DSO 586. Global Healthcare Operations Management

SPRING 2022

<u>Units:</u> 3 units. Monday from 6.30 to 9.30 PM

Office Hours: Monday 2.30 to 4.00 PM or by appointment

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COURSE OBJECTIVE: Across the world, some of the biggest challenges facing healthcare include increasing access and quality of care to large segments of the population.   In this course, you will learn how to apply Operations Management frame-works and techniques to design, and improve the performance of healthcare delivery systems. Healthcare delivery system is the network composed of facilities such as community centers, clinics, emergency rooms, and hospitals that individually and collectively provide care to the community. You will develop skills to analyze these systems and redesign them so as to better meet the needs of the community. Improvements can be achieved through changes in network design, role of different facilities, processes design, work-design, planning systems, and incentive structures.

A significant component of the course is a project. These projects span a range of topics and each project offers you a unique opportunity to dive deeper into an aspect of a health system. You will work in a team consisting of 3 to 6 students.

EXPECTATIONS

Class Participation: (**10 Points**) Read the assigned material and analyze the cases. You are encouraged to work in groups. You will be "cold –called" and so make sure you are familiar with the main issues and have a well thought out view. It is very important that you *prepare yourself for each and every session*. It is not necessary that you know the material "cold" before each class, but it is important that you expend sufficient effort to gain some grasp of the ideas we will be discussing.

With regard to quality, the dimensions that matter include:

> *Relevance* -- does the comment bear on the subject at hand? Comments that do not link up with what the discussion is focusing on can actually detract from the learning experience.

> *Causal Linkage* -- are the logical antecedents or consequences of a particular argument traced out? Comments that push the implications of a fact or idea as far as possible are generally superior.

> *Responsiveness* -- does the comment react in an important way to what someone else has said? Analysis -- is the reasoning employed consistent and logical?

> *Evidence* -- have data from the case, from personal experience, from general knowledge been employed to support the assertions made?

> *Importance* -- does the contribution further our understanding of the issues at hand? Is a connection made with other cases we have analyzed?

Clarity -- is the comment succinct and understandable? Does it stick to the subject or does it wander?

Students will be called on, at random, to participate in various aspects of class discussions. While "cold-calling" is not popular with everyone, it is reflective of actual business situations. When you attend a meeting, the expectation is that you are prepared and ready to contribute. These cold calls are an important part of your participation grade.

Attendance: You are expected to attend all sessions. If you cannot attend for a specific reason then please send an e-mail that you are unable to attend. Treat it like a professional meeting at work: if you cannot attend, you are expected to inform the person running the meeting as a professional courtesy.

If you are unable to attend the class due to other factors such as your current time zone, please let me know.

I will also consider emails and other interactions about course content while assessing your class participation grades.

Home Work and Case Assignments (45 Points):   Two case write ups and 2 homework assignments are individual assignments. Submit all assignments on BlackBoard

Case write ups: (any 2 cases) Due prior to class	(7.5 points each)
Homework set # 1 -- Due on March 6th	(15 points)
Homework set # 2 – Due on April 15th	(15 points)

Case Write-ups:
This course has 6 cases.   You have to submit write-ups for any two.   The syllabus has a set of questions for each case. You need to answer these questions. Your write-up should be no more than 4 pages – double space. Be precise – bullet points are fine.   You need to submit your write-up on BlackBoard prior to the start of the class on the day we are scheduled to discuss the case.   If you submit more than 2, the 2 highest scores will be considered. Your submission files should be named as follows:

> Last Name _First Name.docx (.pdf).

Emerging Trend Short Presentation (5 Pts)
Each team will make a 5 minute presentation in class about an emerging trend in the healthcare industry. Teams are at liberty to pick any aspect of the healthcare sector – hospital based care, insurance, mobile apps, home care, pharmacy, medical devices, healthcare analytics, etc.

Field Project Analysis and Report (45 points – Final report 25 points, Memos 10 & Final Presentation 10 points):
Project teams will be based on your preferences and project requirements. I will try to create balanced multi-skill teams. I, therefore, cannot guarantee that you will get your first or second preference. Each team will be responsible for organizing itself and gathering further information pertaining to the project. There will be one team project report.

