management interventions. Video length: 47m 22s. PDF: 12 slides.

Sirias, D. and G. Wadhwa (2021). Reflections on the use of TOC to manage healthcare clinics. TOCICO Theory of Constraints International Virtual Conference: 19th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: healthcare, clinics, training, 5FS, DBR, buffers,.

Clinics are an important part of the healthcare systems in countries worldwide. However, there are many challenges administrators face to provide excellent quality at a reasonable cost, especially for not-for-profit clinics. One of the major issues clinics face is the lack of well-trained personnel to design and manage an efficient and effective system. With that in mind, we will present a "curriculum" designed to support the generic structure of how clinics are organized, with content targeted to the different functions of the clinics. We believe this curriculum can be attractive to practitioners who want to train their personnel and consultants who want to provide their services to clinicians. Length: 30m. PDF: 12. Q&A .Length: 26m 44s.

Smits, P. (2009). Using critical chain project management to drive innovation in a general hospital. First European TOCICO Regional Conference, Amsterdam, The Netherlands, Theory of Constraints International Certification Organization.

Keywords: healthcare, hospital, critical chain, project management, innovation, service industry, .

> This presentation is about managing a 600-bed general hospital in The Netherlands on a day-to-day basis which is enough of a challenge as is. On top, in early 2008, the Maasstad Ziekenhuis hospital (www.maasstadziekenhuis.nl) turned out to have no less than 180 active projects! Active may be a bit of an overstatement since some projects were well planned and managed; however, quite a few were unclear and often struggling or even dormant. In fact, we were facing all the well-known undesirable effects of project management: lead times of projects were long (often > 1 year), due date performance was poor (if a clear due date was defined at all), and task and project priorities were unclear. Having viewed Eli Goldratt's webcast on critical chain project management (CCPM), Maasstad Ziekenhuis – in cooperation with TOC Resultants (www.toc-resultants.com), decided to implement project management basics and CCPM on top of that. Today, the hospital board is actively involved in selecting, planning and monitoring the execution of supra-departmental projects with the following results: the number of concurrent projects was reduced by 40%; average project lead time was reduced from > 1 year to < 8 months; and > 90 % of projects are finished on time, within scope and budget. Furthermore, we focus on securing our organization's CCPM knowledge and processes and rolling CCPM out to intra-departmental projects. This initiative should be finished by the end of 2009. Length: 31m 20s. PDF: 26 slides.

Soejima, C. (2014). Enterprise-wide promotion framework for CCPM implementation in NTT Data. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: critical chain, project management, IT, IT services, Japan, enterprise-wide, case study, NIT Data Corporation, measures,.

> NTT Data Corporation is Japan's 6th largest global I.T. services company. Industries of our customers cover a wide range, for example, government, healthcare, finance, insurance, manufacturing, retail, etc. In the I.T. service market in Japan, due to the diversification and sophistication of the needs of society and our customers, there is an increasing demand for services that match the expectations for shorter delivery periods. To meet this demand, we started implementing CCPM enterprise-wide in 2009. As you know, it is not easy to implement and operate using CCPM, so we built a framework called “Enterprise-Wide Promotion Framework for CCPM Implementation” for I.T. system integration projects. This framework consists of three parts of support system, know-how and education. Using this framework, we have already implemented CCPM in over 50 sections and achieved reducing the work period by over 30% in the maximum case. This presentation shows the concept and details of the “Enterprise-wide Promotion Framework for CCPM Implementation.” Video length: 24m 34s. PDF: 28 slides.

Stratton, R. (2012). Buffer management in context. TOCICO Theory of Constraints International Conference: 10th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, theory, buffer management, lean, construction, healthcare,.

> This presentation explores the conceptual origins of buffer management in the context of TOC developments across make to order (MTO), engineer to order (ETO), make to availability (MTA)

in manufacturing environments, in addition to more recent developments in the service sector. The presentation relates the buffer management concept to the seminal work of Shewhart (1931) and Ohno (1978) and discusses the practical and theoretical basis for extending the buffer management concept to enhance 'lean' developments, with particular reference to construction and healthcare management. Length: 28m 17s. PDF: slides.

Stratton, R. (2013). Buffer management in context (Encore). TOCICO Theory of Constraints International Conference: 11th Annual Worldwide Gathering of TOC Professionals, Bad Nauheim, Germany, Theory of Constraints International Certification Organization.

