# Health Care Supply Chain

**Course Duration:** 30 hrs (20 sessions)

**Course Description:**

This course aims to impart practical knowledge on healthcare supply chain and operations to upskill students and thereby enabling them to become effective healthcare supply chain management professionals. The course also imparts the tools and techniques for improving healthcare supply chain performance.

**Course Objective**

- To understand the healthcare supply chain ecosystem
- To apply tools and techniques to carry out effective decision making for healthcare supply chain
- To provide exposure on cost optimization techniques for healthcare supply chain
- To illustrate the application of state-of-the-art technologies for healthcare supply chain integration

**Pedagogy/Teaching Method:** Lectures, Case Studies, Demonstration of Tools and Techniques

**Reference Books:**


- Min, H. (2014). Healthcare supply chain management: basic concepts and principles.
- Manrodt, K., & Schott, D. (2016). Health Care Supply Chain Management: Elements, Operations, and Strategies: Elements, Operations, and Strategies. Jones & Bartlett Learning.
- Kros, J. F., & Brown, E. C. (2013). Health care operations and supply chain management: operations, planning, and control. John Wiley & Sons.


**Target Audience:** Middle Level and Senior level Management

**Relevant Industry:** Pharmaceutical industry, health care industry, Logistics industry

**Reference Articles:**


- Bhat, S., Antony, J., Gijo, E. V., & Cudney, E. A. (2019). Lean Six Sigma for the healthcare sector: a multiple case study analysis from the Indian context. International Journal of Quality & Reliability Management.
- Bhat, S., Gijo, E. V., & Jnanesh, N. A. (2016). Productivity and performance improvement in the medical records department of a hospital: an application of Lean Six Sigma. International Journal of Productivity and Performance Management, 65(1), 98-125.
- Kwon, I. W. G., Kim, S. H., & Martin, D. G. (2016). Healthcare supply chain management; strategic areas for quality and financial improvement. Technological Forecasting and Social Change, 113, 422-428.

- Kim, R. H., Gaukler, G. M., & Lee, C. W. (2016). Improving healthcare quality: A technological and managerial innovation perspective. Technological Forecasting and Social Change, 113, 373-378.
- Tortorella, G. L., Saurin, T. A., Fogliatto, F. S., Rosa, V. M., Tonetto, L. M., & Magrabi, F. (2021). Impacts of Healthcare 4.0 digital technologies on the resilience of hospitals. Technological Forecasting and Social Change, 166, 120666.
- Laurenza, E., Quintano, M., Schiavone, F., & Vrontis, D. (2018). The effect of digital technologies adoption in healthcare industry: a case based analysis. Business process management journal.
- Sykes, C. (2018). Time-and temperature-controlled transport: supply chain
- challenges and solutions. Pharmacy and Therapeutics, 43(3), 154.
- Bamakan, S. M. H., Moghaddam, S. G., & Manshadi, S. D. (2021). Blockchain-enabled pharmaceutical cold chain: Applications, key challenges, and future trends. Journal of Cleaner Production, 302, 127021.
- Zhang, X., Meiser, D., Liu, Y., Bonner, B., & Lin, L. (2014). Kroger uses simulationoptimization to improve pharmacy inventory management. Interfaces, 44(1), 70-84.
- Katircioglu, K., Gooby, R., Helander, M., Drissi, Y., Chowdhary, P., Johnson, M., & Yonezawa, T. (2014). Supply chain scenario modeler: A holistic executive decision support solution. Interfaces, 44(1), 85-104.
- van de Kracht, T., & Heragu, S. S. (2021). Lessons from modeling and running the world's largest drive-through mass vaccination clinic. INFORMS Journal on Applied Analytics, 51(2), 91-105.


| Module No. | Session No. | Topics | Readings / Case Study |
|---|---|---|---|
| Module 1: (4.5 hours) | 1-3 | Overview of Indian Healthcare Supply Chain<br><br>e-business models in health care supply chain<br><br>Telemedicine and Omnichannel health care delivery | Burns, L. R. (Ed.). (2014). India's healthcare industry: innovation in delivery, financing, and manufacturing. Cambridge University Press.<br><br>Latifi, R., Doarn, C. R., & Merrell, R. C. (Eds.). (2020). Telemedicine, Telehealth and Telepresence: Principles, Strategies, Applications, and New Directions. Springer Nature. |
| Module 2: (10.5 Hours) | 4-10 | Medical equipment procurement<br><br>Supplier selection, Negotiation, Lifecycle costing<br><br>Contracts and Service Level Agreements, Risk assessment | Sedlmeier, M. E. (1997). Lease or buy: optimizing capital equipment procurement. Healthcare Financial Management, 51(8), 76-79.<br><br>Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2015). Purchasing and supply chain management. Cengage Learning. |
| Module 3: (10.5 Hours) | 11-17 | Cold chain for drug transportation<br><br>Cold chain visibility using GPS | Ageron, B., Benzidia, S., & Bourlakis, M. (2018, January). Healthcare logistics and supply chain–issues and future challenges. In Supply Chain Forum: An International |

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| | | GIS and blood supply chain<br>Storage of pharmaceuticals and medical supplies<br>Inventory management of pharmaceuticals and medical supplies | Journal (Vol. 19, No. 1, pp. 1-3). Taylor & Francis.<br><br>Kritchanchai, D., Hoeur, S., & Engelseth, P. (2018, January). Develop a strategy for improving healthcare logistics performance. In Supply Chain Forum: An International Journal (Vol. 19, No. 1, pp. 55-69). Taylor & Francis. |
| Module 4: (4.5 Hours) | 18-20 | Health care SC performance metrics,<br>Lean tools in healthcare<br><br>Advanced technologies in healthcare supply chain<br><br>Healthcare Supply Chain Integration | Sunder M, V., & Kunnath, N. R. (2020). Six Sigma to reduce claims processing errors in a healthcare payer firm. Production Planning & Control, 31(6), 496-511.<br>Göleç, A., & Karadeniz, G. (2020). Performance analysis of healthcare supply chain management with competency-based operation evaluation. Computers & Industrial Engineering, 146, 106546.<br>Beaulieu, M., & Bentahar, O. (2021). Digitalization of the healthcare supply chain: A roadmap to generate benefits and effectively support healthcare delivery. Technological forecasting and social change, 167, 120717. |

## Learning Outcomes:

After completion of the course, participants would be able to:

- Understand the healthcare supply chain ecosystems and its actors
- Apply tools and techniques for cost optimization and efficiency improvement of healthcare supply chain.
- Understand the application of state-of-the-art technologies for healthcare supply chain integration.