

ICU Set-Up And Maintenance Market

19th August 2022



ABOUT US

Reports and Data is a market research and consulting company that provides syndicated research reports, customized research reports, and consulting services. Our solutions purely focus on your purpose to locate, target, analyze consumer behavior shifts across demographics, across industries, and help client's make a smarter business decision. We offer market intelligence studies ensuring relevant and fact-based research across multiple industries including Healthcare, Technology, Chemicals, Power, and Energy. We consistently update our research offerings to ensure our clients are aware about the latest trends existent in the market. Reports and Data has a strong base of experienced analysts from varied areas of expertise. Our industry experience and ability to develop a concrete solution to any research problems provides our clients the ability to secure an edge over their respective competitors.

TABLE OF CONTENTS

| | | |
|---------|---|----|
| 1 | INDUSTRY OVERVIEW: HEALTHCARE INFRASTRUCTURE INDUSTRY | 10 |
| 1.1 | WORLD ECONOMY | 10 |
| 1.2 | INDIAN ECONOMY | 12 |
| 1.2.1 | OVERVIEW | 12 |
| 1.2.2 | HEALTHCARE SECTOR IN INDIA | 13 |
| 1.2.3 | HEALTHCARE INFRASTRUCTURE IN INDIA | 15 |
| 1.2.4 | PRIVATE SECTOR SPENDING TREND IN INDIA | 16 |
| 1.2.5 | GOVERNMENT SPENDING FOR HEALTHCARE SECTOR | 16 |
| 1.2.6 | GOVERNMENT INITIATIVES | 17 |
| 1.2.7 | INVESTMENT OPPORTUNITIES | 18 |
| 1.3 | MAINTENANCE AND TRADING OF HIGH VALUE MEDICAL EQUIPMENT | 18 |
| 2 | INDUSTRY OVERVIEW: ICU SET-UP AND MAINTENANCE..... | 21 |
| 2.1 | INDIA ICU SET-UP AND MAINTENANCE MARKET OVERVIEW | 21 |
| 2.1.1 | ICU PLANNING AND DESIGNING IN INDIA – GUIDELINES | 22 |
| 2.1.2 | INDIA ICU STATISTICS | 24 |
| 2.1.3 | ICU SETUP COST: INDIA | 27 |
| 2.2 | GLOBAL ICU SET-UP AND MAINTENANCE MARKET OVERVIEW | 28 |
| 3 | COVID-19 IMPACT ASSESSMENT | 30 |
| 3.1 | IMPACT ASSESSMENT | 30 |
| 3.1.1 | INDIA HAS LONG BEEN SHORT OF HOSPITAL BEDS. THE PANDEMIC INTENSIFIED THE SHORTAGE | 31 |
| 3.2 | UPCOMING STRATEGIES REQUIRED TO COMBAT THE CURRENT SITUATION | 31 |
| 4 | ICU SET-UP AND MAINTENANCE SEGMENTATION & IMPACT ANALYSIS | 33 |
| 4.1 | INDUSTRIAL OUTLOOK | 33 |
| 4.1.1 | MARKET DRIVER ANALYSIS | 33 |
| 4.1.1.1 | GROWING PREVALENCE OF CHRONIC DISEASES | 33 |
| 4.1.1.2 | IMPROVEMENT IN HOSPITAL INFRASTRUCTURES | 34 |
| 4.1.1.3 | GROWING DEMAND FOR INTENSIVE CARE | 35 |
| 4.1.2 | MARKET RESTRAINTS ANALYSIS | 35 |
| 4.1.2.1 | HIGH COST OF TREATMENT AND EXPENSIVE SET UP | 35 |
| 4.1.3 | MARKET OPPORTUNITIES ANALYSIS | 36 |
| 4.1.3.1 | TECHNOLOGICAL ADVANCEMENT IN THE TREATMENT FACILITIES | 36 |
| 4.1.4 | MARKET CHALLENGES ANALYSIS | 36 |
| 4.1.4.1 | LACK OF PROPER TRAINING | 37 |
| 4.2 | REGULATORY FRAMEWORK | 37 |

| | | |
|-------|---|----|
| 4.3 | PESTEL ANALYSIS | 38 |
| 5 | ICU SET-UP AND MAINTENANCE MARKET BY TYPE INSIGHTS & TRENDS | 39 |
| 5.1 | ICU SET-UP AND MAINTENANCE COST | 39 |
| 5.2 | MEDICAL ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 40 |
| 5.2.1 | GLOBAL MEDICAL ICU COST ANALYSIS, (USD): 2021 | 40 |
| 5.2.2 | INDIA MEDICAL ICU COST ANALYSIS, (USD): 2021 | 40 |
| 5.3 | SURGICAL ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 41 |
| 5.3.1 | GLOBAL SURGICAL ICU COST ANALYSIS, (USD): 2021 | 41 |
| 5.3.2 | INDIA SURGICAL ICU COST ANALYSIS, (USD): 2021 | 41 |
| 5.4 | NEUROLOGIC ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 42 |
| 5.4.1 | GLOBAL NEUROLOGIC ICU COST ANALYSIS, (USD): 2021 | 42 |
| 5.4.2 | INDIA NEUROLOGIC ICU COST ANALYSIS, (USD): 2021 | 42 |
| 5.5 | NEONATAL ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 43 |
| 5.5.1 | GLOBAL NEONATAL ICU COST ANALYSIS, (USD): 2021 | 43 |
| 5.5.2 | INDIA NEONATAL ICU COST ANALYSIS, (USD): 2021 | 43 |
| 5.6 | PEDIATRIC ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 44 |
| 5.6.1 | GLOBAL PEDIATRIC ICU COST ANALYSIS, (USD): 2021 | 44 |
| 5.6.2 | INDIA PEDIATRIC ICU COST ANALYSIS, (USD): 2021 | 44 |
| 5.7 | TRAUMA ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 45 |
| 5.7.1 | GLOBAL TRAUMA ICU COST ANALYSIS, (USD): 2021 | 45 |
| 5.7.2 | INDIA TRAUMA ICU COST ANALYSIS, (USD): 2021 | 45 |
| 5.8 | CARDIAC ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW | 46 |
| 5.8.1 | GLOBAL CARDIAC ICU COST ANALYSIS, (USD): 2021 | 46 |
| 5.8.2 | INDIA CARDIAC ICU COST ANALYSIS, (USD): 2021 | 46 |
| 6 | ICU SET-UP AND MAINTENANCE MARKET: BY HOME CARE MEDICAL EQUIPMENT TRADING INSIGHTS & TRENDS | 47 |
| 6.1 | HOME CARE MEDICAL EQUIPMENT TRADING, 2021 | 47 |
| 6.2 | IV STAND-TRADING OVERVIEW | 47 |
| 6.2.1 | IV STAND – EXPORT FROM INDIA | 47 |
| 6.2.2 | IV STAND – IMPORT TO INDIA | 48 |
| 6.3 | PARA MONITOR-TRADING OVERVIEW | 48 |
| 6.3.1 | PARA MONITOR – EXPORT FROM INDIA | 49 |
| 6.3.2 | PARA MONITOR – IMPORT TO INDIA | 49 |
| 6.4 | OXYGEN CYLINDER-TRADING OVERVIEW | 49 |
| 6.4.1 | OXYGEN CYLINDER – EXPORT FROM INDIA | 50 |
| 6.4.2 | OXYGEN CYLINDER – IMPORT TO INDIA | 50 |
| 6.5 | SUCTION MACHINE & ALPHA MATTRESS -TRADING OVERVIEW | 50 |
| 6.5.1 | SUCTION MACHINE & ALPHA MATTRESS – EXPORT FROM INDIA | 51 |

| | | |
|-------|--|----|
| 6.5.2 | SUCTION MACHINE & ALPHA MATTRESS –IMPORT TO INDIA | 51 |
| 6.6 | NEBULIZER -TRADING OVERVIEW | 51 |
| 6.6.1 | NEBULIZERS – EXPORT FROM INDIA | 52 |
| 6.6.2 | NEBULIZERS –IMPORT TO INDIA | 52 |
| 6.7 | DVT PUMP -TRADING OVERVIEW | 52 |
| 6.7.1 | DVT PUMP – EXPORT FROM INDIA | 53 |
| 6.7.2 | DVT PUMP - IMPORT TO INDIA | 53 |
| 7 | ICU SET-UP AND MAINTENANCE MARKET: BY HIGH VALUE MEDICAL EQUIPMENT TRADING INSIGHTS & TRENDS | 54 |
| 7.1 | HIGH VALUE MEDICAL EQUIPMENT TRADING, 2021..... | 54 |
| 7.2 | DEFIBRILLATORS -TRADING OVERVIEW | 54 |
| 7.2.1 | DEFIBRILLATORS – EXPORT FROM INDIA | 54 |
| 7.2.2 | DEFIBRILLATORS – IMPORT TO INDIA | 54 |
| 7.3 | ANESTHESIA MACHINES -TRADING OVERVIEW..... | 55 |
| 7.3.1 | ANESTHESIA MACHINES – EXPORT FROM INDIA | 55 |
| 7.3.2 | ANESTHESIA MACHINES – IMPORT TO INDIA | 55 |
| 7.4 | PATIENT MONITORS-TRADING OVERVIEW | 56 |
| 7.4.1 | PATIENT MONITORS – EXPORT FROM INDIA | 56 |
| 7.4.2 | PATIENT MONITORS – IMPORT TO INDIA | 56 |
| 7.5 | STERILIZERS -TRADING OVERVIEW | 57 |
| 7.5.1 | STERILIZERS – EXPORT FROM INDIA | 57 |
| 7.5.2 | STERILIZERS –IMPORT TO INDIA | 57 |
| 7.6 | EKG/ECG MACHINES -TRADING OVERVIEW | 58 |
| 7.6.1 | EKG/ECG MACHINES – EXPORT FROM INDIA | 58 |
| 7.6.2 | EKG/ECG MACHINES –IMPORT TO INDIA | 58 |
| 8 | ICU SET-UP AND MAINTENANCE MARKET: BY TURNKEY PROJECTS COMPANIES & TRENDS | 59 |
| 8.1 | HEALTHCARE SECTOR IN INDIA: BOONS AND BANES | 59 |
| 8.1.1 | NEWBORN CARE IN INDIA | 60 |
| 8.1.2 | STATUS OF FACILITY BASED NEWBORN CARE IN INDIA | 61 |
| 8.1.3 | NATIONAL HEALTH MISSION (NHM) | 62 |
| 8.2 | OVERVIEW OF TURNKEY PROJECTS | 63 |
| 8.2.1 | COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR ICU IN INDIA | 64 |
| 8.2.2 | TRENDS OF TURNKEY PROJECTS | 65 |
| 8.3 | OVERVIEW OF MODULAR OPERATION THEATER | 66 |
| 8.3.1 | COST OF MODULAR OT IN INDIA | 67 |
| 8.3.2 | LAQSHYA SCHEME FOR DEVELOPMENT OF MATERNAL OPERATION THEATER | 67 |
| 8.3.3 | STATUS OF LAQSHYA CERTIFICATION PROGRAMME (2018-2021) | 67 |

| | | |
|-------|---|----|
| 8.3.4 | MODULAR OPERATION THEATER TENDERS – (01 JULY 2022- TILL 31 AUGUST 2022) | 68 |
| 8.3.5 | AVERAGE NUMBER OF OT PER LAKH IN INDIA AND GLOBALLY | 69 |
| 8.3.6 | NUMBER OF GOVERNMENT OT IN INDIA | 70 |
| 8.3.7 | COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR MODULAR OT | 70 |

LIST OF TABLES

| | | |
|----------|--|----|
| TABLE 1 | OVERVIEW OF THE WORLD ECONOMIC OUTLOOK PROJECTIONS (% CHANGE) FROM 2020-2023 | 11 |
| TABLE 2 | EXPENDITURE ON HEALTH AND WELL BEING (USD) | 16 |
| TABLE 3 | INVESTMENT OPPORTUNITIES IN HOSPITAL/MEDICAL INFRASTRUCTURE | 18 |
| TABLE 4 | FDI (FOREIGN DIRECT INVESTMENT) IN INDIA’S HEALTH SECTOR (2000-2020) | 18 |
| TABLE 5 | IMPORT OF MEDICAL DEVICES IN INDIA FROM 2017-2025, (USD THOUSAND) | 19 |
| TABLE 6 | EXPORT OF MEDICAL DEVICES FROM INDIA FROM 2017-2025, (USD THOUSAND) | 20 |
| TABLE 7 | INDIA ICU STATISTICS: 2019 | 24 |
| TABLE 8 | ICU SETUP COST: INDIA, 2021 | 27 |
| TABLE 9 | COVID BEDS ACROSS INDIA, 2020 | 31 |
| TABLE 10 | DISTRIBUTION OF GOVERNMENT: HOSPITALS AND BEDS ACROSS REGIONS, 2020 | 31 |
| TABLE 11 | STRATEGIES USED TO EXPAND ICU BED CAPACITY DURING THE COVID-19 PANDEMIC | 32 |
| TABLE 12 | GLOBAL MEDICAL ICU COST ANALYSIS, (USD): 2021 | 40 |
| TABLE 13 | INDIA MEDICAL ICU COST ANALYSIS, (USD): 2021 | 40 |
| TABLE 14 | GLOBAL SURGICAL ICU COST ANALYSIS, (USD): 2021 | 41 |
| TABLE 15 | INDIA SURGICAL ICU COST ANALYSIS, (USD): 2021 | 41 |
| TABLE 16 | GLOBAL NEUROLOGIC ICU COST ANALYSIS, (USD): 2021 | 42 |
| TABLE 17 | INDIA NEUROLOGIC ICU COST ANALYSIS, (USD): 2021 | 42 |
| TABLE 18 | GLOBAL NEONATAL ICU COST ANALYSIS, (USD): 2021 | 43 |
| TABLE 19 | INDIA NEONATAL ICU COST ANALYSIS, (USD): 2021 | 43 |
| TABLE 20 | GLOBAL PEDIATRIC ICU COST ANALYSIS, (USD): 2021 | 44 |
| TABLE 21 | INDIA PEDIATRIC ICU COST ANALYSIS, (USD): 2021 | 44 |
| TABLE 22 | GLOBAL TRAUMA ICU COST ANALYSIS, (USD): 2021 | 45 |
| TABLE 23 | INDIA TRAUMA ICU COST ANALYSIS, (USD): 2021 | 45 |
| TABLE 24 | GLOBAL CARDIAC ICU COST ANALYSIS, (USD): 2021 | 46 |
| TABLE 25 | INDIA CARDIAC ICU COST ANALYSIS, (USD): 2021 | 46 |
| TABLE 26 | IV STAND - EXPORT FROM INDIA | 47 |
| TABLE 27 | IV STAND - IMPORT TO INDIA | 48 |
| TABLE 28 | PARA MONITOR - EXPORT FROM INDIA | 49 |
| TABLE 29 | PARA MONITOR - IMPORT TO INDIA | 49 |
| TABLE 30 | OXYGEN CYLINDER - EXPORT FROM INDIA | 50 |
| TABLE 31 | OXYGEN CYLINDER - IMPORT TO INDIA | 50 |

| | | |
|----------|--|----|
| TABLE 32 | SUCTION MACHINE & ALPHA MATTRESS - EXPORT FROM INDIA | 51 |
| TABLE 33 | SUCTION MACHINE & ALPHA MATTRESS - IMPORT TO INDIA | 51 |
| TABLE 34 | NEBULIZERS - EXPORT FROM INDIA | 52 |
| TABLE 35 | NEBULIZERS - IMPORT TO INDIA | 52 |
| TABLE 36 | DVT PUMP - EXPORT FROM INDIA | 53 |
| TABLE 37 | DVT PUMP - IMPORT TO INDIA | 53 |
| TABLE 38 | DEFIBRILLATORS - EXPORT FROM INDIA | 54 |
| TABLE 39 | DEFIBRILLATORS - IMPORT TO INDIA | 54 |
| TABLE 40 | ANESTHESIA MACHINES - EXPORT FROM INDIA | 55 |
| TABLE 41 | ANESTHESIA MACHINES - IMPORT TO INDIA | 55 |
| TABLE 42 | PATIENT MONITORS - EXPORT FROM INDIA | 56 |
| TABLE 43 | PATIENT MONITORS - IMPORT TO INDIA | 56 |
| TABLE 44 | STERILIZERS - EXPORT FROM INDIA | 57 |
| TABLE 45 | STERILIZERS - IMPORT TO INDIA | 57 |
| TABLE 46 | EKG/ECG MACHINES - EXPORT FROM INDIA | 58 |
| TABLE 47 | EKG/ECG MACHINES - IMPORT TO INDIA | 58 |
| TABLE 48 | PRIVATE AND PUBLIC HEATHCARE INFRASTRUCTURE IN INDIA, 2020 | 59 |
| TABLE 49 | COST OF NEONATAL CARE IN INDIA, 2020 | 61 |
| TABLE 50 | LIST OF NICUS IN INDIA, 2020 | 61 |
| TABLE 51 | NEW CONSTRUCTION UNDERTAKEN ACROSS INDIA BY GOVERNMENT, 2020 | 62 |
| TABLE 52 | TURNKEY V/S THE TRADITIONAL MODELS COMPARISON | 63 |
| TABLE 53 | LIST OF COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR ICU IN INDIA | 64 |
| TABLE 54 | DIFFERENCES BETWEEN MODULAR OPERATION THEATRES AND CONVENTIONAL OPERATION THEATRES | 66 |
| TABLE 55 | MODULAR OPERATION THEATER TENDERS – (01 JULY 2022- TILL 31 AUGUST 2022) | 68 |
| TABLE 56 | AVERAGE NUMBER OF OT PER LAKH IN INDIA AND GLOBALLY | 69 |
| TABLE 57 | LIST OF COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR MODULAR OT | 70 |

LIST OF FIGURES

| | | |
|-----------|---|----|
| FIGURE 1 | GDP GROWTH PROJECTIONS IN FY 2022 | 10 |
| FIGURE 2 | INDIA'S GROSS DOMESTIC PRODUCTION FROM 2014-2020 | 12 |
| FIGURE 3 | CURRENT SCENARIO | 13 |
| FIGURE 4 | MAJOR SEGMENTS IN INDIA'S HEALTHCARE SECTOR | 14 |
| FIGURE 5 | GROWTH TREND OF INDIA'S HEALTHCARE SECTOR (USD BILLION) FROM 2014-2022 | 15 |
| FIGURE 6 | BED DENSITY (NUMBER OF HOSPITAL BEDS PER 1000 POPULATION) IN INDIA COMPARED TO OTHER PARTS OF THE WORLD, 2021 | 15 |
| FIGURE 7 | PUBLIC V/S PRIVATE HEALTHCARE (%), 2019 | 16 |
| FIGURE 8 | INDIA'S PUBLIC EXPENDITURE ON HEALTHCARE (%) | 21 |
| FIGURE 9 | PERCENTAGE SHARE OF NUMBER OF BEDS AND VENTILATORS AVAILABLE IN INDIA, 2020 | 25 |
| FIGURE 10 | NUMBERS OF ICU BEDS IN STATES ACROSS PUBLIC AND PRIVATE SECTORS, 2020 | 26 |
| FIGURE 11 | RATES OF INTENSIVE CARE BEDS IN HOSPITALS IN SELECT COUNTRIES WORLDWIDE, 2020 | 29 |
| FIGURE 12 | PERCENTAGE OF PEOPLE WITH COVID-19 WHO WERE ADMITTED TO THE ICU IN THE U.S., BY AGE, 2020 | 30 |
| FIGURE 13 | ANNUAL GLOBAL MORTALITY, BY CHRONIC ILLNESS | 34 |
| FIGURE 14 | PESTEL ANALYSIS | 38 |
| FIGURE 15 | ICU SET-UP AND MAINTENANCE MARKET: TYPE DYNAMICS (USD): 2021 | 39 |
| FIGURE 16 | SHARE OF PRIVATE AND PUBLIC ICU'S IN INDIA, 2020 | 60 |
| FIGURE 17 | BENEFITS OF TURNKEY PROJECTS | 63 |
| FIGURE 18 | STATUS OF LAQSHYA CERTIFICATION PROGRAMME (2018-2021) | 67 |
| FIGURE 19 | PERCENTAGE SHARE OF GOVERNMENT AND PRIVATE OT IN INDIA, 2020 | 70 |

1 INDUSTRY OVERVIEW: HEALTHCARE INFRASTRUCTURE INDUSTRY

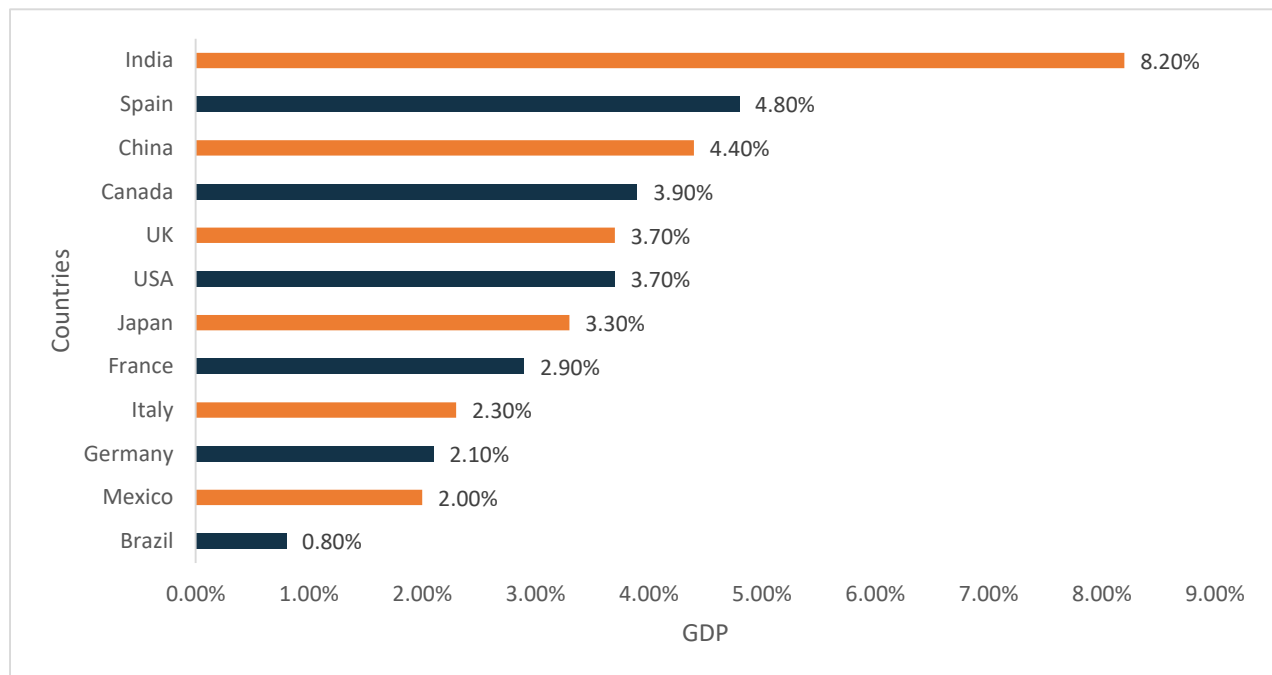
1.1 WORLD ECONOMY

According to the flagship report of International Monetary Fund (IMF) - 'World Economic Outlook' released on 20th April 2022, the global economy is projected to grow by (+) 3.6 % in 2022. The downgrade largely reflects the war's direct impacts on Russia and Ukraine and global spill overs. Both Russia and Ukraine are projected to experience large GDP contractions in 2022.