Keywords: buffer management, theory, Shewhart, Ohno, lean, service environments, kanban, healthcare, construction,.

This presentation explores the conceptual origins of buffer management in the context of TOC developments across make to order, engineer to order, and make to availability (MTO, ETO, MTA) manufacturing environments and more recently in the service sector. The presentation relates the buffer management concept to the seminal work of Shewhart (1931) and Ohno (1978) and discusses the practical and theoretical basis for extending the buffer management concept to enhance 'lean' developments, with particular reference to construction and healthcare management. Video length: 34m 39s. PDF: 41 slides.

Stratton, R. and A. Dinham (2011). Why assessment units are not a waste of time: A TOC perspective. TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, hospital, emergency care, assessment units, service industry, .

This presentation describes three topics. The first topic is how assessment units can significantly improve patient flow when configured and managed in line with TOC principles. The second topic is how assessment units buffer the inpatient / emergency care pathway, introduce a divergent point from which patients can be discharged after a reduced stay, and therefore off-load scarcer, slow-moving in-patient beds. The third topic is how this approach has been practically delivered together with an assessment of the current limitations and the relationship to alternative theory. Length: 34m 21s. PDF: 40 slides.

Stratton, R. and B. West (2014). A holistic solution for community health and social care. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: healthcare, community health, social care, UK, case study, action research, discharge management, community outpatient care, strategy and tactics tree, five focusing steps, buffer management, inherent simplicity, .

Following this presentation, the participant will be able to Identify the main injections and benefits, Explain how the 5 steps apply to this environment, and Discuss how buffer management supports integration in this environment. This presentation focuses on community health and social care in a region of the U.K. where the TOC approach has been applied through

QFI Consulting for more than 5 years. The research involves case and action research over three distinct cycles. The first cycle concerns the use of TOC-based discharge management across the 12 community hospitals in the region. This cycle is followed by 2 cycles extending the TOC application into community outpatient care over the last 18 months. The presentation is structured around these three cycles, and in each case, the process of analysis, design and implementation is presented together with the results and issues associated with building the capability and then capitalizing and sustaining it. These cycles are then discussed with the 5 focusing steps with particular reference to buffer management. Finally, the presentation concludes with a reflection on how the inherent simplicity of this complex environment relates to the other TOC applications. Video length: 27m 11s. PDF: 39 slides.

Strear, C. and D. Sirias (2020). Smash the bottleneck: Fixing patient flow - A provider's guide to TOC in health care. TOCICO Theory of Constraints International Virtual Conference: 18th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: emergency department, five focusing steps, buffer management, patient flow, bottleneck, hospital, healthcare, dbr, inpatient, outpatient,.

In this presentation, we will show the results of the collaboration between a medical practitioner, Christopher Strear, and an academic, Danilo Sirias, proposing a practical approach to implementing TOC to improve patient flow. This collaboration started after Chris, without any TOC training (just reading the Goal), applied the 5FS to a hospital where inpatient lengths of stay were too long, and the ED was closed to ambulance traffic for 60 hours every month, on average, due to overcrowding. They had virtually eliminated ambulance diversion within months of applying TOC to the hospital's system. The rates of patients who left without being seen rate in the ED fell sharply, and the inpatient length of stay was reduced to levels below the national benchmark. This was accomplished during a devastating influenza epidemic, a period of record ED patient volumes, ambulance traffic, and record numbers of admissions. Danilo found this case while doing a literature review of TOC cases in healthcare and contacted Chris. For years, they had many conversations about the potential applications of TOC to improve patient flow and the idea of writing a book was born. They recently published their work: Smash the Bottleneck: Fixing Patient Flow for Better Care. Video length: 59:20. PDF: 176 slides.

Surace (moderator), R., et al. (2012). Healthcare panel: TOC in healthcare. TOCICO Theory of Constraints International Conference: 10th Annual Worldwide Gathering of TOC Professionals, Chicago, IL, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, service operations, production management, project management, healthcare industry, service industry,.

Rocco Surace is moderator. Alex Knight, Mark de Kiewiet, Lisa Ferguson, Jim Cox, and Tim Robinson are panelists. The audience asked questions to the panel and different panelists responded to the questions. Length: . PDF: slides.