Teams are required to meet regularly and provide the instructor updates every two weeks.

You have to make a near-final presentation in class, a final presentation to the client, and turn in a final report. The report is expected to be about 25-30 double-spaced pages or annotated power point presentation (in addition, appendices should be attached). Apart from being reviewed and evaluated by the instructor, it will also be sent to the sponsoring organizations.

The following is the schedule for the project. The timeline is to help you make steady progress during the term. Memos can be bullet points – the goal is avoid busy work and try to focus on what is most useful for successfully completing the project.

Date	Activity/ Deliverable	Description
1/18/2022	Project Preferences and Background Information	
1/30/2022	Memo #1 Context, Problem, Tasks	Describe the context and background of the project, statement of the problem you will address, preliminary plan for solving the problem
2/7/2022	5 minute presentation of Problem & Approach (in class)	
2/27/2022	Memo # 2: Deliverables, Progress, Roadblocks	Define your deliverable, progress made to date, and major roadblocks
3/27/2022	Memo # 3: Updates and Loose-ends	Progress to date and what is left to be done
4/10/2022	Memo #4 : Outline of Deliverables	Outline with some sections completed and others as place-holders
4/18 & 4/25	In-Class Presentations – 30 minutes (with Q & A) (Dry Run)	This is not your final presentation but close to final presentation
4/26 – 5/9	Schedule Final Presentation with Sponsor	
5/9/2022	Final Project Report Due	Final report can be an annotated power point presentation or a document – whatever makes most sense for your project.

All project related memos and reports are group based. Please submit them on Blackboard by the due date.

At the end of the semester, each team member will be asked to assess the relative contributions/efforts of all the other member of their team in order to reward excellence and avoid free riders.

Course Package: https://hbsp.harvard.edu/import/893821
You will need to complete a short registration process if you do not already have an account with HBSP. Please use this link to access the reading materials and cases needed for the class.   A set of readings are also posted on Blackboard.

Reference Books:
- **HEALTHCARE OPERATIONS MANAGEMENT: A SYSTEMS PERSPECTIVE:** J.R. Langabeer II and J. Helton, ISBN-13: 978-1284050066, 2015, Jones & Bartlett Learning; 2 edition (Hard bound or Kindle Edition)

- Customer Service Solution: Managing Emotions, Trust, and Control, S. Dasu and R. Chase, 2013, McGraw Hill, ISBN-10: 0071809937

COURSE OUTLINE

January 10th   <u>Course introduction and overview of healthcare systems</u>
- Descriptions of the projects
- Overview of healthcare systems
- Challenges and opportunities for improving healthcare systems
- Operations Management Basics Review – Systems Approach to Healthcare Ops

Reading:
1) Papanicolas, I., Woskie, L.R., & Jha, A.K. (2018) Healthcare spending in the US and other High Income Countries , JAMA. 2018;319(10):1024-1039. doi:10.1001/jama.2018.1150 (*download from the USC Library System*)

Optional Readings:
2) Crossing the Global Quality Chasm, https://www.nap.edu/catalog/25152/crossing-the-global-quality-chasm-improving-health-care-worldwide (download from the Web).
3) Chapters 1 and 2, Healthcare Operations Management.
4) David Squires and Chloe Anderson (2015), U.S. Health Care from a Global Perspective: Spending, Use of Services, Prices, and Health in 13 Countries, Common Wealth Fund (*posted on blackboard*)

MODULE 1: FLOW MANAGEMENT IN HEALTHCARE

The focus of this module is on managing flows in healthcare operations. We will use "The Body Scan" case and work on some hospital data sets. As we learn about flow measures, we will also explore how to extract operational data from electronic health records.

January 24th: *Flow Measures and Scheduling*

Managing flows is central to any operations. This session will introduce you to basics of hospital operations and process flows in a healthcare setting. We will learn (revisit) flow measures – Capacity/ throughput rate, through-put time, and work-in-process – and their application in healthcare. The *Body Scans and Bottlenecks* case introduces detailed operational decisions and tools such as Gantt charts.