Advanced economies are projected to expand by (+) 3.3 % in 2022 which includes the USA (+ 3.7%), Japan (+ 2.4 %), the United Kingdom (+ 3.7 %), Germany (+2.1 %), France (+2.9 %), Italy (+2.3%), and Spain (+4.8 %). The group of emerging markets and developing economies (EMDEs) is projected to expand by +3.8 % in 2022.

India is the world's fastest-growing major economy in the world, according to Gross domestic product (GDP) growth projections in the Financial Year (FY) 2022 by the International Monetary Fund (IMF). The IMF has projected a fairly robust growth of 8.2% for India in 2022, making it the fastest-growing major economy in the world, almost twice faster than China's 4.4%. The global growth has been projected at 3.6% in 2022, down from 6.1% in 2021. The IMF's projection of global growth at 3.6% in 2022 and 2023 is 0.8 and 0.2 % lower than in the January forecast, respectively. The downgrade largely reflects the war's direct impacts on Russia and Ukraine and global spillovers.

FIGURE 1 GDP GROWTH PROJECTIONS IN FY 2022



Source: IMF, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

TABLE 1 OVERVIEW OF THE WORLD ECONOMIC OUTLOOK PROJECTIONS (% CHANGE)
FROM 2020-2023

| Particulars | 2020 | 2021 | Projections | |
|---|-------------|------------|-------------|------------|
| | | | 2022f | 2023f |
| World Output | -3.1 | 6.1 | 3.6 | 3.6 |
| Advanced Economies | -4.5 | 5.2 | 3.3 | 2.4 |
| USA | -3.4 | 5.7 | 3.7 | 2.3 |
| Euro Area | -6.4 | 5.3 | 2.8 | 2.3 |
| Germany | -4.6 | 2.8 | 2.1 | 2.7 |
| France | -8 | 7 | 2.9 | 1.4 |
| Italy | -9 | 6.6 | 2.3 | 1.7 |
| Spain | -10.8 | 5.1 | 4.8 | 3.3 |
| Japan | -4.5 | 1.6 | 2.4 | 2.3 |
| UK | -9.3 | 7.4 | 3.7 | 1.2 |
| Canada | -5.2 | 4.6 | 3.9 | 2.8 |
| Other Advanced Economies | -1.8 | 5 | 3.1 | 3 |
| Emerging Market and Developing Economies | -2 | 6.8 | 3.8 | 4.4 |
| Emerging and Developing Asia | -0.8 | 7.3 | 5.4 | 5.6 |
| China | 2.2 | 8.1 | 4.4 | 5.1 |
| India | -6.6 | 8.9 | 8.2 | 6.9 |
| ASEAN-5 | -3.4 | 3.4 | 5.3 | 5.9 |
| Emerging and Developing Europe | -1.8 | 6.7 | -2.9 | 1.3 |

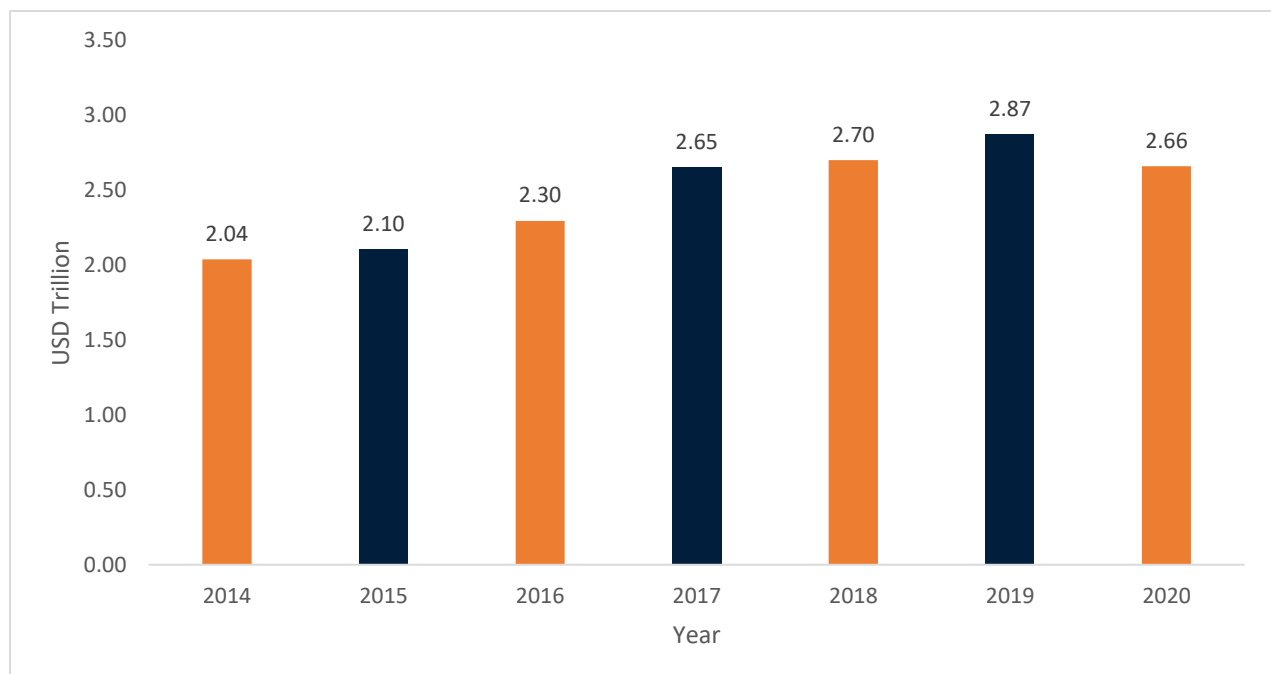
Source: IMF, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.2 INDIAN ECONOMY

India has emerged as the fastest-growing major economy in the world and is expected to be one of the top three economic powers in the world over the next 10-15 years, backed by its robust democracy and strong partnerships.

- India's nominal gross domestic product (GDP) at current prices is estimated to be USD 3.12 trillion in FY22.
- India is the third-largest unicorn base in the world with over 100 unicorns with a total valuation of USD 332.7 billion.

FIGURE 2 INDIA'S GROSS DOMESTIC PRODUCTION FROM 2014-2020



Source: IBEF, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.2.1 OVERVIEW

Certain demographic and epidemiological changes are expected to increase healthcare demand while also influencing the types of health services required in the future. One such development is increased income, which may result in roughly 73 million Indian households entering into the middle class over the next ten years, boosting their purchasing power, especially in healthcare.

By 2026, it is anticipated that 8% of Indians will earn more than USD 12,000 per year. Another noteworthy trend is the rise in life expectancy and the ageing of the population. India's life expectancy is expected to exceed 70 years by 2022, while the country's population is expected to grow to 1.45 billion by 2028, making it the world's most populous country.

While India has the largest population of youth of any country in the World, the number of senior citizens (those aged 60 and more) is also increasing. In fact, it is predicted that by 2041, the proportion of senior citizens in India's population will have doubled, from 8.6% in 2011. India is anticipated to have 300 million senior persons by the year 2050.

FIGURE 3 CURRENT SCENARIO

| Strong Demand | Attractive Opportunities | Rising Power | Policy and Government support |
|---|---|---|---|
| <ul style="list-style-type: none"> Healthcare market in India is expected to reach USD 372 Billion by 2022, driven by rising income, better health awareness, lifestyle diseases and increasing access to insurance. As of 2021, the Indian healthcare sector is one of India's largest employers as it employs a total of 4.7 Million people | <ul style="list-style-type: none"> In the Economic Survey of 2022, India's public expenditure on healthcare stood at 2,1% of GDP in 2021-22 against 1.8% in 2020-21 Two vaccines (Bharat Biotech's Covaxin and Oxford-AstraZeneca's Covishield manufactured by SII)- were instrumental in medically safeguarding the Indian population against COVID-19 | <ul style="list-style-type: none"> Availability of a large pool of well-trained medical professionals in the country The number of allopathic doctors with recognized medical qualifications registered with state medical councils/national medical council increased to 1.27 Million in July 2021, from 0.83 million in 2020. | <ul style="list-style-type: none"> In union Budget 2022-23, USD 11.28 Billion was allocated to the Ministry of Health and Family Welfare. The Indian government is planning to introduce a credit incentive programme worth USD 6.8 Billion to boost the country's healthcare infrastructure. |

1.2.2 HEALTHCARE SECTOR IN INDIA

Healthcare has become one of the largest sectors of the Indian economy, in terms of both revenue and employment. It has been growing at a CAGR of 22% since 2016, employing 4.7 million people directly. The sector has the potential to generate 2.7 million additional jobs in India between 2017-22- over 500,000 new jobs per year.

Several factors such as aging population, a growing middle class, the rising proportion of lifestyle diseases are driving the growth of the Indian healthcare sector. In addition, an increased emphasis on public-private partnerships as well as accelerated adoption of digital technologies, including telemedicine, besides heightened interest from investors and increased FDI inflows over the last two decades is also boosting growth.

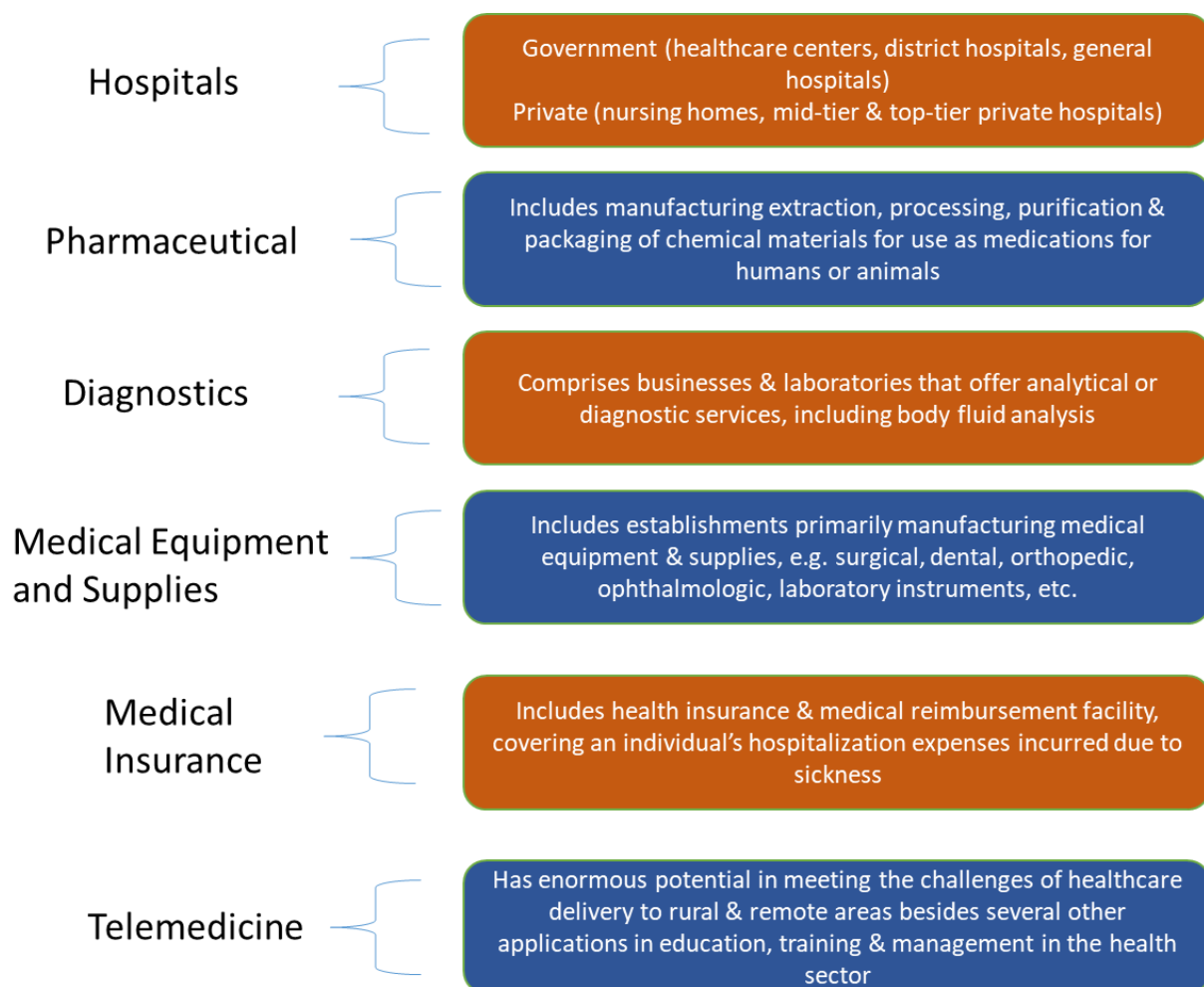
The Indian government has established FDI-friendly policies and has implemented extensive structural and ongoing changes to enhance the healthcare sector. The Aatmanirbhar Bharat Abhiyaan packages include a number of immediate and long-term health system improvements, such as Production-Linked Incentive (PLI) programmes to increase domestic production of pharmaceuticals and medical equipment. Additionally, India is working towards becoming a hub for spiritual and wellness tourism, as the country has much to offer in Ayurveda and Yoga.

The COVID-19 pandemic has not only presented challenges but also several opportunities for India to grow. The crisis has opened the flood gates for Indian start-ups, many of whom have risen to the occasion and accelerated the development of low-cost, scalable, and quick solutions. Additionally, the pandemic is stimulating the country's market for home healthcare and telemedicine.

All these factors, together, make India’s healthcare industry ripe for investment. In the hospital segment, the expansion of private players to Tier 2 and Tier 3 locations, beyond metropolitan cities, offers an attractive investment opportunity. Along with providing investment opportunities in sectors including contract manufacturing and research, over-the-counter drugs, and vaccines, India also has the chance to increase domestic pharmaceutical manufacture, supported by the most current PLI initiatives. The proliferation of diagnostic and pathology centers as well as miniaturized diagnostics presents enormous prospects for businesses in the medical devices market in India.

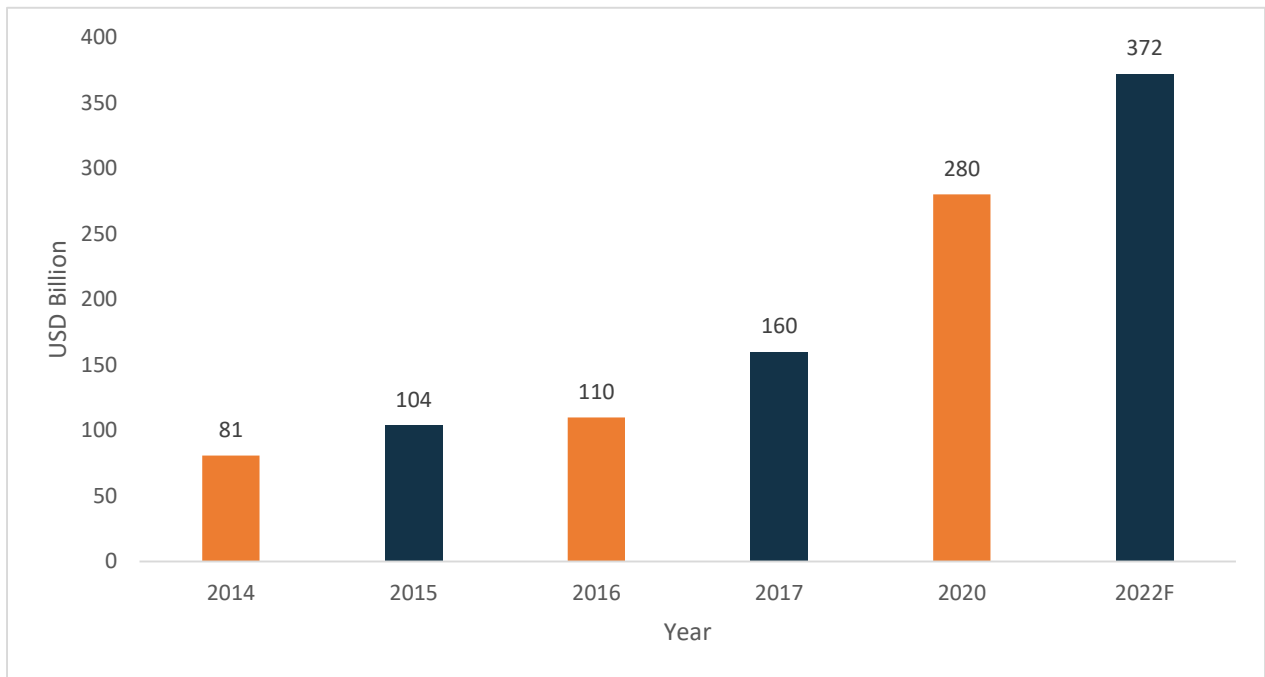
Over the previous two decades, India has emerged as one of the fastest-growing emerging economies, attracting huge FDI inflows that have increased from USD 2.5 billion in 2000-2001 to USD 50 billion in 2019-2020. Investors have become more interested in the healthcare sector in recent years, with transaction values jumping from USD 94 million in 2011 to USD 1,275 million in 2016. All of these variables combine to generate a plethora of investment opportunities in India's healthcare sector.

FIGURE 4 MAJOR SEGMENTS IN INDIA’S HEALTHCARE SECTOR



Source: NITI AAYOG, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

FIGURE 5 GROWTH TREND OF INDIA’S HEALTHCARE SECTOR (USD BILLION) FROM 2014-2022

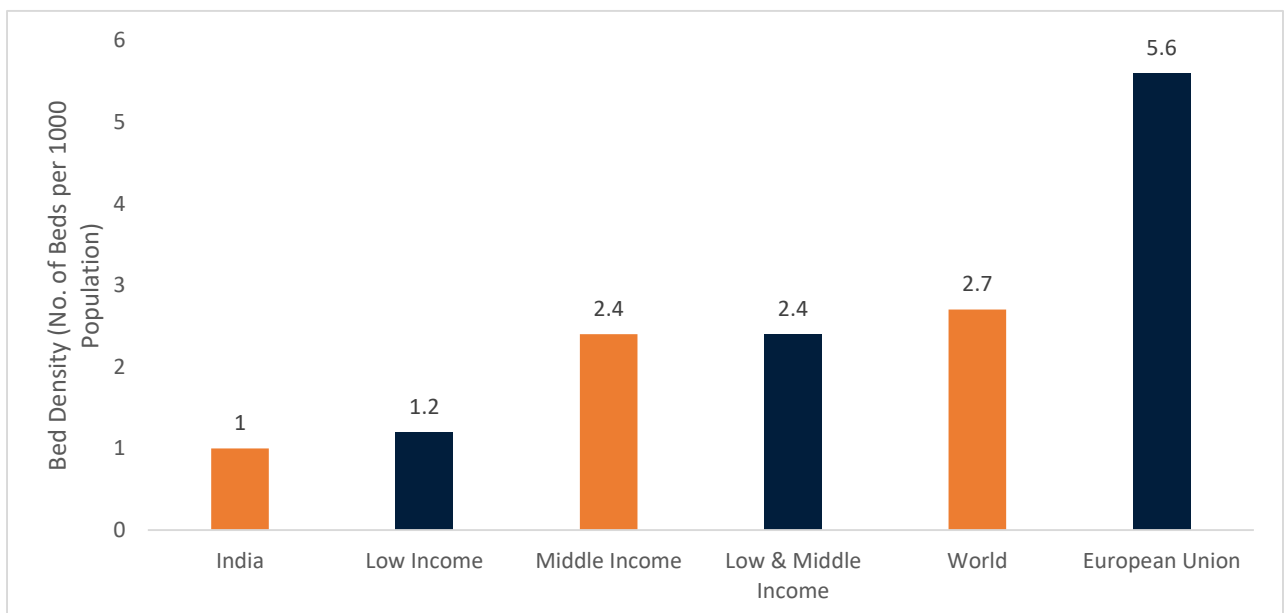


Source: NITI AAYOG, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.2.3 HEALTHCARE INFRASTRUCTURE IN INDIA

Despite economic growth and modernization, India continues to face significant challenges of unavailability and unaffordability in healthcare services. This is substantiated by the fact that India has a lower Bed Density than the rest of the world.