Taylor, B. (2014). The 12 questions current reality branch - The Excel app. TOCICO Webinar Series. TOCICO. Denver, CO., Theory of Constraints International Certification Organization.

Keywords: healthcare, TP, Excel, pediatrics hospital, case,

First presented at a "Hyde Park" presentation at the 2013 TOCICO conference in Bad Nauheim, the 12 questions current reality branch model in Excel produces the basic current reality branch, conflict cloud, chronic conflict and premises and detailed current reality branch. Bill will detail the model's functioning as used in a three-hour interview with the CEO of a very large pediatric hospital in the USA and the holistic process for producing generic T.P. diagrams. The presentation and the Excel model will be available to webinar participants and TOCICO members. The webinar will conclude with a "What is TOC for healthcare?" outline.

Taylor, B. (2014). The 12 questions model for current reality branch, chronic conflict and generics: The Excel app how-to advanced workshop. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: 12-question model, healthcare, advanced workshop, thinking processes, US healthcare, .

The 12-question Excel Model has evolved from over a decade of practical experience in using the TOC thinking processes to solve various problems involving individuals and organizations from various industries and activities. The latest extensive 12-questions activity relates to healthcare in a study in U.S. healthcare by a group of senior executives and consultants. We have named this study the “Little Prince Pediatric Hospital (LPPH).” The developing TOC knowledge we will present is the 12 Questions Workshop Process applied to healthcare. In the workshop at the TOCICO conference, we will give participants hands-on experience with the 12 Questions Excel model. Participants are encouraged to bring a laptop and download the current Excel file at the workshop. In this manner, they can follow the main discussion and simultaneously try to resolve a problem of their interest (OK, it is multitasking, but probably worth it.) First, the presenter will introduce the initiation of the LPPH Project through the first chronic conflict. The workshop group will then develop the analysis of discomfort related to the government's role in U.S. healthcare (UDE) selected by the participants in this workshop to illustrate the 12 questions process. After the UDE analysis is complete, we intend to center most of the remaining discussion on the fit of the product of the TOCICO exercise with the healthcare LPPH study generic current reality tree for U.S. healthcare. We claim that the process we present is developing new knowledge because we systematically categorize the logical entities produced by the method into 12 categories, including the alligator, gold, crutches and mermaid model entities in the larger framework. We will also briefly address the relationship with other conflict resolution methods used in conjunction with Strategy and Tactics trees. Video length: 1h 27m 40s. PDF: 66 slides.

Taylor, B. (2014). The Little Prince Pediatric Hospital - a TOC study in US healthcare. TOCICO Webinar Series. TOCICO. Denver, CO, Theory of Constraints International Certification Organization.

Keywords: Healthcare, case study, pediatrics, strategy and tactics tree,

The Little Prince Pediatric Hospital Study is a theoretical development from the TOC TP diagnosis of various pediatric healthcare institutions, conducted with senior executives with U.S. healthcare experience, and leads to the creation of the LPPH Generic Transition Strategy and Tactics Tree and proposed action plans. These generic structures can be modified with the 12-Questions Current Reality Tree software to customize for other healthcare providers. This webinar will start with a summary "What is TOC for Healthcare?" outline.

Taylor, B. (2016). TOC in US healthcare strategy and operations. TOCICO Theory of Constraints International Conference: 14th Annual Worldwide Gathering of TOC Professionals, Leesburg, VA, Theory of Constraints International Certification Organization.

Keywords: healthcare, intensive care unit, care management, bed constraints management, HIPPA, patient-centered and medically led scheduling, patient flow management, Children's Hospital, cardiac intensive care, bed constraint,

> As Eli Goldratt said: "the more complex the problem, the simpler the solution must be, or it will not work". Four years of work in U.S healthcare have validated this statement. From working with the highest level of a very large healthcare organization to create a complete TOC solution, to working with healthcare management dyads (medical and operations) within various healthcare service lines to enable strategic thinking, to overcoming cardiac intensive care unit bed constraints by scheduling patient care plans in detail with critical chain project management (CCPM), to moving a whole healthcare organization to organize patient intake, flow and throughput and manage the system constraint, all solutions have yielded good results in the short term, but proved unable to create sustainable change and continuous improvement without continuing consulting interventions. Only earlier this year, when we scheduled the Children's Hospital at Erlanger's Neonatal Intensive Care Units (NICU) patient care plans as one task projects and created simple reports accessible online was a TOC solution accepted, adopted, adapted, sustained and enhanced by the various people involved in day-to-day care of premature babies. This successful simple pilot, if it continues to be sustained and improved by hospital staff, and once compliance with the Healthcare Information Privacy Protection Act (HIPPA) is obtained (currently in process), can possibly be transformed into the key to starting to improve U.S. healthcare providers through TOC patient-centered, clinically led scheduling. Video length: 54m 16s. PDF: 79 slides.