Readings:
1) Note on Process Analysis (*on Blackboard*)
2) Case: Body Scans and Bottlenecks: Optimizing Hospital CT Process Flows, KEL592-PDF-ENG. (*Case in HBS online course pack*)

3) Chapters 6 & 7: Healthcare Operations Management. (Optional)

Case(Body Scan and Bottlenecks)questions:

1. Draw the process flow maps for the original CT scan process.
2. If the original process flows remained in place after the new CT scanners were installed, what level of scanning throughput could the hospital achieve?
3. What hourly margins would result from using the new scanners under the old process flows?
4. What specific improvements might be made to improve the performance of the CT scanners? What will be the impact on the margins?
5. How many hours a day would the new scanners have to work to process 310 scans in a day.
6. Are the new scanners a good investment for the hospital?

Project Work: The 20 minutes of the class is set aside for teams to meet

January 31st :   *Managing Flows - II*

In this week will continue with our analysis of flow measures. We will learn about the application of Little's law in healthcare   We will use an EHR data set to determine measures such arrival rates, lengths of stay, flow patterns in hospitals.

Jan 30th   Project Memo # 1 Due by 11.00 PM on Sunday 1/30/2022. Please submit via BlackBoard. This memo should provide details of your sponsor and the problem context.   The memo should explain the problem(s) you will address and sketch out a plan. The memo should not exceed 2 pages. Bullet points are fine.

February 7th :   *Managing Flows – Part III*

We will delve into queues and waiting time management in healthcare.

Project Work: The second half of this class will be used for project work. Each team will make a 7 minute presentation about their project – You should explain the problem you are working on and your planned approach.

MODULE 2: QUALITY MANAGEMENT

We will shift focus to managing quality. In healthcare, quality consists of clinical quality, process quality, safety, and patient experiences. We will also learn about methods for extracting insights from qualitative data.

Feb 14th   *Process Improvement: Lean, Six Sigma, Patient Safety*

- Process improvement
- Lean
- Six Sigma
- Organizational culture and employee satisfaction

Readings:

1. Six Sigma: What it is and how to use it. HBSP Reprint Number U9906C (*HBS online course package*)
2. Lean Knowledge Work: Staats and Upton, HBR October 2011, R1110G(*HBS online course package)*
3. Decoding the DNA of the Toyota Production System: Spear and Bowen , Sept- Oct 1999, R 99509. (*HBS online course package*).

Case: Six Sigma and Academic Medical Hospital
This case provides us an opportunity to learn about the details of six-sigma, the structure of a six-sigma project, and the strengths and challenges of process improvement projects in healthcare systems.
Case Questions:
1. Assess the pilot results in terms of the statistical significance seen via the implemented changes. What should the team say to the project sponsor Dr. Hamilton and the project champion Dr. Elbridge?
2. What issues now confront McCrae and the foundations team? What should they consider at this stage as next steps?
3. What are the obstacles to AMH adapting six-sigma?
4. What advice should this team give to any other team embarking on a six-sigma project? What are the key lessons?

Feb 27th Project Memo # 2 Due by 11.00 PM on Sunday 2/27/2022. Please submit via BlackBoard. This memo should outline your deliverable – what do you expect to report in the end.   Also discuss progress you have made to date and any significant roadblocks you anticipate. The memo should not exceed 3 pages. Bullet points are fine.

Feb 28th   *Process Improvement Systems*

In the previous class we explored the details of one process improvement project. In this session we will study how process improvement activities are managed at an organizational level.
Case: Cincinnati Children's Hospital Medical Center 9-609-109 (*HBS online course package*)
This case illustrates one approach. CCH implemented the "science of improvement" to systematically improve healthcare operations.
Case Questions:
1. What are the key elements of the process improvement approach adopted by the Children's hospital?
2. What are the pros and cons of the transparency policy? Are they being too transparent with their data?
3. What are the challenges in identifying improvement opportunities in a hospital?
4. What if any are the limitations of their approach to continuous improvement?
5. What do they have to sustain the improvement efforts?