FIGURE 6 BED DENSITY (NUMBER OF HOSPITAL BEDS PER 1000 POPULATION) IN INDIA COMPARED TO OTHER PARTS OF THE WORLD, 2021



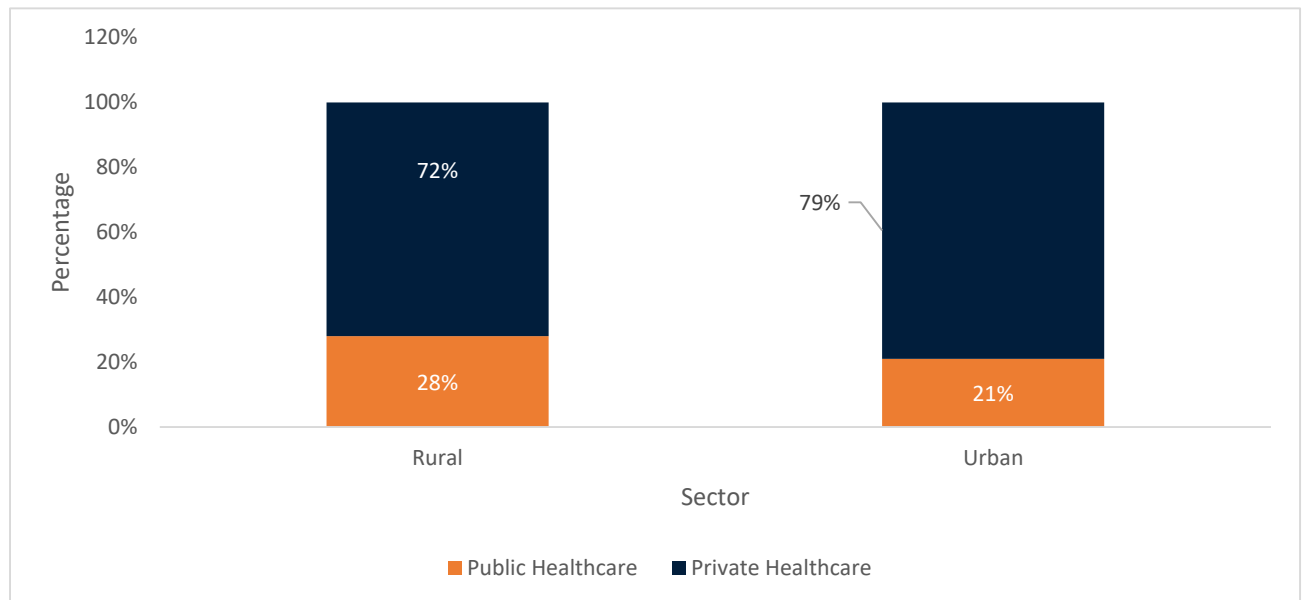
Source: World Bank, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.2.4 PRIVATE SECTOR SPENDING TREND IN INDIA

The standards of India's public healthcare system contrast starkly with its private counterpart, which generates billions of dollars annually from medical tourism.

For Indians, the price of private healthcare is almost four times that of the national system. About 72% of those living in rural areas and 79% of people living in cities use private healthcare services.

FIGURE 7 PUBLIC V/S PRIVATE HEALTHCARE (%), 2019



Source: NITI AAYOG, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.2.5 GOVERNMENT SPENDING FOR HEALTHCARE SECTOR

TABLE 2 EXPENDITURE ON HEALTH AND WELL BEING (USD)

| Ministry Department | 2019-20 | 2020-21 |
|------------------------------------|-----------------|-----------------|
| Dept of health and family welfare | 788.498 | 821.544 |
| Dept of health research | 24.4396 | 26.5373 |
| Ministry of Ayush | 22.5441 | 26.8153 |
| COVID-19 vaccines | - | - |
| Department of water and sanitation | 230.799 | 271.919 |
| Nutrition | 23.7572 | 46.7562 |
| Total | 1,090.04 | 1,193.57 |

Source: NITI AAYOG, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.2.6 GOVERNMENT INITIATIVES

Some of the major initiatives taken by the Government of India to promote Indian healthcare industry are as follows:

- In the Union Budget 2022-23:
 - USD 11.28 billion was allocated to the Ministry of Health and Family Welfare (MoHFW).
 - Pradhan Mantri Swasthya Suraksha Yojana (PMSSY) was allocated USD 1.31 billion
 - Human Resources for Health and Medical Education was allotted USD 982.91 million
 - National Health Mission was allotted USD 4.84 billion
 - Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) was allotted USD 840.32 million
 - The Government of India approved continuation of ‘National Health Mission’ with a budget of USD 4.85 billion
 - USD 675.72 million was allocated to the newly announced PM-ABHIM to strengthen India’s health infrastructure and improve the country’s primary, secondary and tertiary care services.
- As of April 5, 2022, 117,771 Ayushman Bharat-Health and Wellness Centres (AB-HWCs) are operational in India.
- As of April 5, 2022, 748 e-Hospitals were established across India as part of the central government's ‘Digital India’ initiative.
- A Scheme on “India Covid-19 Emergency Response and Health Systems Preparedness Package - Phase-II” (ECRP-Phase-II) during 2021-22 has been approved by the Cabinet on 8.07.2021 for an amount of Rs.23,123 crores, to be implemented in 9 months from 1st July, 2021 to 31st March, 2022. The Scheme is aimed to prevent, detect and respond to the continuing threat posed by COVID-19 and strengthen national health systems for preparedness in India. The scheme is a Centrally Sponsored Scheme (CSS) with some Central Sector (CS) components.
- Under CSS components of ECRP-II, support is provided to the States for provision for establishing District Pediatric Units (42 or 32 bedded units including Oxygen Supported beds and ICU beds) in all the Districts of the Country. Besides, support is also provided to increase the availability of ICU beds in Medical Colleges, District Hospitals, Sub District Hospitals and Community Health Centres.

1.2.7 INVESTMENT OPPORTUNITIES

India's healthcare sector is in high demand from both foreign and indigenous investors. The Government's plans to increase budgetary allocation for public health spending to 2.5% of the country's GDP by 2025, will benefit the hospital sector as well. Specialty hospitals and tertiary care institutions in particular are in high demand. The amount of beds that are currently available and those that are needed are far apart. India has fewer hospital beds per 1,000 people than the rest of the world, which means that over the next 15 years, an additional 2.2 million beds will be required.

TABLE 3 INVESTMENT OPPORTUNITIES IN HOSPITAL/MEDICAL INFRASTRUCTURE

| Sector | Investment Opportunities (IIG) |
|---------------------------------|---|
| Medical Infrastructure | 582 Opportunities worth USD 32.16 Billion |
| Pharma, Biotech & Life sciences | 81 Opportunities worth USD 364.37 Million |

Source: NITI AAYOG, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

TABLE 4 FDI (FOREIGN DIRECT INVESTMENT) IN INDIA'S HEALTH SECTOR (2000-2020)

| | |
|--|--------|
| Health-related FDI (USD Million) | 25,357 |
| Drugs & Pharmaceuticals 16,501 | 16,501 |
| Hospital & Diagnostic Centres 6,727 | 6,727 |
| Medical & Surgical Appliances 2,130 | 2,130 |

Source: NITI AAYOG, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

1.3 MAINTENANCE AND TRADING OF HIGH VALUE MEDICAL EQUIPMENT

Indian medical devices market stood USD 11 Billion in 2020. The market is expected to increase at a CAGR of 35.4% from 2020 to 2025, reaching USD 50 billion, according to data published by IBEF.

The Indian medical device is driven by 75- 80% imports from countries such as the U.S, China and Germany.

The Government of India (GOI) has commenced various initiatives to strengthen the medical devices sector, with emphasis on research and development (R&D) and 100% FDI for medical devices to boost the market.

TABLE 5 IMPORT OF MEDICAL DEVICES IN INDIA FROM 2017-2025, (USD THOUSAND)

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| China | 231,168.0 | 260,795.0 | 260,179.0 | 286,789.0 | 465,689.0 | 554,169.9 | 554,169.9 | 659,462.2 | 784,760.0 |
| United States of America | 377,241.0 | 369,483.0 | 379,284.0 | 264,858.0 | 374,418.0 | 373,715.6 | 373,014.4 | 372,314.6 | 371,616.1 |
| Germany | 246,410.0 | 233,330.0 | 225,969.0 | 179,138.0 | 206,070.0 | 197,062.5 | 188,448.6 | 180,211.3 | 172,334.1 |
| Japan | 104,404.0 | 117,046.0 | 110,255.0 | 80,041.0 | 102,190.0 | 101,643.9 | 101,100.7 | 100,560.4 | 100,023.0 |
| Brazil | 5,618.0 | 6,867.0 | 8,580.0 | 5,219.0 | 4,893.0 | 4,726.9 | 4,566.4 | 4,411.3 | 4,261.6 |
| France | 36,635.0 | 47,244.0 | 47,971.0 | 28,759.0 | 43,659.0 | 45,616.1 | 47,660.9 | 49,797.4 | 52,029.7 |
| Italy | 19,984.0 | 23,346.0 | 27,836.0 | 20,812.0 | 38,865.0 | 45,896.3 | 54,199.7 | 64,005.3 | 75,584.9 |
| United Kingdom | 16,176.0 | 19,509.0 | 25,839.0 | 25,874.0 | 27,923.0 | 32,006.3 | 36,686.6 | 42,051.4 | 48,200.7 |
| Australia | 5,651.0 | 5,852.0 | 6,566.0 | 1,572.0 | 2,992.0 | 2,552.2 | 2,177.1 | 1,857.1 | 1,584.2 |
| Mexico | 21,385.0 | 10,134.0 | 2,278.0 | 3,665.0 | 1,341.0 | 671.1 | 335.8 | 168.0 | 84.1 |
| South Africa | 10.0 | 63.0 | 351.0 | 204.0 | 363.0 | 891.0 | 2,187.1 | 5,368.3 | 13,176.9 |
| Others | 1,949,560.0 | 2,356,991.0 | 2,543,803.0 | 1,967,847.0 | 2,904,936.0 | 3,297,102.4 | 3,742,211.2 | 4,247,409.7 | 4,820,810.0 |

Source: Trade Map, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

TABLE 6 EXPORT OF MEDICAL DEVICES FROM INDIA FROM 2017-2025, (USD THOUSAND)

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| United States of America | 138,830.0 | 206,509.0 | 242,415.0 | 208,617.0 | 242,198.0 | 278,350.7 | 319,899.9 | 367,651.2 | 422,530.2 |
| Germany | 38,862.0 | 46,149.0 | 69,270.0 | 68,959.0 | 61,765.0 | 69,350.0 | 77,866.6 | 87,429.0 | 98,165.7 |
| China | 32,542.0 | 48,182.0 | 60,694.0 | 57,103.0 | 61,053.0 | 71,453.4 | 83,625.4 | 97,871.0 | 114,543.3 |
| Brazil | 36,232.0 | 43,381.0 | 35,688.0 | 34,237.0 | 47,073.0 | 50,256.4 | 53,655.2 | 57,283.8 | 61,157.7 |
| France | 20,985.0 | 20,509.0 | 26,877.0 | 19,827.0 | 21,790.0 | 21,996.0 | 22,204.0 | 22,414.0 | 22,625.9 |
| Italy | 8,802.0 | 13,022.0 | 15,464.0 | 17,449.0 | 19,126.0 | 23,221.2 | 28,193.3 | 34,229.9 | 41,559.2 |
| United Kingdom | 8,535.0 | 10,297.0 | 13,066.0 | 13,459.0 | 15,405.0 | 17,855.7 | 20,696.2 | 23,988.6 | 27,804.8 |
| South Africa | 7,260.0 | 6,980.0 | 7,684.0 | 7,970.0 | 8,781.0 | 9,208.6 | 9,657.1 | 10,127.4 | 10,620.7 |
| Japan | 7,156.0 | 7,798.0 | 10,884.0 | 6,599.0 | 7,626.0 | 7,748.2 | 7,872.5 | 7,998.6 | 8,126.9 |
| Australia | 2,477.0 | 3,440.0 | 3,070.0 | 3,662.0 | 6,041.0 | 7,549.3 | 9,434.1 | 11,789.5 | 14,733.0 |
| Mexico | 5,639.0 | 4,619.0 | 7,168.0 | 8,381.0 | 9,609.0 | 10,978.6 | 12,543.4 | 14,331.3 | 16,374.0 |
| Others | 1,000,073.0 | 1,168,042.0 | 1,435,823.0 | 1,389,906.0 | 1,630,132.0 | 1,841,919.1 | 2,081,221.5 | 2,351,614.2 | 2,657,136.4 |

Source: Trade Map, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

2 INDUSTRY OVERVIEW: ICU SET-UP AND MAINTENANCE

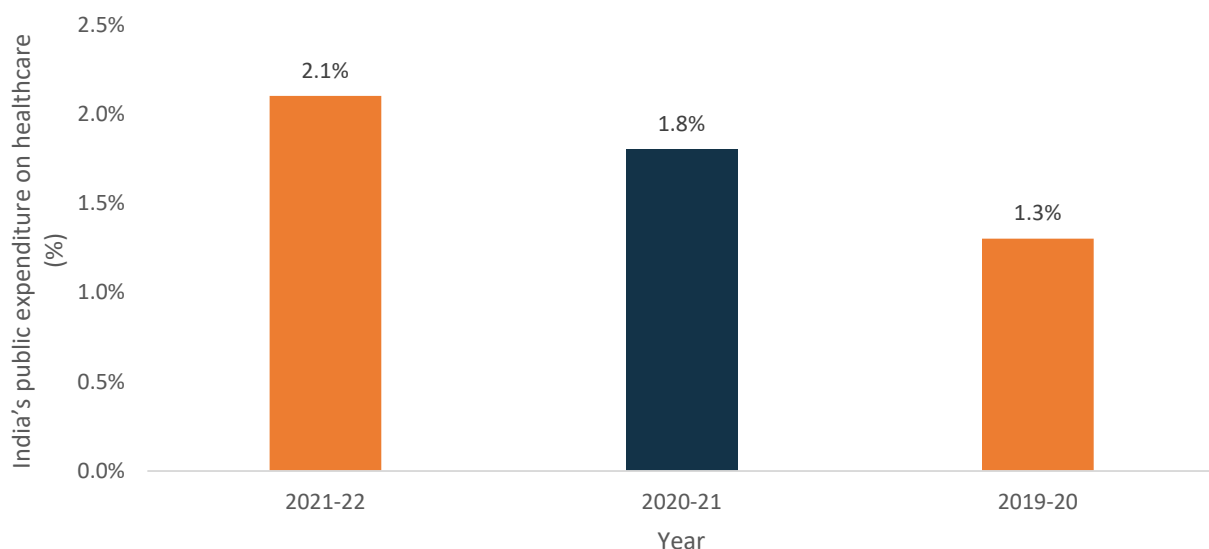
2.1 INDIA ICU SET-UP AND MAINTENANCE MARKET OVERVIEW

The Indian healthcare sector is experiencing rapid change and has become one of India's largest sectors, both in terms of revenue and employment. This change has become significantly more visible over the last decade, with a renewed focus from the government and a growing market demand for healthcare services and products. The Indian population of nearly 1.4 billion is growing at a rate of 1.6 percent per year and has an elderly population of over 100 million. Rapid economic growth, rising middle class incomes, and increased market penetration of health insurance are fueling growth in the industry. In addition, changing demographics and a shift from chronic to lifestyle diseases has led to a boom in healthcare spending.

The Indian healthcare industry reached \$190 billion in 2020, and according to the India Brand Equity Foundation (IBEF), it is expected to reach \$370 billion by 2024-2025, due to increased demand for specialized and higher quality healthcare facilities. The products and services driving this growth include hospitals, medical devices, clinical trials, telemedicine, medical tourism, health insurance, and medical equipment.

The industry's rapid development is fueled by large investments from existing corporate hospital chains and new entrants backed by private equity investors. However, considerable challenges exist in terms of service accessibility and patient care quality. According to the Global Burden of Disease Study (GBD), released by the Lancet Medical Journal in 2018, India ranks 145th among 195 countries on the healthcare index. India's healthcare access and quality (HAQ) index score has improved in recent years, increasing from 44.8 (out of 100) in 2015 to 67.3 in 2020.

FIGURE 8 INDIA'S PUBLIC EXPENDITURE ON HEALTHCARE (%)



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

In the Economic Survey of 2022, India’s public expenditure on healthcare stood at 2.1% of GDP in 2021-22 against 1.8% in 2020-21 and 1.3% in 2019-20.

ICU is highly specified and sophisticated area of a hospital which is specifically designed, staffed, located, furnished and equipped, dedicated to management of critically sick patient, injuries or complications. It is a department with dedicated medical, nursing and allied staff. It operates with defined policies; protocols and procedures should have its own quality control, education, training and research programmes. It is emerging as a separate specialty and can no longer be regarded purely as part of anaesthesia, medicine, surgery or any other speciality. It has to have its own separate team in terms of doctors, nursing personnel and other staff who are tuned to the requirement of the speciality.

In India the scenario of ICU development is fast catching up and after initiatives, promotion, education and training programmes of Indian Society of Critical Care Medicine (ISCCM) during last 15 years, there has been stupendous growth in this area but much needs to be done in area of infrastructure, human resource development, protocol, guidelines formation and research which are relevant to Indian circumstances.

India is a diverse country with different levels of health care: primary, secondary and tertiary. At advanced centres in large cities, the ICU bed strength varies between less than 5% of the total hospital beds in majority of hospitals, to near 10% in selected few hospitals. Large public hospitals (e.g., some corporate/chain hospitals in the metropolitan cities/state-provincial capitals of the country) have separate medical, surgical, paediatric, cardiac, cardiothoracic, neurology, paediatric and neonatal ICUs. Most hospitals have all/broad purpose ICUs or, at most, medical, surgical, and coronary care units. The number of ICU beds available is disproportionately low, both in private as well as public hospitals. Obtaining a bed in ICU is quite often difficult for critically ill patients. Owing to shortage of ICU beds, only the most critical of the deserving patients are provided ICU care, that could contribute to high mortality inside the ICU as well as outside the ICU (in the wards).