Taylor, B. (2020). The Erlanger NICU prototypes: A bridge from "The Goal" to COVID 19 and back to the future. TOCICO Theory of Constraints International Virtual Conference: 18th Annual Worldwide Gathering of TOC Professionals, Virtual, Theory of Constraints International Certification Organization.

Keywords: healthcare, inherent simplicity, CCPM, Erlanger Children's Hospital, thinking processes, neonatal intensive care unit, Exepron Health, .

> TOC claims that the more complex the situation, the simpler the solution must be. One of the greatest challenges the world has faced is the current pandemic. World leaders have oscillated between shutdowns and business as usual amid a turbulent cascade of dilemmas, difficulties and doubts. The human and economic consequences of the leaders' actions are still unfolding, as is the evolving penetration of COVID-19 into humanity's herd immune system. Is it possible to find inherent simplicity in this chaos? Is there a way to better prepare for the things that mother nature will continue to throw at us? Can solutions be found using the tried and tested TOC thinking processes, identifying and exploiting constraints and adapting CCPM to healthcare? The development of Exepron Health, a patient centered, forward looking length of stay (LOS) management system at the Erlanger Children's Hospital NICU (Neonatal Intensive Care Unit) has shown the way to handle significant oscillations in ICU demand and appropriately manage future resource requirements. The analysis of four years of data provides predictive insights into the impact of co-morbidities and the combination of this data with artificial intelligence can generate new insights. Finally, a reflection on the effects of "The Goal" on a personal journey

from “Bottles to Babies” and beyond. It is testimony to the lasting impact of Eli Goldratt’s masterpiece. Video length: 1:00:04. PDF: 71 slides.

Uga, A. and Y. Kishira (2014). TOC for mental health. TOCICO Theory of Constraints International Conference: 12th Annual Worldwide Gathering of TOC Professionals, Washington, DC, Theory of Constraints International Certification Organization.

Keywords: healthcare, mental health, depression, evaporating cloud, Japan, case study,.

Mental health issues are ubiquitous in workplaces worldwide, and Japan is no exception. Depression among employees has been recognized as a serious problem to be tackled in many major corporations. Several “self-help” books have been sold, and mental healthcare has become a growing concern in corporations in recent years. Mental health counselors have been taking in clients year after year, trying to resolve their issues individually. Yet, we have not seen a significant improvement. Reality tells us; there must be a wrong assumption in dealing with the issue of depression. Video length: 23m 54s. PDF: 29 slides.

van Aart, M. A. (2009). Dealing with change in hospitals quickly and efficiently by means of horizontal leadership and TOC. First European TOCICO Regional Conference, Amsterdam, The Netherlands, Theory of Constraints International Certification Organization.

Keywords: healthcare, hospitals, leadership, processes, case study, action research, Netherlands, services, UDEs, Maasstad Ziekenhuis hospital, horizontal leadership,

Hospitals in The Netherlands and elsewhere in western society are faced with the question of how the human, compassionate aspect of care can be combined with efficiency. The environment includes the aging population, the rising demand for care, a looming staff shortage, the autonomy of the private specialist and the introduction of hospitals in the marketplace. In healthcare, the answer to this problem lies in new organizational principles that align with 'the process concept of an organization.' This process concept sees organizations not as vertical structures with top-down and bottom-up forces but as horizontal processes of value creation at different levels: client, work, and management. This change affects the nature of leadership in hospitals. While previously, leadership was mostly embedded in the vertical power structure and dependent on position, it increasingly has a crossroad function whereby the interests of many stakeholders have to be met. As a result, today's leadership is moving towards a dialogic, dynamic organizational process in which a great deal of change is affected. How does this horizontal leadership work, and how can it be used so that processes of change and renewal lead to meaningful results? And how can leadership qualities be developed that turn horizontal leadership into a fruitful human and organizational development process? In 2006 – 2009, the Maasstad Ziekenhuis hospital in Rotterdam tested these horizontal principles using the' Methodology van de Evidential' (Bekman)' Theory of Constraints (TOC).' This presentation described the outcomes of an action research project which formed part of that process - undertaken for an MSc dissertation on TOC Healthcare Management (Nottingham Trent University, UK). The project presented research on the applications of these principles in operations (discharge, A&E, elective and outpatients), project management, finance and measurements, distribution and supply chain, marketing, sales and rapid response. The main focus of the project, which proved successful very quickly, was on the role of leadership and organizational development. Length: 27m 29s. PDF: 28 slides.