March 6th   **Homework #1 is due**

March 7th :   *Patient Experience Management*

The Affordable care act bases reimbursements to hospitals on patient satisfaction scores (HCAHPS). In this session, we will focus on the importance of service quality and techniques providers can employ to improve patient experiences.

Readings:
1. Development, implementation, and public reporting of the HCAHPS surveys. (*On Blackboard*)
2. Designing the soft side of customer service, Sloan Management Review, Fall 2010 Vol 52, No 1., Reprint # 52104 (*HBS online course package*)
3. The relative importance of physician communication, participatory decision making, and patient understanding in Diabetes self-management., M. Hiesler, et. al., *J Gen Intern Med*. 2002 April; 17(4): 243–252 (*On Blackboard*)

Case: Low Patient Satisfaction Scores: Herzog Memorial Hospital (*HBS online course package*)

This case illustrates how to analyze qualitative data to understand patient requirements and to design services. To identify actions from the comments, we need to group and categorize comments. The case contains a spreadsheet that lists a series of comments that have been grouped (room, admissions, etc.) This grouping is typically based on entities (areas, individuals) or activities (admissions, discharge,..). Next the comments belonging to each group are further broken-down into categories.   For example one category for admissions could be waiting time and another could be nurse interaction, etc.   From these groups and categories we need to identify and prioritize the actions we want to take. You can have different categories for positive comments and negative comments.

Case Questions:
1. For top two groups of comments (based on total number of comments) in Workbook: Exhibit KEL869, Sheet: "*All Patient Feedback*" identified three negative and three positive categories?
2. What factors would you consider in prioritizing actions that you would recommend based on the comments?
3. What are the three actions you would take to improve the HCAPS scores?

MODULE 3:   HIGH LEVEL SYSTEM DESIGN

In the next two sessions we will look at broader system design questions.   The design of the operating system should depend on the types of markets being served. The first session is devoted to how we can design operations taking into factors such volume and variety. In the second session, we will look at some of the newer approaches to coordinating care across multiple entities.

March 21st: *Types of Systems*

Thus far we have focused on how to operate and improve an existing system. In this class we will study how the characteristics of demand determine the trade-offs among costs, access, and quality, and ultimately the optimal structure of the systems. We will examine the relationships between volume or scale, uncertainty, process flows, human resource requirements, and capacity.   In general, as an operations manager you have to balance the tension between diversification and focus.   Rittenhouse Medical Center is a multi-specialty operation where this tension has to be managed.

Reading:

1. Linking manufacturing process and product life cycles, HBR reprint # 79107 (*HBS online course package*)

Case: Managing Orthopaedics at Rittenhouse Medical Center HBSP Case 9-607-152 (*HBS online course pack*)

Case Questions (Rittenhouse):

1. What is your assessment of the 3B orthopaedics model relative to that used for typical procedures performed by the faculty practice surgeons? Which is better? What are the key criteria for your assessment?.

2. Assume the specific process time noted on p. 10 of the case: 30 minutes to prepare patient in the OR, 20 minutes for Booth to complete the procedure, 15 minutes for suturing and room turnover, and 5 minutes for Booth to perform inter-operative activities such as calling the family and scrubbing for his next procedure.

    a. How many joint replacements could Booth perform during an operating block lasting from 7 AM to 12.00 Noon?
    b. What is Booth's utilization rate during this time?
    c. Over the same time period, what is the utilization rate for his two operating rooms?
    d. How do these figures change if the time required to prepare the patient in the OR increases from 30 to 45 minutes?
    e. For all calculations, assume that: (1) Booth only performs unilateral procedure, (2) the first patient cannot enter the room until 7:00 AM, and (3) the entire procedure for the final patient must be completed by 12.00 PM. Also note that an operating room is considered "non-idle" when it is either occupied by a patient or being cleaned between procedures.