2.1.1 ICU PLANNING AND DESIGNING IN INDIA – GUIDELINES

Designing ICU/Level/No of ICUs/No of Beds and Individual Bed

Following ICU Levels are proposed

Level I

- It is recommended for small district hospital, small private Nursing homes, Rural centres
- Ideally 6 to 8 Beds
- Provides resuscitation and short-term Cardio respiratory support including Defibrillation
- ABG Desirable
- It should be able to Ventilate a patient for at least 24 to 48 hrs and Noninvasive Monitoring like - SPO2, H R and rhythm (ECG), NIBP, Temperature etc
- Able to have arrangements for safe transport of the patients to secondary or tertiary centres
- The staff should be encouraged to do short training courses like FCCS or BASIC ICU Course
- In charge should be preferably a trained doctor in ICU technology and knowledge

- Blood Bank support
- Should have basic clinical Lab (CBC, BS, Electrolyte, LFT and RFT) and Imaging back up (X-ray and USG), ECG
- Some Microbiology may be desirable
- At least one book on Critical Care Medicine as ready reckoner

Level II (Recommendations of Level I Plus)

- Recommended for larger General Hospitals
- Bed strength 6 to 12
- Director be a trained/qualified Intensivist
- Multisystem life support
- Invasive and Noninvasive Ventilation
- Invasive Monitoring
- Long term ventilation ability
- TC Pacing
- Access to ABG, Electrolytes and other routine diagnostic support 24 hrs
- Strong Microbiology support with facility for Fungal Identification desirable
- Nurses and duty doctors trained in Critical Care
- CT must & MRI is desirable
- Protocols and policies for ICUs are observed
- Research will be highly recommended
- Should be supported ideally by Cardiology and other super specialities of Medicine and Surgery
- HDU facility will be desirable
- Should fulfil all requirements for IDCC Course
- Resident doctors must be exposed to FCCS course/BASIC course/Ventilation workshops and other updates
- Blood banking either own or outsourced

Level III (All recommendations of Level II Plus)

- Recommended for tertiary level hospitals
- Bed strength 10 to 16 with one or multiple ICUS as per requirement of the institution
- Headed by Intensivist
- Preferably Closed ICU
- Protocols and policies are observed
- Have all recent methods of monitoring, invasive and noninvasive including continuous cardiac output, SCvO₂ monitoring etc
- Long term acute care of highest standards
- Intra and inter-hospital transport facilities available
- Multisystem care and referral available round 24 hrs

- Should become lead centres for IDCC and Fellowship courses
- Bedside x-ray, USG, 2D-Echo available
- Own or outsourced CT Scan and MRI facilities should be there
- Bedside Bronchoscopy
- Bedside dialysis and other forms of RRT available
- Adequately supported by Blood banks and Blood component therapy
- Optimum patient/Nurse ratio is maintained with 1/1 pt/Nurse ratio in ventilated patients
- Protocols observed about prevention of infection
- Provision for research and participation in National and International research programmes
- Patient area should not be less than 100 sq ft per patient (>125 sq ft will be ideal). In addition there is optimum additional space for storage, nursing station and relatives
- The unit is assisted by an Ethical Committee which formulates policies about DNAR, Organ donation, EOLS etc.
- Doctors, Nurses and other support staff be continuously updated in newer technologies and knowledge in critical Care

2.1.2 INDIA ICU STATISTICS

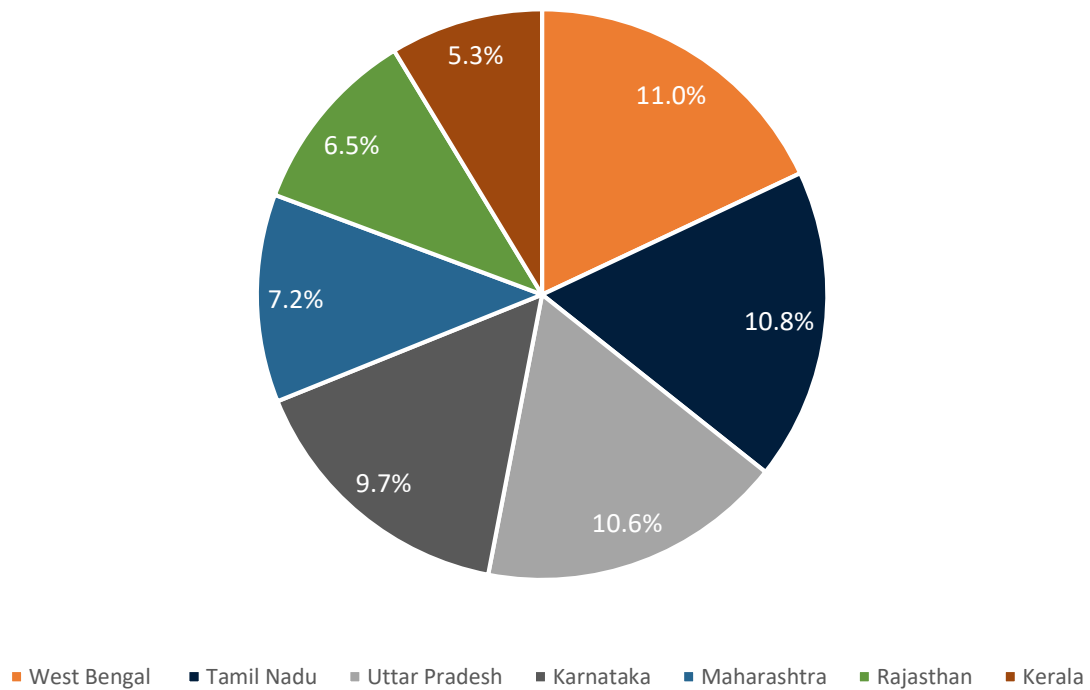
There were an estimated 95 thousand intensive care unit hospitals beds across India in 2019. Of these, private hospitals had the highest number of beds at around 59 thousand, compared to around 36 thousand ICU beds in public hospitals.

TABLE 7 INDIA ICU STATISTICS: 2019

| | |
|---------------------------------------|--------------------|
| Total Hospital Beds | 1.9 Million |
| Public Hospital Beds | 713,986 |
| Private Hospital Beds | 1,185,242 |
| Total Intensive Care Unit Beds | 94,961 |
| Public Intensive Care Unit Beds | 35,699 |
| Private Intensive Care Unit Beds | 59,262 |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

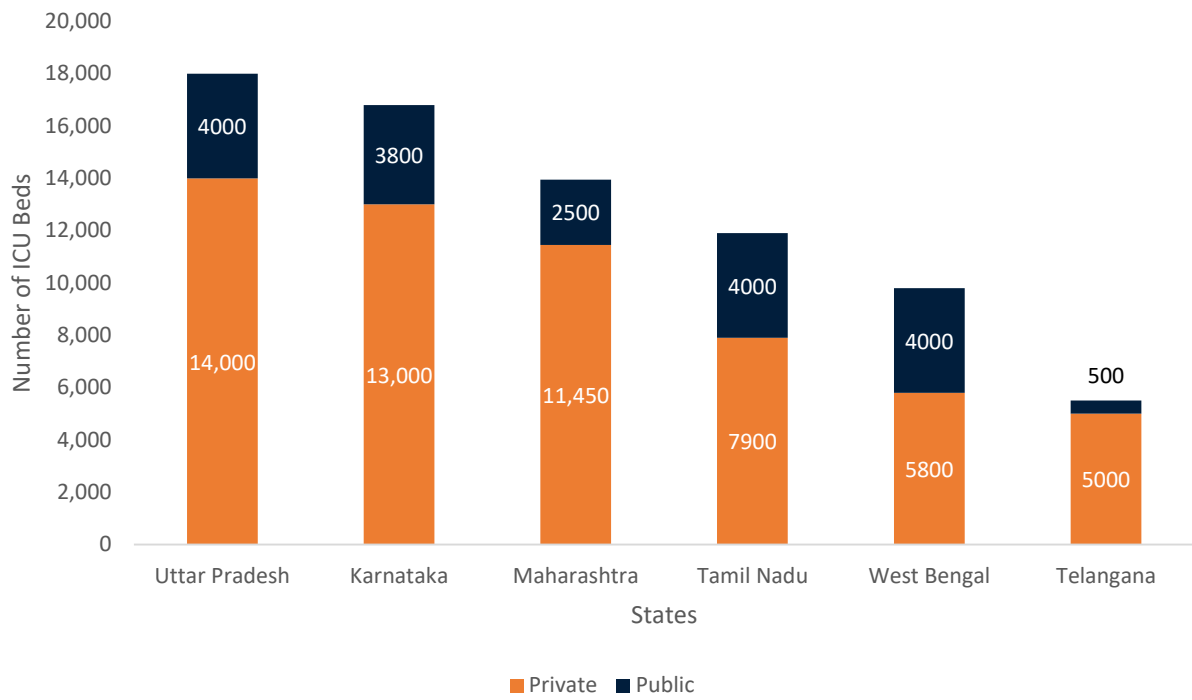
FIGURE 9 PERCENTAGE SHARE OF NUMBER OF BEDS AND VENTILATORS AVAILABLE IN INDIA, 2020



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

According to research, India has approximately 1,900,000 hospital beds, 95,000 ICU beds, and 48,000 ventilators. Most of the beds and ventilators in India are spread across seven states – West Bengal (11 percent), Tamil Nadu (10.8 percent), Uttar Pradesh (10.6 percent), Karnataka (9.7 percent), Maharashtra (7.2 percent), Rajasthan (6.5 percent) and Kerala (5.3 percent).

FIGURE 10 NUMBERS OF ICU BEDS IN STATES ACROSS PUBLIC AND PRIVATE SECTORS, 2020



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

2.1.3 ICU SETUP COST: INDIA

The cost to set up a hospital in India depends on two per-determinants:

1. The intended capacity of the health care facility
2. The level of health care the facility intends to offers

TABLE 8 ICU SETUP COST: INDIA, 2021

| Sl. No. | Departments | Facilities & Items | Qty | Cost (INR) |
|---------|----------------------|--|-----|---|
| 1. | OPD | Outpatient check-up rooms with proper preliminary diagnostic devices | 2-3 | 50,000 |
| | | Multispecialty Dental Chair | 1 | 2,50,000 |
| | | ENT check-up workstation with audiometer and tympanometry | 1 | 3,00,000 |
| 2. | In-patient Ward | General (beds) | 20 | 5,50,000 |
| | | ICU/ICCU(beds) | ≤10 | 19,90,000 |
| | | Nursery with Intensive Care | | 9,00,000 |
| 3. | OR Setup | Basic operation room With optional laparoscopic facility | 2 | 20,40,000 (+) 18,00,000 |
| 4. | Emergency Block | - | 1 | 6,43,000 |
| 5. | Diagnostic Framework | Radiology, pathology, and imaging rooms separately With optional MRI machine (each dept.) | 1 | 38,50,000 8,00,000 (+) 1,00,00,000 |
| 6. | CSSD | Sterilization equipment and storage | | 2,75,000 |
| 7. | Ambulatory Service | Medical vehicle with life support | 1 | 5,00,000 |
| 8. | Special Storage | Refrigerated and regulatory guidelines complied storage facility for blood bank and blood products | 1 | 5,00,000 |
| 9. | Mortuary | - | 1 | 4,00,000 |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

2.2 GLOBAL ICU SET-UP AND MAINTENANCE MARKET OVERVIEW

The frequent outbreaks of pandemic diseases such as Influenza, Ebola, and the recent Covid-19, has put enormous pressure on healthcare authorities and health services to draft and discuss preparedness plans that include the increase in number of ICU beds, to accommodate critically ill patients. During pandemics, most patients require ICU admission and this drives the market for ICU beds. Even in most well-developed countries, ICU beds are often close to capacity during such out-breaks.

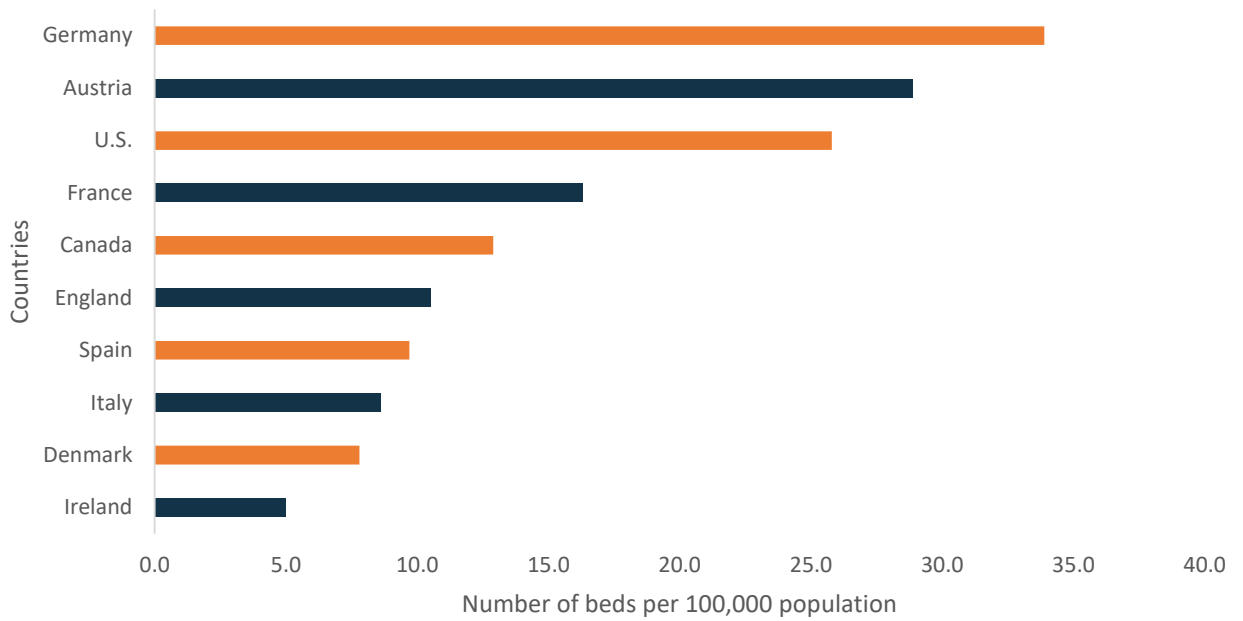
Patients with severe COVID-19 disease require approximately 14 days of respiratory support in ICU. Such lengthy treatment time will further stress resources. Therefore, the frequent outbreaks of pandemics are expected to drive the overall ICU beds market.

Critical care is often described as expensive care that includes high cost of resources. In the U.S., although ICU beds comprise less than 10% of hospital beds, ICU departments consume 22% of total hospital costs.

ICU beds tend to cost threefold higher than a bed in a general ward. ICU beds cost between \$25,000 and \$30,000, significantly more than other medical/surgical beds, which typically cost \$5,000 to \$10,000 a bed.

Bariatric beds are even more expensive, which are nearly about \$35,000 to \$40,000 each. The escalating demand for critical care services put financial strain on both health care systems, and also on patients, who pay completely or partially out-of-pockets for these services. Therefore, high prices of ICU beds are a restraint on the growth of the ICU beds market.

FIGURE 11 RATES OF INTENSIVE CARE BEDS IN HOSPITALS IN SELECT COUNTRIES
WORLDWIDE, 2020



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

As of 2020, it was estimated that Germany had around 34 intensive care beds in hospitals per 100,000 population. This statistic shows rates of intensive care beds in hospitals in select countries worldwide as of 2020. In the course of the COVID-19 pandemic, the availability of critical care beds has become a major issue across all affected countries.

3 COVID-19 IMPACT ASSESSMENT

3.1 IMPACT ASSESSMENT

Since December 2019, the Coronavirus disease-19 (COVID-19) pandemic has affected more than 110 million patients and led to more than 2.4 million deaths worldwide. Unfortunately, global cases continued to rise, with many countries facing additional waves of infection, some of which were even more worrisome than the first. Healthcare systems have been challenged but have also shown remarkable adaptability.

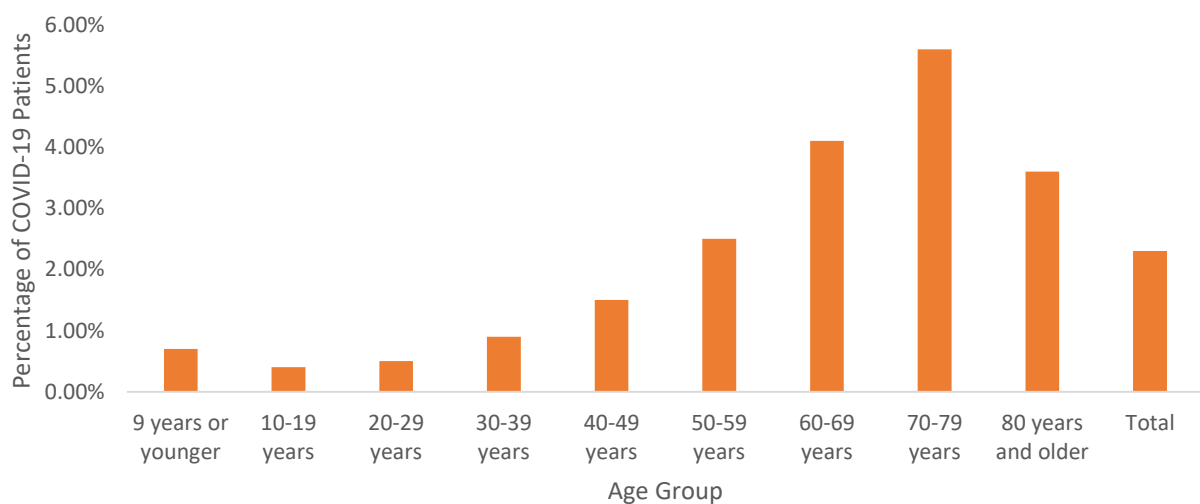
COVID-19 can affected the global economy in three main ways: by directly affecting production and demand, by creating supply chain and market disruption, and by its financial impact on firms and financial markets. The outbreak of COVID-19 has brought effects on many aspects, like flight cancellations travel bans and quarantines restaurants closed all indoor events restricted over forty countries state of emergency declared massive slowing of the IT Spending market volatility falling business confidence, growing panic among the population, and uncertainty about future.

The growing number of COVID-19 patients with respiratory failure has led to an unprecedented surge of ventilators, leading to shortage of mechanical ventilators. To mitigate this worldwide shortage, major key players as well as the small scale manufacturers have increased the production of ventilators.

For instance, in March 2020, Medtronic increased the production of ventilators by more than 40% due to coronavirus outbreak and to cater to the increase of demands of the patients and healthcare systems.

Intensive care unit is one of the most critically functioning operational environments in a hospital. It provides the critical care, and life support for acutely ill and injured patients. ICU equipment includes life support, real-time patient monitoring, and emergency resuscitation devices; and diagnostic devices.

FIGURE 12 PERCENTAGE OF PEOPLE WITH COVID-19 WHO WERE ADMITTED TO THE ICU IN THE U.S., BY AGE, 2020



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

3.1.1 INDIA HAS LONG BEEN SHORT OF HOSPITAL BEDS. THE PANDEMIC INTENSIFIED THE SHORTAGE

When India country was ravaged by an aggressive second wave of the virus in March-April, there were fewer beds for Covid patients, not just in Delhi but also in many other parts of the country, including Mumbai.

TABLE 9 COVID BEDS ACROSS INDIA, 2020

| | |
|--------------------------------------|-----------|
| Dedicated Covid treatment facilities | 15,375 |
| Dedicated isolation beds | 15,41,821 |
| Oxygen supported beds | 2,70,738 |
| ICU Beds | 80,583 |
| Ventilator Beds | 40,545 |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

TABLE 10 DISTRIBUTION OF GOVERNMENT: HOSPITALS AND BEDS ACROSS REGIONS, 2020

| | Hospitals | Beds |
|-------|-----------|----------|
| Rural | 21,403 | 2,65,275 |
| Urban | 4,375 | 4,48,711 |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

The pandemic has underscored the need to urgently invest in the public sector healthcare infrastructure. The current wave of the pandemic is set to extract a huge toll due to the inadequacies of the healthcare infrastructure.

There might be a third wave in the not too distant future. However, urgent measures taken now by the Union and state governments to upgrade the quality of healthcare infrastructure and hospital care can limit the damage inflicted by it.

3.2 UPCOMING STRATEGIES REQUIRED TO COMBAT THE CURRENT SITUATION

As the COVID-19 pandemic continues to expand throughout the world, innovative methods are required to involve residents in the care of critically ill COVID-19 patients. Telemedicine is one of the promising technologies which is having a significant focus during the pandemic. Several initiatives and implementations have been carried out by various government organizations and market players related to tele ICU which are likely to drive the market growth. For instance,

In July 2020, Physician anesthesiologists at the New Hampshire Society of Anesthesiologists (NHSA) have launched Tele-intensive Care Unit (Tele-ICU) hub to collaborate with physicians in rural hospitals to ensure infected patients from across the state get critical care expertise at no expense while receiving care close to home in Chicago.

In August 2020, Advanced ICU Care launched comprehensive tele-ICU care in collaboration with CentraState Medical Center located in New Jersey.

India is in the top 5 countries with the highest amount of COVID-19 cases. The country’s healthcare system was under immense pressure as infections spike. Leveraging its clinical, technical and design expertise, several companies have developed new mobile ICUs to address the challenging needs of critical-care services in India. For instance,

In July 2020, Royal Philips, a global leader in health technology announced that it introduced first-of-its-kind mobile Intensive Care Units (ICUs) in India. Designed to meet the critical-care requirements of patients, each prefabricated ICU has a capacity of nine beds.

Furthermore, the COVID-19 pandemic has highlighted a pre-existing shortage of critical care specialists, nurses and other clinicians across the U.S. and around the world. In response to the critical care shortage GE Healthcare announced a multi-year agreement with Oregon Health & Science University (OHSU), Oregon’s only academic health center, that allow OHSU to oversee and help provide care to ICU patients across eight hospital sites via a “Virtual ICU” (VICU), using the GE Healthcare Mural Virtual Care Solution.

TABLE 11 STRATEGIES USED TO EXPAND ICU BED CAPACITY DURING THE COVID-19 PANDEMIC

| Area | Strategy |
|-------------------------|---|
| Within ICU | Use of non-operational ICU beds |
| | Converting large ICU rooms to double rooms for 2 patients |
| | Shifting low-acuity patients to the wards |
| Within hospital | Repurposing other monitored beds (post-anesthetic care units, stepdown, stroke units, endoscopy suites and emergency departments and operating rooms) to ICUs |
| | Repurposing wards to ICUs |
| | Establishing de novo ICUs |
| Outside hospital | Field hospitals |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

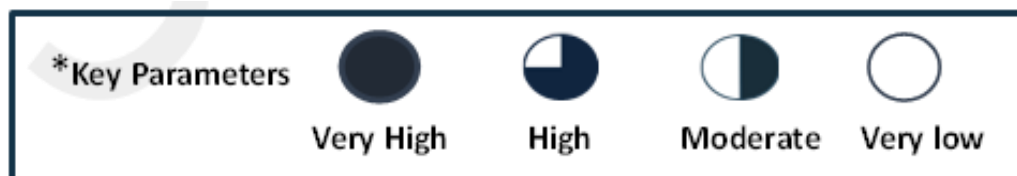
4 ICU SET-UP AND MAINTENANCE SEGMENTATION & IMPACT ANALYSIS

4.1 INDUSTRIAL OUTLOOK

4.1.1 MARKET DRIVER ANALYSIS

| Market Drivers | 2021–2022 | 2022–2024 | 2025–2030 |
|---|-----------|-----------|-----------|
| | Impact | | |
| Growing prevalence of chronic diseases | | | |
| Improvement in hospital infrastructures | | | |
| Growing demand for intensive care | | | |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data



4.1.1.1 GROWING PREVALENCE OF CHRONIC DISEASES

Chronic diseases, such as cardiovascular diseases, cancer, neurological diseases, and respiratory diseases, are globally prevalent. For instance, according to the Centres for Disease Control and prevention, approximately 133 Americans have at least one chronic disease. They require ongoing monitoring or treatment, leading to long-term hospitalization and intensive care. Hence, the growing prevalence of chronic diseases has simultaneously led to an increasing number of patient admissions in the critical care unit, which is projected to drive the market growth.