Wadhwa, G. (2007). Viable Vision is achievable in healthcare. TOCICO Theory of Constraints International Conference: 5th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NV, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, holistic, healthcare, oral surgery, specialty medicine, lean, six sigma, buffer management, choke release, reliability, five focusing steps, system dynamics, process flow, decisive competitive edge, reliability, rapid response, case study, measures,.

> This presentation is a case study of Adirondack Oral and Maxillofacial Surgery clinic and their first (achieved by using TOC/lean/six sigma) and second (achieved by using the transformational strategy and tactic (S&T) tree and the decisive competitive edges of reliability and rapid response) Viable Vision. Gary Wadhwa, MD, provided his background in education, business, operations, lean, six sigma, system dynamics, balanced scorecard, theory of constraints, etc. and how he implemented these tools at his medical practice to transform it from a break-even practice to make several million dollars in profit each year. In addition, he discusses throughput accounting and the transformational S&T tree to determine the product mix's impact on profits and how to free up enough capacity to do 30-40% pro-bono work while still making high profits. Length: 22m. 17s. PDF: 37 slides.

Wadhwa, G. (2009). Viable Vision for healthcare. 1st Annual North American Regional TOCICO Conference, Tacoma, WA, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, Viable Vision, system dynamics, thinking processes, strategy and tactics tree, oral surgery, Adirondack Oral and Maxillofacial Surgery.

> This presentation discussed a 10-step process for successfully implementing a Viable Vision (VV) for healthcare. The steps are: 1. Delimit the system's boundaries within our control span but within the larger system's context. 2. Agree upon the system's goal. 3. Agree upon performance measurements for the system. 4. Develop a VV for the organization using the RRR (reliability and rapid response) transformational strategy and tactic (S&T) tree. 5. Get an insight into your system and its current performance using the systems dynamics model. 6. Identify gaps between the VV and current performance. Write these down as undesirable effects (UDEs). 7. Identify core conflicts and injections to the core conflicts causing the gaps or UDEs. Use injections to change UDEs to DEs (desirable effects) and develop the future reality tree (FRT). 8. Validate injections on the system dynamics model to see the effect. 9. Develop the prerequisite and transition tree to implement the super injections on our road to the VV. 10. Continuously improve system performance and measure with the system dynamics model. This process was discussed in detail based on its application to Adirondack Oral and Maxillofacial Surgery clinic. Length: 50m 23s. PDF: 74 slides.

Wadhwa, G. (2011). Can TOC fix our ailing healthcare system? TOCICO Theory of Constraints International Conference: 9th Annual Worldwide Gathering of TOC Professionals, Palisades, NY, Theory of Constraints International Certification Organization.

Keywords: theory of constraints, healthcare, thinking processes,.

> Unlike for-profit organizations with a clear goal of improving economic value now and into the future, the stakeholders of a health system, such as government, private industry and healthcare

providers have conflicting interests. All stakeholders in the healthcare system, including consumers of healthcare seem to agree that the current performance of the healthcare system is undesirable. In the US, the conflict between two opposing ways to solve the healthcare system-wide problems has reached the highest sociopolitical level with proposals, such as Obama care and Free Market healthcare. The theory of constraints thinking processes (TP) could provide win-win solutions to eliminate all of the current healthcare system's undesirable effects (UDEs). The TP could be utilized as an effective tool for aligning the conflicting positions to achieve one clear goal and the necessary conditions for a flourishing healthcare system: availability of affordable, high quality of care for all US citizens, and an environment that provides incentives for innovations and continuous improvements. Length: 45m 11s. PDF: 28 slides.