3. What will be the capacity of the hospital if they perform surgeries on Saturday?

March 27th Project Memo # 3 Due by 11.00 PM on Sunday 3/27/2022. Please submit via BlackBoard. This memo provide an update on your project and discuss what is left to be done (loose ends).   The memo should not exceed 3 pages. Bullet points are fine.

March 28th   *Health Care Systems – Newer Models and Emerging Trends*

In this session we will explore approaches such as accountable care organizations (ACOs) some provider systems are adopting to improve overall care and lower costs.   We will also delve into the incentive challenges in healthcare.

Readings:

1. Accountable Care Organization, by Burke, Law and Public Health (*on Blackboard - Optional*)
2. Can Accountable Care Organizations improve the value of health care by solving the cost and quality quandaries? By Devers and Berenson (*on Blackboard - Optional*)

MODULE 4:   INCENTIVES IN HEALTHCARE

The performance of the healthcare system is driven largely by the incentive structure. Understanding the interplay between payers, providers, and innovators is crucial.   This module we will delve into the incentives in healthcare.

April 4th:
    Operational decisions are driven by measures and incentives.   Healthcare systems typically have very complex incentive structures. We want to understand the healthcare incentive challenges.
- Nature of incentives in healthcare
- Interplay between payers, providers, and innovators
- Different payment models
- Healthcare system reform

Readings:
1. Note on Physician Compensation and Financial Incentives by Bohmer and Harshbarger (*HBSP Course packe*t)
2. Theory and practice in the design of physician payment incentives (*on Blackboard* – Optional)

Case: Blue Shield of California. HBSP Case OIT - 112 (*HBS online course package*)

Case questions
1. What are the main drivers of profitability for a health insurer? How do you see industry profitability changing over the coming 5 to 10 years?
2. Do you agree with Paul Markovich's view that non-profit insurers are best positioned to drive change in the health care industry? Why or Why not?
3. Consider integrated provider/insurance systems such as Kaiser, traditional "disconnected" systems in which insurance and care are provided by different entities, and ACOs such as the one built by Blue Shield in combination with Dignity Health and Hill Physicians Group in Sacramento? What do you consider the advantages and disadvantages of each system from the perspective of patients, technology innovators (i.e., drug companies, device manufacturers, diagnostic firms, etc.), and the overall health care system?
4. What strategy would you recommend Blue Shield pursue for the individual exchange market? Would you recommend Blue Shield offer an exchange product and, if so, how aggressive should they be on pricing? What do you believe will be drivers for individual decision on which insurance plan to choose?
5. What are the drivers of industry consolidation in the health insurance industry? Would you recommend that Blue Shield look for additional acquisitions? If so, what type of companies should they target and why?

> **April 10th** Project Memo # 4 Due by 11.00 PM on Sunday 4/10/2022. Please submit via BlackBoard. This memo should be the first draft of your final report/ deliverable. The document (or pptx) should have all the sections -- several sections are likely to be incomplete.

April 11th   **PROJECT MEETINGS**

April 15th	Homework #2 is due

April 18th   PROJECT PRESENTATIONS (Half the Class) & Course Wrap-up

April 25th   PROJECT PRESENTATIONS (Other Half)

May 9th   FINAL PROJECT REPORT DUE

PROJECT PEER EVALUATION FORM

GROUP PROJECT

DSO 586 - GLOBAL HEALTHCARE OPERATIONS

Your Name: _____

Each member of the team is expected to make a contribution. This peer evaluation form will be used to assess individual member's contributions to the project.

You should evaluate yourself and each of your teammates on a scale of 1-5, with 5 being the best efforts and highest contributions. You may want to consider the following factors in your assessment:
Quality of deliverables to team, assistance to team members, quality of listening and participation in discussion, research contribution, and time management.

Name	Contribution (1 -5)	Comments
Yourself		

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on Research and Scholarship Misconduct.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
eeotix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
osas.usc.edu

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101
diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.
USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

*Occupational Therapy Faculty Practice - (323) 442-33*40 or otfp@med.usc.edu
chan.usc.edu/otfp

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.