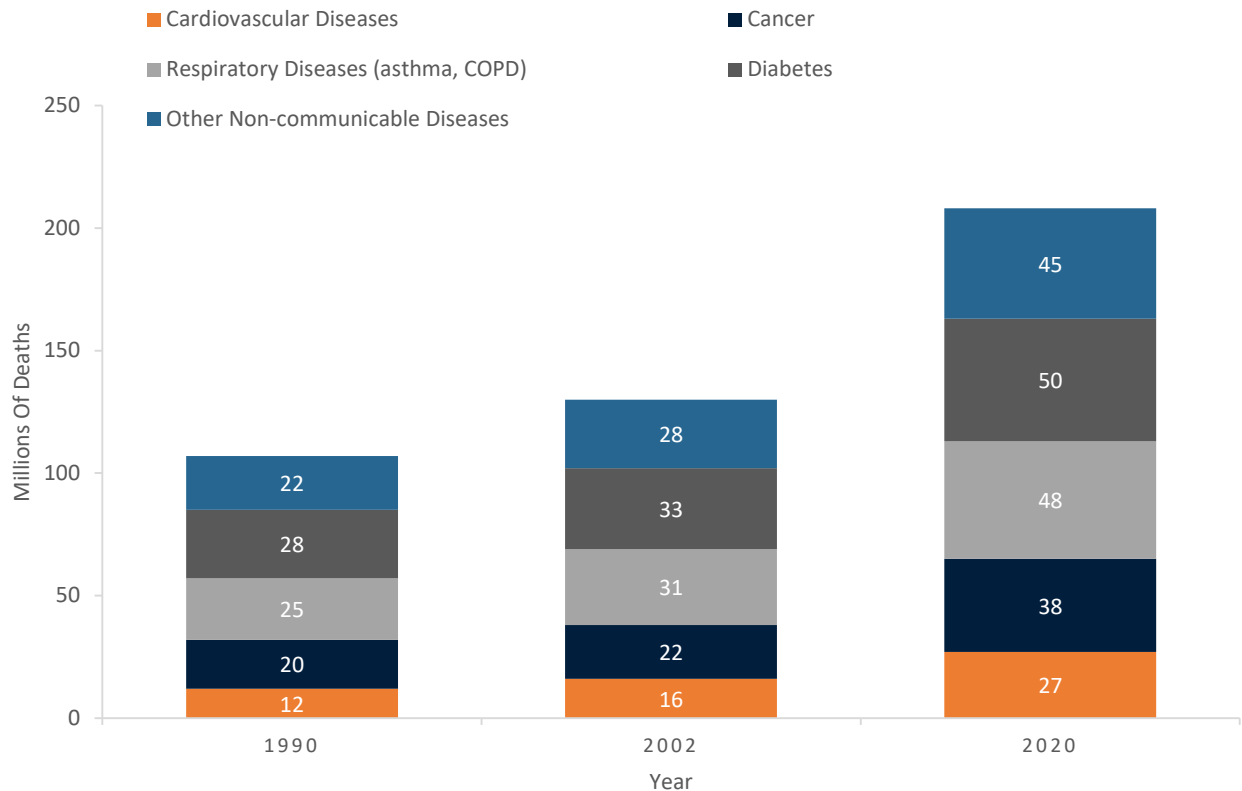
For instance, according to a research article published in the National Centre for Biotechnology Information (NCBI), in 2019, in the U.S., intensive care unit readmission and re-hospitalization risk among COPD patients was 44% within five years of discharge.

Additionally, the burden of respiratory disease is rising globally, owing to various factors, such as obesity, smoking, and lifestyle changes. At severe stage of respiratory diseases, acute respiratory failure often requires intensive care unit admission.

According to a research article published by the National Centre of Biotechnology Information (NCBI), In Germany, around 2.1 million patients are admitted to intensive care unit each year, out of which an estimated 42.0% of patients require mechanical ventilation.

Worldwide annual mortality due to chronic disease is expected to increase in real numbers as well as relative to deaths from injuries and diseases traditionally understood to be infectious such as polio, rubella, tuberculosis, etc.

FIGURE 13 ANNUAL GLOBAL MORTALITY, BY CHRONIC ILLNESS



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

4.1.1.2 IMPROVEMENT IN HOSPITAL INFRASTRUCTURES

The growing trend of digitalization of healthcare, the integration of advanced AI/ML algorithms, cloud deployment of healthcare systems, rising expenditure, inefficient facility management, and overburdened systems are creating a surge in demand for healthcare infrastructure. Care facilities would be able to integrate and streamline their workflows, drive their operational and functional outcomes, enhance data management and security, and deliver optimum care. It is anticipated to boost the adoption and demand for cloud infrastructure systems and bolster the market growth.

The pandemic positively impacted the demand for advanced cloud infrastructure and solutions due to the rise in the implementation of these systems across several organizations. The Covid-19 pandemic has upended how businesses function and has overburdened back-end support services and increased traffic on networks.

The pandemic led to remote working and relying on virtual digital events, which significantly increased the demand for cloud infrastructure implementation. Clinical providers are rapidly adjusting to adopt these advanced solutions. Furthermore, the implementation of these systems and solutions allows organizations to drastically cut down on their IT spending and focus on seamlessly remote working.

4.1.1.3 GROWING DEMAND FOR INTENSIVE CARE

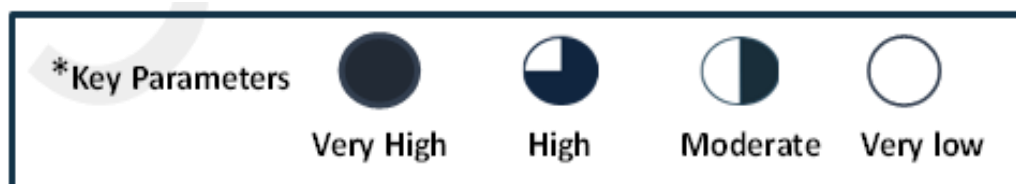
Intensive care represents the highest patient care and treatment level designated for critically ill patients with potentially recoverable life-threatening conditions. This intensive care for patients is given in the intensive care unit a separate self-contained area within a medical facility equipped with high-tech specialized facilities.

The growing geriatric population with the rising prevalence of chronic diseases and emerging health threats, such as coronavirus, are contributing to the global market growth. For instance, in March 2020, Philips announced to ramp up the production of critical healthcare products to help diagnose and treat patients with the new coronavirus disease. It doubled the production of hospital ventilators and achieved a four-fold increase by the third quarter of 2020.

4.1.2 MARKET RESTRAINTS ANALYSIS

| Market Restraints | 2021–2022 | 2022–2024 | 2025–2030 |
|---|-----------|-----------|-----------|
| | Impact | | |
| High cost of treatment and expensive set up | | | |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data






4.1.2.1 HIGH COST OF TREATMENT AND EXPENSIVE SET UP

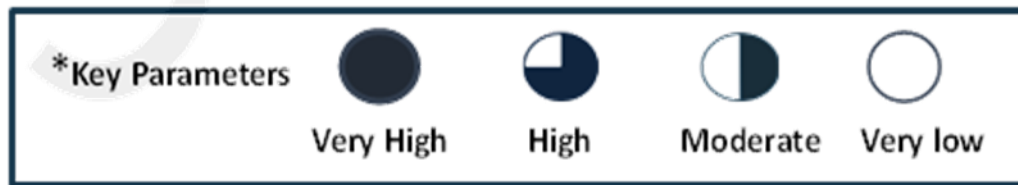
Despite the growing population and chronic disease burden, certain factors are restraining the growth of the market. One of the major restraining factors among them is the high price tag of critical care equipment. Higher costs of the equipment result in a higher cost per patient admission in the critical care unit. For instance, according to the economic analysis, the cost per patient admission in the ICU ranges from about USD 1,783 to USD 78,435. Hence, the overall treatment cost in the ICU is an out-of-pocket expense in emerging countries, which limits the market growth.

Due to the high cost associated with the equipment, many healthcare providers operating in emerging countries rely on purchasing refurbished equipment for their facilities. This factor significantly hampers the growth of the market. For instance, mid-sized private hospitals that account for over 90% of the total number of the healthcare providers in India cannot afford expensive systems, such as patient monitoring equipment and ventilators. In March 2020, the Union Ministry of India eased the import policy and commissioned the import of second-hand ventilators until September 2020, as coronavirus infections skyrocketed. In addition to this, higher import duties on advanced equipment are projected to impact the market growth over the forecast duration significantly.

4.1.3 MARKET OPPORTUNITIES ANALYSIS

| Market Opportunities | 2021–2022 | 2022–2024 | 2025–2030 |
|---|---|---|---|
| | Impact | | |
| Technological advancement in the treatment facilities |  |  |  |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data






4.1.3.1 TECHNOLOGICAL ADVANCEMENT IN THE TREATMENT FACILITIES

In the past few decades, a particularly rapid period of technological advancement has been witnessed in the area of critical care. The incorporation of artificial intelligence (AI) in the ventilators is one of the most current market trends across the globe. For instance, in August 2020, when ventilators have become critical for treating severe coronavirus cases, an India-Dutch start-up LEVEN Medical, developed smart ventilators that are integrated with AI and machine learning (ML).

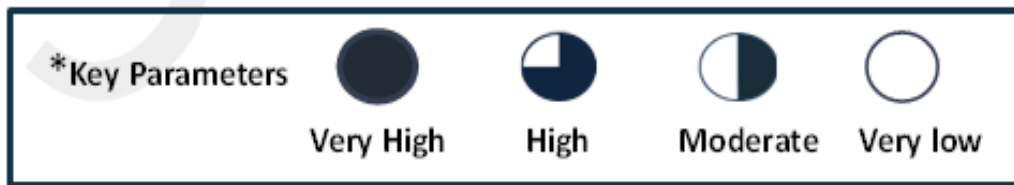
Moreover, the beds are witnessing innovative developments, such as wireless beds that provide higher service and function levels, such as caregiver and patient assistance, real-time monitoring, automated functions and positions, and data logging. For instance, in October 2020, Stryker announced the global launch of the industry’s first and only completely wireless hospital bed, ProCuity. This intelligent bed was designed to help reduce in-hospital patient falls at all acuity levels, improve nurse workflow efficiencies and safety, and help lower hospital costs. It is the only bed in the market today that can connect seamlessly to nurse call systems without cables or wires.

Thus, such increasing advancements in the ICU equipment are anticipated to drive market growth over the forecast period.

4.1.4 MARKET CHALLENGES ANALYSIS

| Market Challenges | 2021–2022 | 2022–2024 | 2025–2030 |
|-------------------------|---|---|---|
| | Impact | | |
| Lack of proper training |  |  |  |

Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data



4.1.4.1 LACK OF PROPER TRAINING

The absence of proper education and training is closely tied to the negative consequences of technology, such as staff errors, stress, and limited autonomy. ICU nurses must gain information and clinical skills through a lifelong learning approach to retain competency because undergraduate education cannot address training for continually changing equipment. Continuous education and training programs are required to keep pace with technological advancements and provide accurate information about capabilities, potential applications, and user requirements for the safe and effective use of new, more complicated devices, particularly their advantages over previous models.

4.2 REGULATORY FRAMEWORK

Guidelines for the provision of intensive care services-

- Critical care units must hold multi-professional clinical governance meetings, including analysis of mortality and morbidity.
- The unit must participate in a National Audit Programme for Adult Critical Care.
- Critical care units must participate in a mortality review programme using appropriate methodology to maximize learning and improvements in care
- Critical care units should participate in a programme of hospital-acquired infection surveillance to monitor and benchmark rates of catheter-related bloodstream infections, antimicrobial use, and frequency of multi-resistant infections.

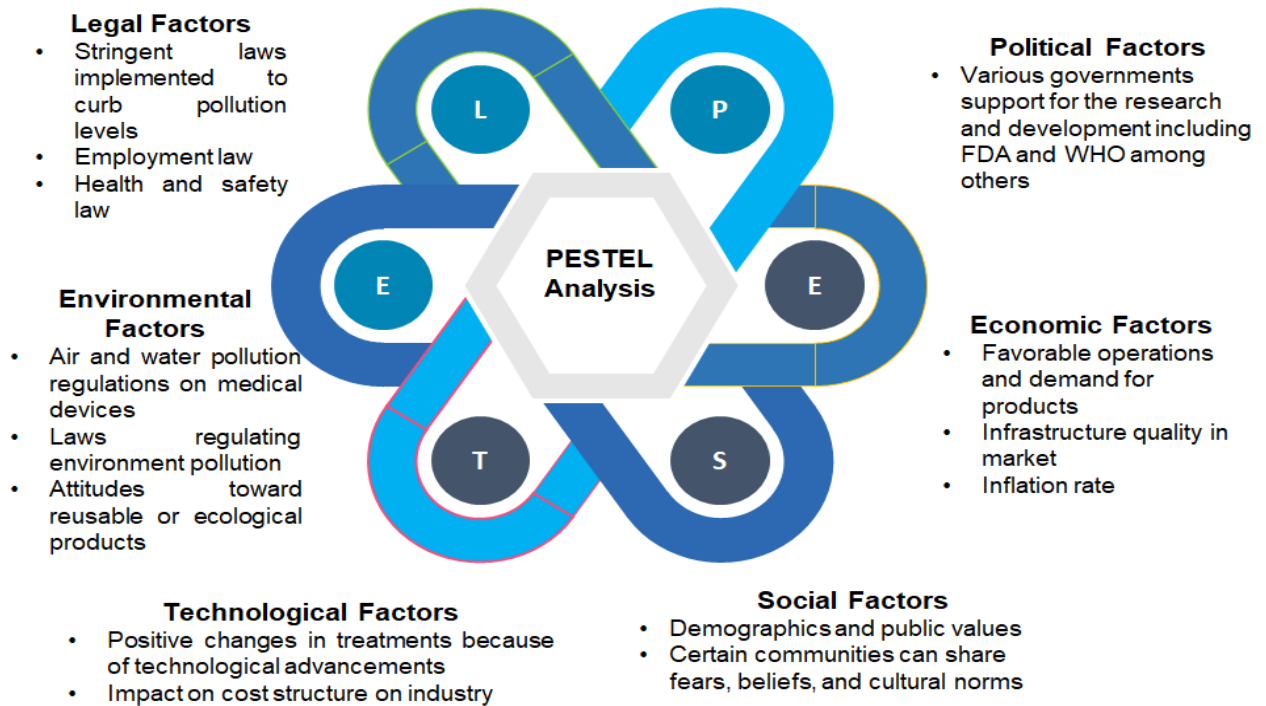
Recommendations-

- The UK intensive care community should encourage and develop a validated methodology to review referrals to intensive care and evaluate decision making and subsequent outcomes relating to intensive care admission and refusal.
- Units should develop a consistent approach to patient-centred decision making, evaluating burdens and benefits of admission to intensive care, and be able to demonstrate this through the audit of pre-admission consultation, agreed ceilings of therapy, and time-limited treatment trials.
- Longer-term mortality should be collected on all patients admitted to critical care.
- The UK intensive care community should encourage and develop validated measures of longerterm patient- and family-centred outcomes beyond mortality, including measures of functional ability, socioeconomic consequences, and carer burden.
- The UK intensive care community should encourage and develop validated measures of quality of care relating to end of life and bereavement.

- Critical care units should consider systematic assessment of patient and family experiences and demonstrate how these are used to guide improvement.

4.3 PESTEL ANALYSIS

FIGURE 14 PESTEL ANALYSIS



Source: NCBI, ISCCM, CDDEP, CDC, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data

5 ICU SET-UP AND MAINTENANCE MARKET BY TYPE INSIGHTS & TRENDS

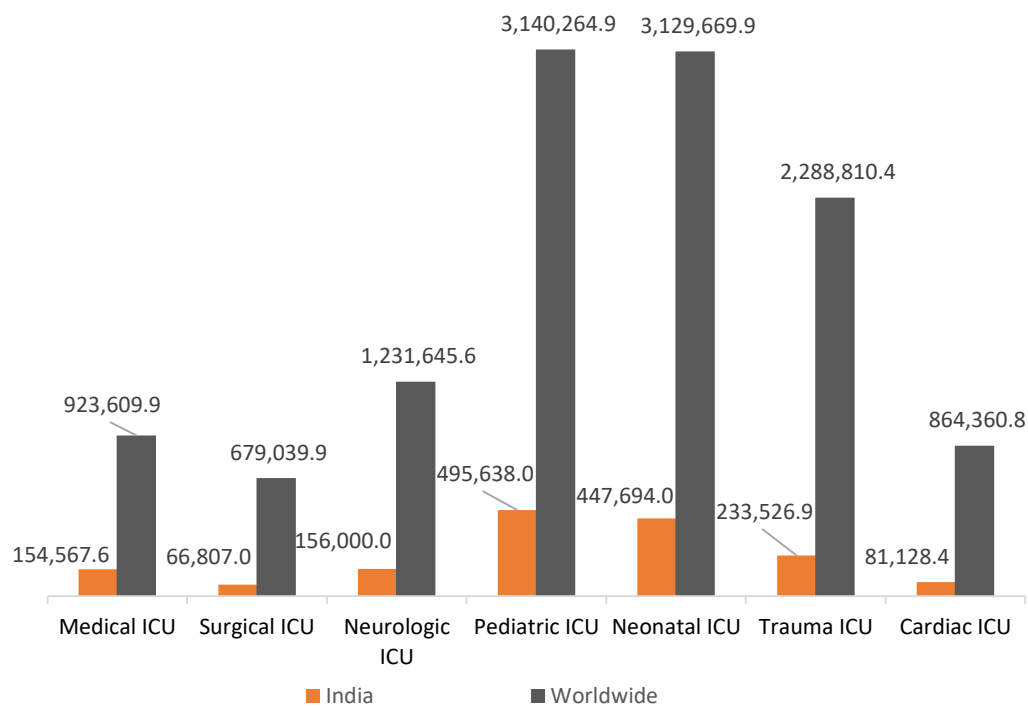
KEY TRENDS & HIGHLIGHTS

- Medical ICU segment set-up is expected to cost 1,54,567.6 (Level-2) in India.

5.1 ICU SET-UP AND MAINTENANCE COST

Based on type, the market has been segmented into Medical ICU, Surgical ICU, Neurologic ICU, Neonatal ICU, Pediatric ICU, Trauma ICU and Cardiac ICU.

FIGURE 15 ICU SET-UP AND MAINTENANCE MARKET: TYPE DYNAMICS (USD): 2021



Source: Reports and Data, Secondary Research and Primary Interviews.

5.2 MEDICAL ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

The medical intensive care unit is dedicated to the care of adult patients with medical conditions requiring frequent observation, specialized monitoring and medical treatment. These include illnesses such as diabetic ketoacidosis, gastrointestinal bleeding, drug overdose, respiratory failure, sepsis, stroke and cancer. The diseases need specialized care and high-tech tools including anesthesia machines, respiratory ventilators, EKG machines, sequential compression devices, and others to be treated effectively. For example, using a Sequential Compression Device (SCD), which enhances blood flow in the legs, (Deep vein thrombosis) DVT is prevented. SCDs have the appearance of "sleeves," which wrap around the legs and inflate one at a time with air. By simulating walking, this reduces the risk of blood clots.

5.2.1 GLOBAL MEDICAL ICU COST ANALYSIS, (USD): 2021

TABLE 12 GLOBAL MEDICAL ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|------------|--|---------------------------|---------------------------|---------------------|
| Level I | 1,65,000.0 | 48,384.7 | 77,000.2 | 13,284.0 | 1,25,496.1 |
| Level II | 3,30,000.0 | 96,769.3 | 1,92,500.6 | 39,852.0 | 2,64,488.0 |
| Level III | 4,40,000.0 | 1,29,025.8 | 3,08,001.0 | 53,136.0 | 4,76,550.2 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.2.2 INDIA MEDICAL ICU COST ANALYSIS, (USD): 2021

TABLE 13 INDIA MEDICAL ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|----------|---|---------------------------|---------------------------|---------------------|
| Level I | 3,120.0 | 3,900.0 | 13,000.0 | 26,000.0 | 11,693.4 |
| Level II | 6,240.0 | 7,800.0 | 32,500.0 | 78,000.0 | 30,027.6 |
| Level III | 8,320.0 | 10,400.0 | 52,000.0 | 1,04,000.0 | 52,764.3 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.3 SURGICAL ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

The surgical intensive care unit is dedicated to the management of postoperative patients, including postoperative patients who have undergone major abdominal surgeries, craniotomy patients, thoracotomy patients, unstable multiple trauma patients and any surgical patient who requires continuous monitoring or life support. The SICU is well-equipped with modern ventilators, non-invasive ventilation systems, multi-modular monitors, dedicated ultrasound systems, bronchoscopes, defibrillators, dialysis machines, portable X-ray machines, CRRTs, and ABG machines to evaluate sick patients immediately; volume, syringe infusion & feeding pumps for precision delivery, and dedicated beds for hemodialysis are some of the major equipment used in the SICU. For example, defibrillators are machines that send an electric pulse or shock to the heart to restore a normal heartbeat. They are used to prevent or treat an irregular heartbeat that beats too slowly or too quickly, called arrhythmia. If the heart suddenly stops, defibrillators can also help it beat again.

5.3.1 GLOBAL SURGICAL ICU COST ANALYSIS, (USD): 2021

TABLE 14 GLOBAL SURGICAL ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | SURGERY SUCTION MACHINE | OTHER COMPONENTS |
|-----------|------------|-----------------------------------|------------------------|-------------------------|------------------|
| Level I | 1,65,000.0 | 48,384.7 | 77,000.2 | 900.0 | 27,820.0 |
| Level II | 3,30,000.0 | 96,769.3 | 1,92,500.6 | 2,700.0 | 57,070.0 |
| Level III | 4,40,000.0 | 1,29,025.8 | 3,08,001.0 | 3,600.0 | 1,06,690.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.3.2 INDIA SURGICAL ICU COST ANALYSIS, (USD): 2021

TABLE 15 INDIA SURGICAL ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | SURGERY SUCTION MACHINE | OTHER COMPONENTS |
|-----------|----------|-----------------------------------|------------------------|-------------------------|------------------|
| Level I | 3,120.0 | 3,900.0 | 13,000.0 | 338.0 | 12,259.0 |
| Level II | 6,240.0 | 7,800.0 | 32,500.0 | 1,014.0 | 19,253.0 |
| Level III | 8,320.0 | 10,400.0 | 52,000.0 | 1,352.0 | 32,942.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.4 NEUROLOGIC ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

The patients in the Neuro ICU have serious brain tumours, strokes, or traumas, and many of them go through neurosurgery. These may involve the placement of various invasive brain monitoring devices, craniotomies for injuries, the repair of cerebral aneurysms, or the removal of tumours. The recovery of patients undergoing minimally invasive endovascular operations to treat cerebral aneurysms or other vascular illnesses is carefully tracked in the Neuro ICU. Cardiovascular telemetry, routine noninvasive blood pressure checks by automatic cuff inflation or continuous invasive arterial blood pressure recording, pulse oximetry, and core body temperature are examples of systemic monitoring in the NICU. Additionally, there are various other equipments utilised in the NICU, such the Flexible Fiberoptic Bronchoscope, Pulse index Continuous Cardiac Monitoring (PiCCO), Transcranial Doppler, Ultrasound Machine, and others. For instance, the Pulse Index Continuous Cardiac Monitoring (PiCCO) system combines transcadiopulmonary thermodilution with pulse contour analysis to integrate static and dynamic hemodynamic data.

5.4.1 GLOBAL NEUROLOGIC ICU COST ANALYSIS, (USD): 2021

TABLE 16 GLOBAL NEUROLOGIC ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | INTRACRANIAL PRESSURE MONITORS | ICU VENTILATION SYSTEM | DEFIBRILLATORS | OTHER COMPONENTS |
|-----------|------------|--------------------------------------|---------------------------|----------------|---------------------|
| Level I | 1,65,000.0 | 3,00,000.0 | 77,000.2 | 5,598.3 | 28,620.0 |
| Level II | 3,30,000.0 | 6,00,000.0 | 1,92,500.6 | 16,795.0 | 92,350.0 |
| Level III | 4,40,000.0 | 8,00,000.0 | 3,08,001.0 | 22,393.3 | 1,38,350.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.4.2 INDIA NEUROLOGIC ICU COST ANALYSIS, (USD): 2021

TABLE 17 INDIA NEUROLOGIC ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | INTRACRANIAL PRESSURE MONITORS | ICU VENTILATION SYSTEM | DEFIBRILLATORS | OTHER COMPONENTS |
|-----------|----------|--------------------------------------|---------------------------|----------------|---------------------|
| Level I | 3,120.0 | 4,680.0 | 13,000.0 | 2,600.0 | 13,871.0 |
| Level II | 6,240.0 | 9,360.0 | 32,500.0 | 7,800.0 | 42,744.0 |
| Level III | 8,320.0 | 12,480.0 | 52,000.0 | 10,400.0 | 64,051.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.5 NEONATAL ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

Premature, high-risk, and severely unwell infants are managed in the neonatal intensive care unit. The neonatal intensive care unit also treats newborns with congenital diseases and birth problems. The NICU is equipped with cutting-edge equipment and skilled medical staff to provide specialised treatment for the tiniest patients. Umbilical catheter, catheter, tracheostomy tubes, orogastric tubes, extracorporeal membrane oxygenators, cooling blankets or caps, apnea monitors, and other equipment are some of the key equipment used in NICUs. For instance, an umbilical catheter is a tiny tube that is inserted into the baby's umbilical cord's arteries after the cord is severed after delivery. Through the tube, medical professionals can administer fluids, blood, medications, and nutrients including vitamins and minerals to the infant. The tube is also used to draw blood from the infant. The baby's blood pressure can be checked by caregivers using a little connection to the tube which is a useful method.

5.5.1 GLOBAL NEONATAL ICU COST ANALYSIS, (USD): 2021

TABLE 18 GLOBAL NEONATAL ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | TRANSCUTANEOUS BILIRUBINOMETER | OTHER COMPONENTS |
|-----------|------------|-----------------------------------|------------------------|--------------------------------|------------------|
| Level I | 1,65,000.0 | 48,384.7 | 77,000.2 | 2,600.0 | 10,99,225.0 |
| Level II | 3,30,000.0 | 96,769.3 | 1,92,500.6 | 5,200.0 | 25,05,200.0 |
| Level III | 4,40,000.0 | 1,29,025.8 | 3,08,001.0 | 6,500.0 | 27,94,200.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.5.2 INDIA NEONATAL ICU COST ANALYSIS, (USD): 2021

TABLE 19 INDIA NEONATAL ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | TRANSCUTANEOUS BILIRUBINOMETER | OTHER COMPONENTS |
|-----------|----------|-----------------------------------|------------------------|--------------------------------|------------------|
| Level I | 3,120.0 | 3,900.0 | 13,000.0 | 1,950.0 | 79,901.9 |
| Level II | 6,240.0 | 7,800.0 | 32,500.0 | 3,900.0 | 3,97,254.0 |
| Level III | 8,320.0 | 10,400.0 | 52,000.0 | 4,875.0 | 4,87,337.5 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.6 PEDIATRIC ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

In a PICU, children’s respiration, heart rate, and blood pressure are continuously monitored by nurses who provide acute nursing care. Additionally, the medical staff is able to offer treatments in the Pediatric Intensive Care Unit that might not be available in other hospital departments. It includes equipment for intense therapy, including a pediatric laryngoscope, an echocardiography machine, an ophthalmoscope, and others. There are different sizes, shapes, and other characteristics of the equipment, such as the nebulizer mask, T-piece, stethoscope, etc. It is typically colorful and cheerful for children. Most common cases are congenital anomalies, respiratory failure, poison and others.

5.6.1 GLOBAL PEDIATRIC ICU COST ANALYSIS, (USD): 2021

TABLE 20 GLOBAL PEDIATRIC ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|------------|-----------------------------------|------------------------|------------------------|------------------|
| Level I | 1,50,000.0 | 48,384.7 | 77,000.2 | 5,598.3 | 11,07,805.0 |
| Level II | 3,00,000.0 | 96,769.3 | 1,92,500.6 | 16,795.0 | 25,34,200.0 |
| Level III | 4,00,000.0 | 1,29,025.8 | 3,08,001.0 | 33,589.9 | 47,64,345.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.6.2 INDIA PEDIATRIC ICU COST ANALYSIS, (USD): 2021

TABLE 21 INDIA PEDIATRIC ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|----------|-----------------------------------|------------------------|------------------------|------------------|
| Level I | 3,120.0 | 3,900.0 | 13,000.0 | 26,000.0 | 83,190.9 |
| Level II | 6,240.0 | 7,800.0 | 32,500.0 | 52,000.0 | 3,97,098.0 |
| Level III | 8,320.0 | 10,400.0 | 52,000.0 | 65,000.0 | 4,80,740.0 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.7 TRAUMA ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

Trauma is a significant global health concern since it is a primary cause of mortality and morbidity worldwide. According to estimates from the World Health Organization (WHO), trauma accounts for 9% of all fatalities worldwide. Additionally, 100 million people experience temporary or permanent disabilities each year. Trauma patients frequently require surgery related to their accident and require the highest level of intensive care, necessitating the use of advanced monitoring equipment as well as other equipment, such as a video laryngoscope, an electrocardiograph-oscilloscope-defibrillator, tourniquets, a thoracostomy, thermal control equipment, craniotomy instruments, and others. For example, Optical stylets and video laryngoscopes are hard instruments that provide indirect laryngoscopy, or the vision of the vocal cords and associated airway structures without a direct line of sight. In their most basic form, VLs are retractor devices with lighting and optical components. In comparison, OS don't offer much retraction. They are tubular objects that slide within the tracheal tube and transmit images through either a fiberoptic bundle or a video camera.

5.7.1 GLOBAL TRAUMA ICU COST ANALYSIS, (USD): 2021

TABLE 22 GLOBAL TRAUMA ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|------------|-----------------------------------|------------------------|------------------------|------------------|
| Level I | 1,65,000.0 | 1,65,000.0 | 77,000.2 | 7,00,000.0 | 2,15,467.8 |
| Level II | 3,30,000.0 | 3,30,000.0 | 1,92,500.6 | 1,80,000.0 | 12,56,309.8 |
| Level III | 4,40,000.0 | 4,40,000.0 | 3,08,001.0 | 3,60,000.0 | 22,62,279.8 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.7.2 INDIA TRAUMA ICU COST ANALYSIS, (USD): 2021

TABLE 23 INDIA TRAUMA ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|----------|-----------------------------------|------------------------|------------------------|------------------|
| Level I | 3,120.0 | 3,900.0 | 13,000.0 | 9,100.0 | 1,01,364.1 |
| Level II | 6,240.0 | 7,800.0 | 32,500.0 | 27,300.0 | 1,59,686.9 |
| Level III | 8,320.0 | 10,400.0 | 52,000.0 | 54,600.0 | 3,97,287.9 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.8 CARDIAC ICU SET-UP AND MAINTENANCE- MARKET OVERVIEW

Critically sick patients with surgical complications involving their hearts, lungs, or blood vessels get care in the Cardiovascular Intensive Care Unit (CVICU). Coronary artery bypass grafting (CABG), cardiac valve repair/replacement using cardiopulmonary bypass, transcatheter aortic valve replacement, aortic replacement with or without hypothermic circulatory arrest, endovascular aortic repair, such as endovascular aneurysm repair and thoracic endovascular aneurysm repair, lung transplantation, heart transplantation, and ventricular assist device implantation are some of the procedures that may be performed. This might necessitate the use of specialised tools, such as intra-aorta balloon pumps, defibrillators, external pacemakers, ventilators, continuous cardiac output monitors, and others. For instance, an External Cardiac Pacemaker that is also known as a Transcutaneous or Artificial Pacemaker is an electrodes-based medical device that is used to regulate the contractility of myocytes to maintain adequate heart rate and so cardiac output.

5.8.1 GLOBAL CARDIAC ICU COST ANALYSIS, (USD): 2021

TABLE 24 GLOBAL CARDIAC ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|------------|-----------------------------------|------------------------|------------------------|------------------|
| Level I | 1,65,000.0 | 48,384.7 | 77,000.2 | 30,000.0 | 1,31,835.5 |
| Level II | 3,30,000.0 | 96,769.3 | 1,92,500.6 | 90,000.0 | 1,55,090.9 |
| Level III | 4,40,000.0 | 1,29,025.8 | 3,08,001.0 | 1,80,000.0 | 1,70,833.8 |

Source: Reports and Data, Secondary Research and Primary Interviews.

5.8.2 INDIA CARDIAC ICU COST ANALYSIS, (USD): 2021

TABLE 25 INDIA CARDIAC ICU COST ANALYSIS, (USD): 2021

| Level | ICU BEDS | ICU RESPIRATORY MONITORING SYSTEM | ICU VENTILATION SYSTEM | ICU DIALYSIS EQUIPMENT | OTHER COMPONENTS |
|-----------|----------|-----------------------------------|------------------------|------------------------|------------------|
| Level I | 3,120.0 | 1,872.0 | 13,000.0 | 494.0 | 29,938.8 |
| Level II | 6,240.0 | 3,744.0 | 32,500.0 | 1,482.0 | 37,162.4 |
| Level III | 8,320.0 | 4,992.0 | 52,000.0 | 2,964.0 | 42,102.1 |

Source: Reports and Data, Secondary Research and Primary Interviews.

6 ICU SET-UP AND MAINTENANCE MARKET: BY HOME CARE MEDICAL EQUIPMENT TRADING INSIGHTS & TRENDS

6.1 HOME CARE MEDICAL EQUIPMENT TRADING, 2021

Some of the most commonly used home care medical equipment includes IV stand, para monitor, oxygen cylinder, suction machine, alpha mattress, nebulizer and DVT pump.

6.2 IV STAND-TRADING OVERVIEW

The increase in import of IV stand is one of the major reason for the growth of IV stand segment. US imports the largest amount of IV Stands from India. Out of the total million-dollar worth of IV Stands that India exports, 86.43% of the IV Stands shipments goes to US. Followed by China that imported IV Stands of 0.78 USD which makes 67.29% share of China in the overall IV stand market of India. The top five IV Stands importing countries from India contributed to the total Indian IV Stands exports are U.S, Germany, China, Japan and Australia. Another reason is the increase in demand for modern IV stand as modern IV stand have features like activity monitoring for the patients, a folding, adjustable, and 4-hook detachable top that makes it easy to attach an IV bottle to two hooks and accommodate two patients at once for IV medicine. The development of user-friendly features in technology is projected to accelerate the growth of the IV stands segment.

6.2.1 IV STAND – EXPORT FROM INDIA

TABLE 26 IV STAND - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 94029090 | OTHERS | India | U.S. | NOS | 76,111.33 | 0.84 | -86.43 |
| | | | Germany | | 9,883.34 | 0.10 | 12.30 |
| | | | China | | 21,252.72 | 0.78 | -67.29 |
| | | | Japan | | 6,176.77 | 0.01 | 584.62 |
| | | | Australia | | 8,283.13 | 0.13 | 240.48 |
| | | | Brazil | | 6,488.97 | - | -88.52 |
| | | | South Africa | | 6,085.29 | 0.12 | 293.25 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.2.2 IV STAND – IMPORT TO INDIA

TABLE 27 IV STAND - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 94029090 | OTHERS | U.S. | India | NOS | 43,313.84 | 3.25 | 5.05 |
| | | Germany | | | 14,963.14 | 5.74 | 81.97 |
| | | China | | | 94,167.24 | 11.50 | 75.82 |
| | | Japan | | | 14,399.77 | 1.06 | 1,019.72 |
| | | Australia | | | 16,756.17 | - | -85.19 |
| | | Brazil | | | 5,713.28 | 0.01 | 5,250.00 |
| | | South Africa | | | 10,965.81 | - | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.3 PARA MONITOR-TRADING OVERVIEW

India imports para monitor from many nations. U.S, Germany, China, Japan and Australia are the top five countries that sell para monitor to India. The world's largest importer of para monitor is India. According to the factsheet by Government of India Trade and commerce 2021, India imported 200,279.25 quantity of Multi Parameter Monitor, making India the country with the biggest volume of imports. Diagnostic tools, ultrasonic scanning equipment, and other items are among the main para monitoring products. Further, one of the main factors driving the expansion of portable, user-friendly monitors is the rise in home care treatment. Additionally, improvements in wireless medical communication technologies have increased the range of patient monitoring options available to them both within and outside of hospitals. These technological developments enable the quick recording and transmission of data from a patient's device to a healthcare professional, cutting down on the time needed for diagnostics and management. Such breakthroughs are expected to work in favor of the para monitor segment for patient monitoring in the years to come.

6.3.1 PARA MONITOR – EXPORT FROM INDIA

TABLE 28 PARA MONITOR - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|----------------------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90181290 | OTHR ELECTRO-DIAGNOSTIC APARATUS | India | U.S. | NOS | 76,111.33 | 4.71 | 45.78 |
| | | | Germany | | 9,883.34 | 0.20 | 38.36 |
| | | | China | | 21,252.72 | 3.40 | 19.05 |
| | | | Japan | | 6,176.77 | 1.90 | -14.80 |
| | | | Australia | | 8,283.13 | 0.04 | -35.37 |
| | | | Brazil | | 6,488.97 | 0.12 | 13.89 |
| | | | South Africa | | 6,085.29 | - | -90.08 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.3.2 PARA MONITOR – IMPORT TO INDIA

TABLE 29 PARA MONITOR - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|----------------------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90181290 | OTHR ELECTRO-DIAGNOSTIC APARATUS | U.S. | India | NOS | 43,313.84 | 19.41 | 27.43 |
| | | Germany | | | 14,963.14 | 2.37 | -9.09 |
| | | China | | | 94,167.24 | 72.50 | 53.79 |
| | | Japan | | | 14,399.77 | 3.06 | -23.96 |
| | | Australia | | | 16,756.17 | 0.12 | 360.15 |
| | | Brazil | | | 5,713.28 | 0.24 | 135.20 |
| | | South Africa | | | 10,965.81 | - | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.4 OXYGEN CYLINDER-TRADING OVERVIEW

The rise in demand for oxygen supplies for COVID-19 patients has been one of the most glaring trends impacting the production and distribution of medical oxygen gas cylinders. Governments in various countries, notably in India and the U.S. have been actively recalibrating the production, distribution, and storage norms and have adopted policies to bridge the gap in supply and demand. Additionally, due to an increase in cases and the increased demand for oxygen cylinders during the COVID-19 pandemic, oxygen cylinders were imported during the second half of the pandemic. In 2021, India purchased oxygen from the US, Germany, China, Japan and India. The U.S. was the leading exporter of oxygen cylinders with a contribution of USD 76,111.33 million, followed by China, Germany, according to the key ports for oxygen cylinder import to India. The main port for the import of oxygen i.e., CHENNAI Air Cargo, saw an increase in oxygen cylinder imports which is one of the factors contributing to the segmental growth of oxygen cylinder in India.

6.4.1 OXYGEN CYLINDER – EXPORT FROM INDIA

TABLE 30 OXYGEN CYLINDER - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|--|----------------|---------------------|------|-----------|-------------------|--------------------|
| 73110090 | OTHER PRESSURE CONTAINERS FOR TRANSPORT OR STORAGE OF COMPRESSED GASES | India | U.S. | NOS | 76,111.33 | 19.73 | 184.49 |
| | | | Germany | | 9,883.34 | 2.90 | 5.09 |
| | | | China | | 21,252.72 | 3.84 | 226.08 |
| | | | Japan | | 6,176.7 | 1.10 | 5,007.91 |
| | | | Australia | | 8,283.13 | 1.24 | 39.59 |
| | | | Brazil | | 6,488.97 | 1.77 | -11.30 |
| | | | South Africa | | 6,085.29 | 0.96 | 939.52 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.4.2 OXYGEN CYLINDER – IMPORT TO INDIA

TABLE 31 OXYGEN CYLINDER - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|--|----------------|---------------------|------|-----------|-------------------|--------------------|
| 73110090 | OTHER PRESSURE CONTAINERS FOR TRANSPORT OR STORAGE OF COMPRESSED GASES | India | U.S. | NOS | 43,313.84 | 2.86 | 203.70 |
| | | | Germany | | 14,963.1 | 2.79 | 54.15 |
| | | | China | | 94,167.24 | 39.16 | 831.11 |
| | | | Japan | | 14,399.77 | 0.32 | 69.77 |
| | | | Australia | | 16,756.17 | 0.21 | 423.96 |
| | | | Brazil | | 5,713.28 | - | - |
| | | | South Africa | | 10,965.81 | 0.68 | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.5 SUCTION MACHINE & ALPHA MATTRESS -TRADING OVERVIEW

The import of medical devices has increased in 2021, according to the Indian import department. India imported medical devices worth USD 6.24 billion in 2020–21, up from USD 5.84 billion in 2019–20 and USD 5.7 billion in 2018–19. Electronics equipment made up the majority of imports in 2021 (USD 3.6 billion), followed by consumables and disposables (USD 1.5 billion). For instance, according to Government of India, 43,313.84 suction units were imported from U.S by India, further the majority of the suction units were imported from Germany, China, and Japan and incorporated ophthalmology and dentistry equipment. Additionally, it is anticipated that the rapid transition from traditional healthcare settings to homecare settings and the drop in medical suction device prices, which is boosting their uptake in developing nations, will drive the growth of the medical suction devices segment over the course of the forecast period. The rapid development of technology and the rise in the prevalence of chronic diseases are both expected to boost segment expansion.

To ensure that patients can sleep on them comfortably, medical mattresses differ in terms of quality and characteristics. Medical mattresses are a great option where regular washing is anticipated because they are specifically made for much higher workload and require being both waterproof and antibacterial. In addition to

being strong and long-lasting, hospital beds must also be antibacterial, antifungal, latex-free, and inflammation-resistant. According to the factsheet of Government of India Trade and Commerce India exported the highest number Alpha Mattress to U.S with a quantity of 76,111.33, followed by Germany, China and Japan

6.5.1 SUCTION MACHINE & ALPHA MATTRESS – EXPORT FROM INDIA

TABLE 32 SUCTION MACHINE & ALPHA MATTRESS - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|--|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189099 | OTHR SRGCL INSTRMNTS AND APPLNCS (INCL VTRNRY) | India | U.S. | NOS | 76,111.33 | 10.96 | 26.21 |
| | | | Germany | | 9,883.34 | 1.80 | -37.90 |
| | | | China | | 21,252.72 | 0.08 | -74.22 |
| | | | Japan | | 6,176.77 | 0.62 | 12.39 |
| | | | Australia | | 8,283.13 | 2.26 | 70.87 |
| | | | Brazil | | 6,488.97 | 2.06 | 16.70 |
| | | | South Africa | | 6,085.29 | 0.39 | 25.94 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.5.2 SUCTION MACHINE & ALPHA MATTRESS –IMPORT TO INDIA

TABLE 33 SUCTION MACHINE & ALPHA MATTRESS - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|--|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189099 | OTHR SRGCL INSTRMNTS AND APPLNCS (INCL VTRNRY) | U.S. | India | NOS | 43,313.84 | 73.56 | 38.24 |
| | | Germany | | | 14,963.14 | 22.64 | 37.91 |
| | | China | | | 94,167.24 | 59.16 | 54.92 |
| | | Japan | | | 14,399.77 | 11.75 | 81.80 |
| | | Australia | | | 16,756.17 | 0.39 | 37.71 |
| | | Brazil | | | 5,713.28 | 0.92 | 62.61 |
| | | South Africa | | | 10,965.81 | 0.03 | -71.95 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.6 NEBULIZER -TRADING OVERVIEW

In 2021, India imported highest quantity of nebulizer 94,167.24 units from China followed by U.S and Germany. The majority of nebulizers are imported into India. The top 3 items that India imports are microtomes, components, and accessories, as well as (ozone therapy, oxygen therapy, aerosol therapy, artificial respiration, or other therapeutic respiration apparatus). Additionally, due to their affordability compared to ultrasonic and mesh nebulizers, pneumatic nebulizers are also becoming more and more popular among elderly patients, which is another factor driving import growth and supporting segment expansion.

6.6.1 NEBULIZERS – EXPORT FROM INDIA

TABLE 34 NEBULIZERS - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90192090 | OTHERS | India | U.S. | NOS | 76,111.33 | 3.77 | 423.83 |
| | | | Germany | | 9,883.34 | 0.04 | -86.44 |
| | | | China | | 21,252.72 | 0.04 | 558.73 |
| | | | Japan | | 6,176.77 | - | -55.56 |
| | | | Australia | | 8,283.13 | 2.33 | 14,818.59 |
| | | | Brazil | | 6,488.97 | 0.12 | 11.70 |
| | | | South Africa | | 6,085.29 | 0.25 | -0.28 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.6.2 NEBULIZERS –IMPORT TO INDIA

TABLE 35 NEBULIZERS - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90192090 | OTHERS | U.S. | India | NOS | 43,313.84 | 134.62 | 309.96 |
| | | Germany | | | 14,963.14 | 51.74 | 85.43 |
| | | China | | | 94,167.24 | 442.88 | 305.82 |
| | | Japan | | | 14,399.77 | 20.98 | 17,858.48 |
| | | Australia | | | 16,756.17 | 48.54 | 332.01 |
| | | Brazil | | | 5,713.28 | 0.38 | 275.05 |
| | | South Africa | | | 10,965.81 | 0.25 | 667.91 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.7 DVT PUMP -TRADING OVERVIEW

In 2021 India was the largest importer of DVT machine with highest quantity of 94,167.24 from China followed by U.S, Germany and Japan. Total Import duty on DVT pumps is around 26-29%. DVT pumps are furthermore imported into India from Australia, Brazil, Turkey, Israel, and other nations, which benefits the growth of imports and is the reason for market's expansion.

6.7.1 DVT PUMP – EXPORT FROM INDIA

TABLE 36 DVT PUMP - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|---------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189029 | OTHR SURGICAL TOOLS | India | U.S. | NOS | 76,111.33 | 7.97 | 67.47 |
| | | | Germany | | 9,883.34 | 1.13 | 23.07 |
| | | | China | | 21,252.72 | 13.1 | 14.74 |
| | | | Japan | | 6,176.77 | 0.36 | -1.8 |
| | | | Australia | | 8,283.13 | 0.29 | 20.88 |
| | | | Brazil | | 6,488.97 | 0.67 | 133.00 |
| | | | South Africa | | 6,085.29 | 0.02 | -68.63 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

6.7.2 DVT PUMP - IMPORT TO INDIA

TABLE 37 DVT PUMP - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|---------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189029 | OTHR SURGICAL TOOLS | U.S. | India | NOS | 43,313.84 | 45.27 | 49.17 |
| | | Germany | | | 14,963.14 | 14.07 | 52.51 |
| | | China | | | 94,167.24 | 27.01 | 148.94 |
| | | Japan | | | 14,399.77 | 0.4 | 241.23 |
| | | Australia | | | 16,756.17 | 0.50 | 116.19 |
| | | Brazil | | | 5,713.28 | 0.02 | -20.21 |
| | | South Africa | | | 10,965.81 | - | -97.38 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7 ICU SET-UP AND MAINTENANCE MARKET: BY HIGH VALUE MEDICAL EQUIPMENT TRADING INSIGHTS & TRENDS

7.1 HIGH VALUE MEDICAL EQUIPMENT TRADING, 2021

Some of the most commonly used high value medical equipment includes Defibrillators, Anesthesia Machines, Patient Monitors, Sterilizers, and EKG/ECG Machines.

7.2 DEFIBRILLATORS -TRADING OVERVIEW

In total, India imports defibrillators from 26 different nations. In 2021-2022 India was the largest importer of defibrillators with highest quantity of 94,167.24 imported from China followed by U.S, Germany and Japan. Defibrillators are furthermore imported into India from Australia, Brazil, South Africa, Israel, and other nations, which benefits the growth of imports and is the reason for market's expansion.

7.2.1 DEFIBRILLATORS – EXPORT FROM INDIA

TABLE 38 DEFIBRILLATORS - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|----------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189094 | DEFIBRILLATORS | India | U.S. | NOS | 76,111.33 | 0.71 | 1,147.79 |
| | | | Germany | | 9,883.34 | 0.0 | -71.43 |
| | | | China | | 21,252.72 | - | - |
| | | | Japan | | 6,176.77 | - | - |
| | | | Australia | | - | - | - |
| | | | Brazil | | - | - | - |
| | | | South Africa | | 6,085.29 | - | -100.00 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.2.2 DEFIBRILLATORS – IMPORT TO INDIA

TABLE 39 DEFIBRILLATORS - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|----------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189094 | DEFIBRILLATORS | U.S. | India | NOS | 43,313.84 | 1.41 | -57.14 |
| | | Germany | | | 14,963.14 | 0.52 | -33.28 |
| | | China | | | 94,167.24 | 3.47 | -3.44 |
| | | Japan | | | 14,399.77 | 0.99 | 3,098.39 |
| | | Australia | | | 16,756.17 | - | - |
| | | Brazil | | | 5,713.28 | - | - |
| | | South Africa | | | 10,965.81 | - | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.3 ANESTHESIA MACHINES -TRADING OVERVIEW

As per Government of India fact sheet data of 2021-2022, U.S. exported the highest quantity of Anesthesia equipment's from India. The majority of the anaesthesia machines, which included acupuncture equipment, precision instruments, and other accessories, were supplied to U.S., China, Germany, and Japan. Additionally, India surpassed all other countries as the top exporter of anaesthesia machines in 2021-2022 with highest quantity of 134,281.55 export to top 7 countries.

7.3.1 ANESTHESIA MACHINES – EXPORT FROM INDIA

TABLE 40 ANESTHESIA MACHINES - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|-----------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189041 | ANAESTHETIC EQUIPMENT | India | U.S. | NOS | 76,111.33 | 0.36 | -67.52 |
| | | | Germany | | 9,883.34 | 0.02 | 43.36 |
| | | | China | | 21,252.72 | 0.11 | -46.81 |
| | | | Japan | | 6,176.77 | - | -100.00 |
| | | | Australia | | 8,283.13 | 0.01 | 175.86 |
| | | | Brazil | | 6,488.97 | - | - |
| | | | South Africa | | 6,085.29 | - | 500.00 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.3.2 ANESTHESIA MACHINES – IMPORT TO INDIA

TABLE 41 ANESTHESIA MACHINES - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|-----------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189041 | ANAESTHETIC EQUIPMENT | U.S. | India | NOS | 43,313.84 | 6.89 | 97.44 |
| | | Germany | | | 14,963.14 | 0.75 | -61.04 |
| | | China | | | 94,167.24 | 12.38 | 60.38 |
| | | Japan | | | 14,399.77 | 0.03 | 223.40 |
| | | Australia | | | 16,756.17 | 0.04 | 393.41 |
| | | Brazil | | | 5,713.28 | - | - |
| | | South Africa | | | 10,965.81 | 0.02 | -41.86 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.4 PATIENT MONITORS-TRADING OVERVIEW

China is the leading exporter of Patient monitors in India. In 2021-2022 U.S. exported 76,111.33 quantity of Patient monitoring devices to India followed by China, Germany and 8,283.13. The majority of the patient monitor, which included ultrasonic scanning apparatus, Multi-Channel Vital Sign Patient Monitor, Pressure Monitor, BP Monitor, Diagnostic Medical Color Monitor, Digital Blood Pressure Monitor and others. India imported most of its Patient monitor from Australia, Germany and U.S. Additionally, according to the 2022 data of import, India is the largest importer of Patient monitor.

7.4.1 PATIENT MONITORS – EXPORT FROM INDIA

TABLE 42 PATIENT MONITORS - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|---------------------------------------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189019 OTHR DIAGNOSTICS INSTRUMENTS | | India | U.S. | NOS | 76,111.33 | 27.37 | 28.83 |
| | | | Germany | | 9,883.34 | 23.02 | -31.66 |
| | | | China | | 21,252.72 | 0.77 | 192.00 |
| | | | Japan | | 6,176.77 | 0.08 | 202.52 |
| | | | Australia | | 8,283.13 | 0.07 | 141.99 |
| | | | Brazil | | 6,488.97 | 0.01 | 637.50 |
| | | | South Africa | | 6,085.29 | 0.25 | 8,675.86 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.4.2 PATIENT MONITORS – IMPORT TO INDIA

TABLE 43 PATIENT MONITORS - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|---------------------------------------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90189019 OTHR DIAGNOSTICS INSTRUMENTS | | U.S. | India | NOS | 43,313.84 | 12.49 | 0.43 |
| | | Germany | | | 14,963.14 | 26.11 | -4.91 |
| | | China | | | 94,167.24 | 71.04 | 44.07 |
| | | Japan | | | 14,399.77 | 2.59 | 75.80 |
| | | Australia | | | 16,756.17 | 0.54 | 4.36 |
| | | Brazil | | | 5,713.28 | 0.02 | - |
| | | South Africa | | | 10,965.81 | 0.15 | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.5 STERILIZERS -TRADING OVERVIEW

In total, India exported sterilizers to 173 different countries. The volume of export to U.S. in 2021-2022 was around 76,111.33. The figures show the great potential for Indian exporters of sterilizers to increase their participation in global trading and improve their numbers. China is the largest exporter of Sterilizers that India imports from. In 2021-2022 India imported 94,167.24 quantity of Sterilizers from China followed by U.S. and Germany. Further, the top 5 trading partners of India are U.S, Germany, China, Japan, and Australia.

7.5.1 STERILIZERS – EXPORT FROM INDIA

TABLE 44 STERILIZERS - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|--------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 84192090 | STERILISERS,N.E.S. | India | U.S. | NOS | 76,111.33 | 0.38 | 185.67 |
| | | | Germany | | 9,883.34 | 0.01 | -96.92 |
| | | | China | | 21,252.72 | 0.05 | 3,553.33 |
| | | | Japan | | 6,176.77 | 0.18 | - |
| | | | Australia | | 8,283.13 | 0.06 | 128.51 |
| | | | Brazil | | 6,488.97 | - | - |
| | | | South Africa | | 6,085.29 | 0.01 | -82.50 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.5.2 STERILIZERS –IMPORT TO INDIA

TABLE 45 STERILIZERS - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|----------|--------------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 84192090 | STERILISERS,N.E.S. | U.S. | India | NOS | 43,313.84 | 2.76 | 47.64 |
| | | Germany | | | 14,963.14 | 1.86 | 55.86 |
| | | China | | | 94,167.24 | 3.29 | -16.79 |
| | | Japan | | | 14,399.77 | 0.11 | 195.04 |
| | | Australia | | | 16,756.17 | - | 100.00 |
| | | Brazil | | | 5,713.28 | 0.03 | 8.55 |
| | | South Africa | | | 10,965.81 | - | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.6 EKG/ECG MACHINES -TRADING OVERVIEW

As per Government of India Trade and Commerce factsheet 2021-2022, 18 buyers imported ECG shipments in India. The majority of the ECG Machines, which included electro-diagnostic apparatus, including apparatus for functional exploratory examinations or for checking physiological parameters, electro-cardiographs, ultrasonic scanning apparatus and others. India imported most of its ECG monitor from U.S, Germany and China. Additionally, according to the 2022 data of import, India is the largest importer of ECG monitor which accounts with the highest import quantity of ECG machines i.e., 94,167.24 from China.

7.6.1 EKG/ECG MACHINES – EXPORT FROM INDIA

TABLE 46 EKG/ECG MACHINES - EXPORT FROM INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|-------------------------------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90181100 ELECTRO-CARDIOGRAPHS | | India | U.S. | NOS | 76,111.33 | 17.51 | 68.14 |
| | | | Germany | | 9,883.34 | 11.92 | 17.19 |
| | | | China | | 21,252.72 | 1.22 | 94.21 |
| | | | Japan | | 6,176.77 | 1.02 | 37.08 |
| | | | Australia | | 8,283.13 | 0.77 | 32.85 |
| | | | Brazil | | 6,488.97 | 0.97 | 93.77 |
| | | | South Africa | | 6,085.29 | 0.04 | 129.81 |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

7.6.2 EKG/ECG MACHINES –IMPORT TO INDIA

TABLE 47 EKG/ECG MACHINES - IMPORT TO INDIA

| HS Code | Description | Origin Country | Destination Country | Unit | Quantity | Value USD Million | % Growth (2021-22) |
|-------------------------------|-------------|----------------|---------------------|------|-----------|-------------------|--------------------|
| 90181100 ELECTRO-CARDIOGRAPHS | | U.S. | India | NOS | 43,313.84 | 5.35 | 99.94 |
| | | Germany | | | 14,963.14 | 0.26 | 25.13 |
| | | China | | | 94,167.24 | 8.54 | 88.71 |
| | | Japan | | | 14,399.77 | - | 109.09 |
| | | Australia | | | 16,756.17 | - | -100.00 |
| | | Brazil | | | 5,713.28 | - | - |
| | | South Africa | | | 10,965.81 | - | - |

Source: DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8 ICU SET-UP AND MAINTENANCE MARKET: BY TURNKEY PROJECTS COMPANIES & TRENDS

8.1 HEALTHCARE SECTOR IN INDIA: BOONS AND BANES

In India, about 62 % of the country's total health infrastructure is private. The capacity of the majority of public hospitals and private hospitals in the states is the same, with the exception of Chandigarh and Puducherry, where private hospitals have larger capacity than public hospitals (measured by beds to hospitals ratio, ICU to hospitals ratio, and ventilator to hospitals ratio).

TABLE 48 PRIVATE AND PUBLIC HEALTHCARE INFRASTRUCTURE IN INDIA, 2020

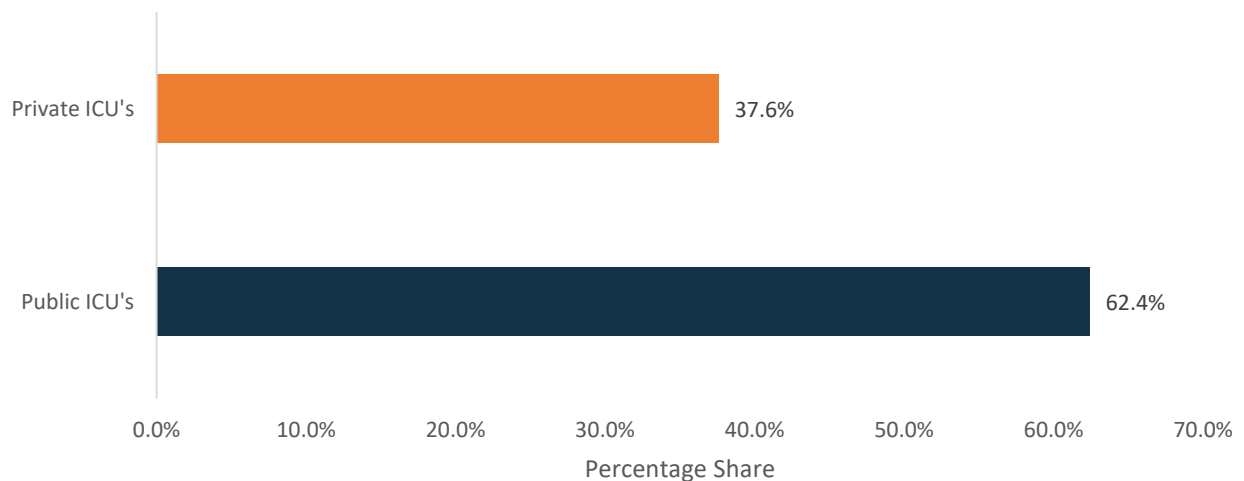
| Infrastructure | Private | Public |
|----------------|--------------|---------|
| Hospitals | 43,486 | 25,778 |
| Beds | 1.18 Million | 713,986 |
| ICU | 59,264 | 35,700 |
| Ventilators | 29,631 | 17,850 |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

The top three states with the greatest disparity between private and public health infrastructure are Uttar Pradesh, Karnataka, and Maharashtra. These three states are home to 31% of India's population. Private infrastructure outnumbers public infrastructure in Uttar Pradesh and Maharashtra by nearly 128,000 beds, 6,400 ICUs, and 3,200 ventilators. Private infrastructure outnumbers public infrastructure in Karnataka by 122,667 beds, 6,133 ICUs, and 3,067 ventilators.

Private hospitals, beds, ICUs, and ventilators ("Infrastructure") outnumber government Infrastructure in 15 states (Andhra Pradesh, Bihar, Dadra & Nagar Haveli Daman & Diu, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand). These 15 states account for roughly 74.25% of India's projected population for 2020 (including the population of Ladakh). These 15 states account for roughly 74.25 % of India's projected population for 2020 (including the population of Ladakh). In these 15 states, private infrastructure accounts for 69-70 % of all health infrastructure. In other states (where government infrastructure exceeds or equals private infrastructure), private infrastructure accounts for nearly 35-36 % of total health infrastructure.

However, the Covid-19 pandemic highlighted some of the peculiarities and shortcomings of India's healthcare infrastructure. This examines the private healthcare system, which is rapidly developing but comes at a high cost that many people cannot afford, and thus does not adequately supplement public healthcare.

FIGURE 16 SHARE OF PRIVATE AND PUBLIC ICU'S IN INDIA, 2020


Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.1.1 NEWBORN CARE IN INDIA

According to UNICEF data, nearly 3.5 million babies in India are born prematurely, 1.7 million are born with birth defects, and one million new-borns are discharged from Special New-born Care Units each year (SNCUs). These newborns continue to be at high risk of death, stunting, and developmental delay.

Investing in intrapartum and newborn care services lowers the risk of newborn death. The Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) strategy, which was launched in 2013, took a life course approach to newborn health, focusing on the continuum of care and strengthening health systems. The India Newborn Action Plan (INAP) 2014 was created to provide a roadmap for achieving the 2030 goals of "Single Digit Neonatal Mortality" and "Single Digit Stillbirth." Furthermore, India's National Health Policy, 2017, endorsed the national consensus on achieving neonatal mortality targets more quickly. The India Strategy for Women's, Children's, and Adolescents' Health (I-WACH), which was released in December 2018, advances the life-course approach. It describes an integrated and multisector approach that recognizes the importance of health-promoting factors (such as maternal nutrition and education, water, clean air, sanitation, hygiene, and infrastructure) in addressing the underlying causes of preterm births and newborn deaths.

India assessed its progress against the INAP 2014 milestones and targets in 2020. India had met its goal of lowering the newborn mortality rate to 24 by 2017 and lowering the stillbirth rate to less than 19 in 2020.

Currently, Ayushman Bharat–Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) covers 10 Neonatal Care packages, 5 of which are most commonly used for in-patient care and vary depending on the severity of the baby's condition at the time of birth.

TABLE 49 COST OF NEONATAL CARE IN INDIA, 2020

| Packages | Cost |
|---------------------------------|------------------------|
| Basic Neonatal Care Package | INR 500-600 per day |
| Special Neonatal Care Package | INR 3,000-4500 per day |
| Intensive Neonatal Care Package | INR 5,000-6500 per day |
| Advanced Neonatal Care Package | INR 6,000-7000 per day |
| Critical Neonatal Care Package | INR 7,000-8600 per day |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.1.2 STATUS OF FACILITY BASED NEWBORN CARE IN INDIA

A key strategy for improving neonatal health is facility-based newborn care. Investing in neonatal care units is an expensive endeavour. Aside from the initial investment, the ongoing costs of equipment, personnel, ancillary services, drugs, consumables, investigations, and care with or without ventilators are significant.

TABLE 50 LIST OF NICUS IN INDIA, 2020

| States | No. of NICUS | States | No. of NICUS |
|------------------|--------------|-------------------|--------------|
| Bihar | 43 | Uttarakhand | 6 |
| Chhattisgarh | 23 | Arunachal Pradesh | 5 |
| Delhi | 20 | Assam | 28 |
| Himachal Pradesh | 16 | Manipur | 5 |
| Jharkhand | 19 | Meghalaya | 5 |
| Madhya Pradesh | 56 | Mizoram | 5 |
| Odisha | 40 | Nagaland | 3 |
| Rajasthan | 61 | Sikkim | 2 |
| Uttar Pradesh | 85 | Goa | 3 |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.1.3 NATIONAL HEALTH MISSION (NHM)

The National Rural Health Mission (NRHM) and the National Urban Health Mission (NUHM) are the two Sub-Missions that make up the National Health Mission (NHM) (NUHM). Reproductive, maternal, neonatal, child, and adolescent health (RMNCH+A), as well as Communicable and Noncommunicable diseases, are the three core programmatic components. According to the NHM, everyone will be able to access fair, affordable, and high-quality healthcare services that are accountable and sensitive to the requirements of their patients.

Upto 33% of NHM funds in High Focus States can be used for infrastructure development. The following list includes information on new building and renovation/upgrading projects carried out across the nation under NHM are as follows:

TABLE 51 NEW CONSTRUCTION UNDERTAKEN ACROSS INDIA BY GOVERNMENT, 2020

| Facility | New Construction | | Renovation/Upgradation | |
|---|------------------|-----------|------------------------|-----------|
| | Sanctioned | Completed | Sanctioned | Completed |
| SC- Sub-Centre | 35805 | 22073 | 26125 | 19464 |
| PHC-Primary Health Centre | 2889 | 2447 | 16783 | 14582 |
| CHC-Community Health Centres | 604 | 530 | 7636 | 8662 |
| Sub Health Centre- Health & Wellness Centre (SHC- HWCs) | 251 | 174 | 1317 | 1145 |
| DH-District Hospitals | 175 | 156 | 3311 | 2854 |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.2 OVERVIEW OF TURNKEY PROJECTS

Large-scale infrastructure projects are typically developed using a variety of methods. Turnkey project development is one of these methods. A turnkey project is one that is designed, developed, and outfitted with all necessary amenities by a company under contract. When it is ready to conduct business, it is handed over to a buyer.

FIGURE 17 BENEFITS OF TURNKEY PROJECTS



Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

TABLE 52 TURNKEY V/S THE TRADITIONAL MODELS COMPARISON

| Approach | Traditional Project Management | Turnkey |
|--------------------------------|--|--|
| Process | Sequential: design, bid, and build. | Overlapping of design and build stages |
| Service provider's role | Management | Execution |
| Who hires the vendors | Client, after the bidding process | Service provider has a team of supplier partners |
| Project timeline | 32 weeks | 24 weeks: 25% of savings |
| Better for projects | Budget-sensitive: large scale projects | Time-sensitive: small and medium scale projects |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.2.1 COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR ICU IN INDIA

TABLE 53 LIST OF COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR ICU IN INDIA

| Company Name | Company Overview | Establishment Year | Location |
|--|--|--------------------|---------------|
| Acme Hospital Projects | <p>The company has a team of Hospital Planners, Designers, Equipment Specialists and Commissioning Experts that helps right from the concept to commissioning stages, ensuring a well-integrated approach for a timely completion to the Hospital.</p> <p>The company has an experience of about 20 years in the field of Healthcare and over 700 Hospitals worked with, across the Country.</p> | 1996 | Tamil Nadu |
| HLL Infra Tech Services Ltd. | <p>HLL Infra Tech Services Limited, known as 'HITES' is a 100% subsidiary of HLL Lifecare Limited (A Mini Ratna PSU) under Ministry of Health and Family Welfare, Government of India.</p> <p>HITES is specifically positioned towards absorbing the requirements of Medium to Large Public Hospitals primarily within the country as well as small forays overseas.</p> | 2014 | Uttar Pradesh |
| Redsun communication Pvt. Ltd. | <p>Redsun communication is one of the turnkey project consultants in India. They are doing turnkey project consultancy for various projects like, Healthcare Projects, High end Education projects and Engineering projects.</p> | 2007 | Gujarat |
| FrontEnders' healthcare consultancy services | <p>FrontEnders' healthcare consultancy services provides the latest medical solutions to both medical industrialists and healthcare establishment owners, which are easy on the pocket. Healthcare Entrepreneurs can avail their technical and tactical guidance, and make their endeavors thriving.</p> | 2011 | Tamil Nadu |
| Magnatek Enterprises | <p>Through its comprehensive services in Medicare, the Magnatek group covers all the requirements of today's growth-oriented companies. Its focus towards innovation, customer-centric approach and dedication to qualitative productivity and technological solutions have catapulted Magnatek group of companies into one of the most reputed names in India.</p> | 1964 | Hyderabad |

| | | | |
|---------------------------------------|--|------|-----------|
| L&T Construction | L&T Construction is a division of Larsen & Toubro (L&T) a major Indian technology, engineering, construction, manufacturing and financial services conglomerate, with global operations. | 1946 | Mumbai |
| C Cube Advanced Technologies | C Cube Advanced Technologies is providing ways for organizations to be successful by outsourcing very important business process of Wire Harness & assembling. C Cube Advanced Technologies is all set to deliver wire harness and assembly solutions in a cost effective and elegant manner. | 2010 | Karnataka |
| Aastha Medical Technologies Pvt. Ltd. | Aastha India a leading company is India specialized in a diversity of turnkey design build solutions for modular operation theatres & providing full-fledged design & integration facilities to hospitals medical centres IVF and healthcare facilities in modular construction. | 2016 | Mumbai |
| Allied Medical Limited | Allied Medical Limited is well-known Manufacturers, Exporters, Traders and Importers of a huge gamut of Hospital Equipment. | 1982 | Haryana |
| Diti Engineering Services | Diti Engineering Services (DES) is a Turnkey solutions for hospitals providing for the Healthcare industry, focusing exclusively on Hospitals and Laboratories by offering customized leading edge solutions in Design, Detailed Engineering and Implementation & Validation. Not only healthcare industry we also take care of other sectors by providing Best turnkey solutions for hospitals. | 2013 | Mumbai |

8.2.2 TRENDS OF TURNKEY PROJECTS

Trend of turnkey projects is increasing due to substantial rise of ICU's and OT setups in India. This basically depends upon the increase in healthcare infrastructure and spending as most of the government organizations are looking towards the development of hospitals, ICU's, OT's through turnkey projects which minimizes the cost, time, and provides knowledge regarding the project. The trend is increasing due to the number of tenders passed/released by various government authorities. For instance, tender for setting up of 10 bedded intensive care unit by Gandhi Shatabdi Eye Hospital, Dehradun at Uttarakhand on turnkey basis during the year 2020.

Additionally, in April 2022, the Telangana government awarded a contract to Larsen and Toubro (L&T) for the development of a super speciality hospital in Warangal. A 1750 bed super specialty hospital will need to be built by the corporation as part of Telangana's Warangal Health City. This will be the tallest hospital building in the

nation as well as one of the largest hospitals in the state with modern amenities. The project is anticipated to be completed by the corporation in 18 months.

8.3 OVERVIEW OF MODULAR OPERATION THEATER

The goal of a modular operation theatre is to maximize efficiency, accuracy, and safety for the entire operating crew. By removing squandered time and resources, it is intended to improve patient outcomes and streamline the workflow. The use of a modular operating room helps operations run consistently and smoothly, lowering the risk involved in performing surgery. Savings from a modular operating room benefit the hospital as well as the patient. Patient movement is minimal because a wide range of operations can be performed in the same space. It saves the hospital money on the price of beds, the expense of hiring staff to carry patients, and much more.

Further, due to rising healthcare costs and the expansion of a technologically advanced healthcare infrastructure, modular operating rooms have become more and more popular in India. According to the NHM research, almost all district hospitals in India have one operating theatre, and 48% of them have an operating theatre exclusively for gynaecological procedures. Additionally, the majority of hospitals and institutes are planning to raise the number of OTs in their respective organizations as a result of the rising need. For instance, according to a 2021 report from the Ministry of Health and Family Welfare, the North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS) in Shillong, Meghalaya, currently has 7 operating theatres. Construction of an additional 8 high modular operation theatres with the integration of 5 OTs is currently underway with approval from the Ministry of Health and Family Welfare.

TABLE 54 DIFFERENCES BETWEEN MODULAR OPERATION THEATRES AND CONVENTIONAL OPERATION THEATRES

| Modular operation theatres | Conventional operation theatres |
|--|---|
| Uses a mixture of Fresh air and Recycled air | Uses 100% Fresh air |
| Each Modular OT has a different Air conditioning system | Uses a central air conditioning system |
| Laminar Air flow system | Flow of air involves eddy currents |
| Anti-static flooring is an absolute requirement | May not have anti-static flooring |
| Energy efficient up to 60% by using Recycled air | Not energy efficient |
| Designed using 3D software's as per international and National standards | Designed using simple 2D CAD Design |
| Temperature and humidity control is localized in each Modular OT | Due to centralized AC system localized temperature control is quite difficult |

| | |
|--|---|
| Constructed by a single team of professionals who understands the mechanics of Operation theatre | Constructed by multiple vendors at the time of hospital construction, hence control becomes quite difficult |
| Contains standardized instrument and Equipment. Quality control is easy | Quality control is quite difficult when multiple vendors are used. |

8.3.1 COST OF MODULAR OT IN INDIA

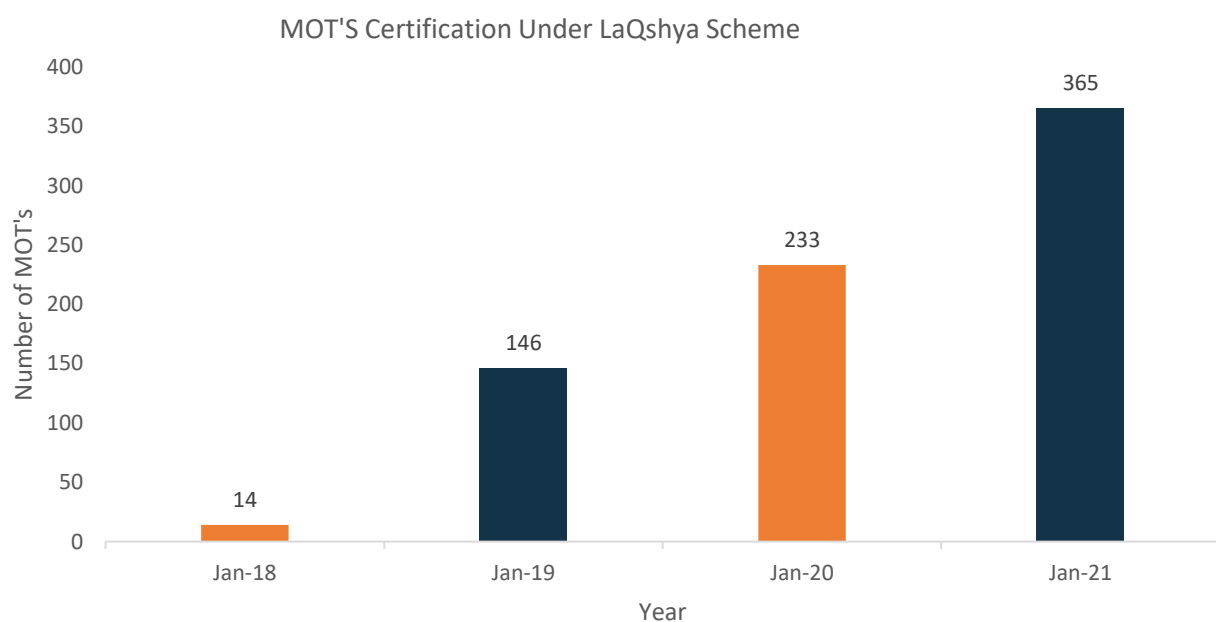
Modular OT manufacturing costs vary depending on factors such as size, equipment, equipment quality, team expertise, and so on. In India, the cost of effectively building a Modular OT typically ranges between 4,00,000 and 10,00,000 INR. VMEDO has one of the best teams in India working on Modular OT development.

8.3.2 LAQSHYA SCHEME FOR DEVELOPMENT OF MATERNAL OPERATION THEATER

The ambitious LaQshya programme was introduced in 2017 by the Ministry of Health & Family Welfare of the Government of India. This program's goals were to decrease maternity and newborn morbidity and death, improve postpartum care quality, increase beneficiary satisfaction, promote a positive birthing experience, and offer Respectful Maternity Care (RMC) to all expectant women using public health facilities. Aiming to improve the quality of care provided to mothers and newborns during the intrapartum and immediately post-partum periods, it is essentially a quality improvement project in labour rooms and maternity OT. For instance, under this programme LaQshya achieved 447 Labour Rooms and 365 OTs till 2021, LaQshya certified 64 MOT's in 2021, which shows the growth of OT's and the increased focus of government towards the development of healthcare.

8.3.3 STATUS OF LAQSHYA CERTIFICATION PROGRAMME (2018-2021)

FIGURE 18 STATUS OF LAQSHYA CERTIFICATION PROGRAMME (2018-2021)



Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.3.4 MODULAR OPERATION THEATER TENDERS – (01 JULY 2022- TILL 31 AUGUST 2022)

Various tendering authorities & private companies have announced 8 modular operation theater tenders.

TABLE 55 MODULAR OPERATION THEATER TENDERS – (01 JULY 2022- TILL 31 AUGUST 2022)

| Tender No | Description | Publish Date | Due Date | Tender Opening Date | State |
|-----------|--|--------------|------------|---------------------|-------------------|
| 33258843 | Work for Comprehensive Maintenance for 9 Nos Modular OT and 9 Nos Non Modular OT Including Material Supply, Delivery, Off Loading, Testing, Setting To Work and Engaging of Man Power for Maintenance of 9 Nos Modular OT and 9 Nos Non Modular OT at N.C.H Campus | 26-07-2022 | 02-08-2022 | 03-08-2022 | Gujarat |
| 33249068 | Bids Are Invited For Modular Operation Theater Total Quantity : 1 | 25-07-2022 | 04-08-2022 | 04-08-2022 | Maharashtra |
| 33212130 | Bids Are Invited For Tender For Indigenous Modular Operation Theater For S.P.M (Civil) Hospital -1 Free standing Substructure for mounting Paneling system complete with all installation accessories - made of 1.5 mm GI profiles, as per 1minutes, sp | 22-07-2022 | 02-08-2022 | 30-07-2022 | Uttar Pradesh |
| 33206737 | Modular Operation Theatre (As Per Corrigendum) Modular Operation Theatre (As Per Corrigendum) , Modular Operation Theatre , Cmc For Ist Year , Cmc For2nd Year , Cmc For 3Rd Year , Cmc For 4Th Year , Cmc For 5Th Year , Cmc For. | 22-07-2022 | 30-07-2022 | 01-08-2022 | Jammu And Kashmir |
| 33167351 | Provision of Fully Automatic Modular OT with Dual Dome Led OT Light with Cupboard in One Wall 23 Feet (OT Size 27X23 Feet) At Central Hospital S. E. C. Rly. Bilaspur Under The Jurisdiction Of Sr.Den / Settlement / Bilaspurprovision Of Fully A. | 20-07-2022 | 16-08-2022 | N.A. | Chhattisgarh |
| 33138367 | Setting Up Of Medical Gas System And Modular OT At Wc Kanhangad Kasargod. | 18-07-2022 | 28-07-2022 | 29-07-2022 | Kerala |

| | | | | | |
|----------|---|------------|------------|------------|------------|
| 33133884 | Execution Including Supply, Installation, Testing And Commissioning Of Modular Operation Theatres And Minor Operation Theatre For Advanced Neuro Science Centre At Pgimer, Chandigarh. | N.A. | 29-07-2022 | N.A. | Chandigarh |
| 32717113 | Corrigendum : Repair / Routine Preventive Maint Of Central Ac Plant Modular OT And Repair To Fcus, Csus, Pac, Cooling Towers Condenser And Chilled Water Pipe Lines And Certain Ahus Of Central Ac Plants At Naval Base Kochi | 21-07-2022 | 28-07-2022 | 01-08-2022 | Kerala |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.3.5 AVERAGE NUMBER OF OT PER LAKH IN INDIA AND GLOBALLY

India is believed to be home to 1.26 lakh millionaires and has just one operation theatre per 1 lakh population. Eastern Europe has the most OTs per 100,000 people, followed by Asia Pacific, North America, and Australia.

TABLE 56 AVERAGE NUMBER OF OT PER LAKH IN INDIA AND GLOBALLY

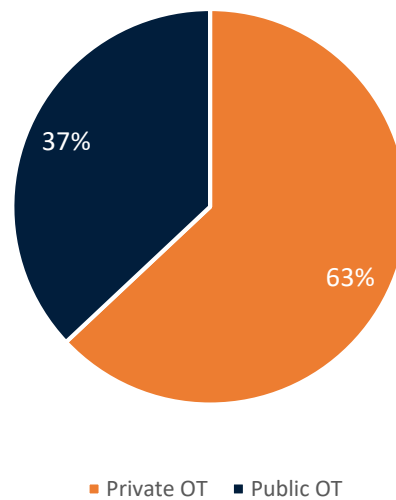
| Region | Number of OT's per lakh population |
|---------------------------|------------------------------------|
| Eastern Europe | 25.1 |
| Asia Pacific | 24.3 |
| North America & Australia | 14.3 |
| India & Pakistan | 1.3 |
| China | 2.6 |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.3.6 NUMBER OF GOVERNMENT OT IN INDIA

In India there were around 8694 number of government OT in 2020.

FIGURE 19 PERCENTAGE SHARE OF GOVERNMENT AND PRIVATE OT IN INDIA, 2020



Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

8.3.7 COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR MODULAR OT

TABLE 57 LIST OF COMPANIES THAT PROVIDE TURNKEY PROJECTS FOR MODULAR OT

| Company Name | Company Overview | Establishment Year | Location |
|------------------------------|--|--------------------|-----------------|
| Sterile Tech India | The manufacturer of modular operating theatres, Sterile Tech India, offers complete turnkey solutions. With believe that they are highly competent of completing the projects to perfection in accordance with the standards and timelines since they have extensive knowledge of the most recent technology guidelines set out by NABH and ISO. Sterile Tech India are also well-trained with practical experience. | 2015 | Chennai, India. |
| Kaizen Group | One of the top organizations for organizing, carrying out, and managing turnkey projects is Kaizen. Offer a 360-degree solution for a modular operating room. In order for it to be installed precisely in accordance with your unique requirements, they provide custom-made Modular OT. | 2013 | Pune, India. |
| Western India Electromedical | The company Western India Electromedical Systems Private Limited manufactures and exports a wide variety of equipment, including Modular Operation Theatres, Surgical Scrub Sinks, Clean Room Doors, and other items. | 2001 | Pune, India |

| | | | |
|-------------------------|--|------|------------------|
| Systems Private Limited | They also offer hospital turnkey project services. Additionally, Western India Electromedical Systems Private Limited offers value-added services like planning, aiding, designing, installation, and after-sales services for the convenience of the clients. | | |
| Hectra Enviro Systems | A specialized and fully integrated company offering the best quality product range with turnkey solutions of Modular Clean Room manufacturers and Modular Operation Theatres. | | Hyderabad, India |
| Bio-care Systems | One of the top companies dealing in, manufacturing, and providing services for medical equipment, instruments, furniture for hospitals, hospital software, turnkey projects, turnkey projects O.Ts and other goods. | 2003 | Banaglore, India |
| BiOM Medical Technology | A creative firm that designs, executes, and implements operating rooms (ORs) that provide best-in-class OR solutions to meet OR requirements. They are a pioneer in the field of modular OT and provide full turnkey projects with their partner firm, Axis Medical. | 2016 | Banaglore, India |

Source: MoHFW, DGFT, Journals and Whitepaper, Company Annual report, Primary Interviews, Reports and Data.

Disclaimer

This report is prepared by Reports and Data. We hereby authorize, Aprameya Engineering Limited (the Issuer) & Hem Securities Limited (BRLM to the Issue) to use the report “ICU Setup and Maintenance Market Report” as issued by us, in the Offer Documents (DRHP/RHP/Prospectus), Research Reports, Investor Presentations, Press Releases, Newspapers etc. for the purpose of IPO of Aprameya Engineering Limited. We also authorize the Company to upload the report on its website and permits the company and the BRLM to reveal the report to the appropriate regulatory authorities if required to do so.

Reports and surveys are based purely on data or information accumulated from the authorized personals not limited to stakeholders and field marketing executives of reputed companies, Material, organizations or bodies. The information is also derived based on further discussion with subject matter experts heading the practice or at reputed companies.

Experts at Reports and Data assert that no business including but not limited to investments should be made purely on the data presented in these reports. We highly recommend that business owners or stakeholders should seek professional advice before making a business decision. Any resale, lending, disclosure or reproduction of this publication can only be made with prior written permission from Reports and Data. Transmission and/or reproduction of this document by any means or in any form (includes photocopying, mechanical, electronic, recording or otherwise) are prohibited without the permission of Reports and Data.

Office Address
Reports and Data.
40 Wall St. 28th floor New York City,
NY 10005
United States