



# Patients in Need

## MEDICINE SHORTAGES

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# Cancer Drug Shortage Crisis



**Manufacturing** Issues, from production line problems to quality control failures.  
**Supply Chain** Disruptions from geopolitical tensions, natural disasters, and transportation issues and **Regulatory** Delays - the approval process for new drugs and production changes can be lengthy and cumbersome.

## Insights from the National Comprehensive Cancer Network

The CEO of the National Comprehensive Cancer Network recently highlighted that the current cancer drug shortage is an extension of the broader generic drug shortage. This insight sheds light on systemic issues within the pharmaceutical industry. The challenges faced by generic drug manufacturers also impact cancer drug production, creating a compounded effect on availability.

## Market Pressures and Poor Incentives

One significant factor driving the generic drug shortage is market pressure for lower costs. Manufacturers are constantly pushed to produce drugs at the lowest possible price. However, this pressure can reach a threshold where it becomes unsustainable to maintain a steady supply. The financial incentives to produce generic drugs are often insufficient, leading to reduced production and eventual shortages.

## Economic Thresholds and Supply Stability

When the economic incentives to produce a drug fall below a certain threshold, manufacturers may cease production altogether. This situation is particularly problematic for generic cancer drugs, which are often less profitable than their branded counterparts. The lack of financial motivation to produce these drugs can result in chronic shortages, impacting patient care and clinical trials.

# Cancer Drug Shortage: 8 Key Updates

## 1. Carboplatin

The shortage of carboplatin, which is used to treat multiple cancers, has mostly resolved. However, the FDA lists five presentations in limited or no availability, and the ASHP reports two products on back order. Between late May and mid-June, 11% of U.S. cancer centres reported insufficient supply.

## 2. Cisplatin

The national supply of cisplatin now exceeds demand, according to FDA Commissioner Robert Cailiff, MD, as of June 28. A few weeks prior, two of 28 cancer centres reported a shortage of this drug, which treats multiple cancers. The ASHP lists three presentations in short supply.

## 3. Dacarbazine

Dacarbazine, a treatment for melanoma, Hodgkin lymphoma, and other cancers, has seen an unsteady supply since autumn 2023. Currently, two presentations are on back order or allocation.

## 4. Etoposide

Although the FDA does not list etoposide as being in shortage, the ASHP indicates that eight products are in short supply and one is available. Notably, 46% of cancer centres do not have enough of this drug, which treats small-cell lung and testicular cancers.

## 5. Fluorouracil (5-FU)

The FDA has not reported a shortage of fluorouracil (5-FU), but both cancer centres and the ASHP are experiencing unstable supply. As of July 6, nine presentations are available and seven are unavailable.

## 6. Methotrexate

Methotrexate, which kills cancer cells, has been in national shortage since February 2023. Both the ASHP and FDA report that between four and seven presentations are in limited supply.

## 7. Topotecan

Topotecan, a therapy for cervical, ovarian, and small-cell lung cancers, is short in supply at 43% of cancer centres.

## 8. Vinblastine

Vinblastine, used for treating lymphoma, is in insufficient supply at 57% of cancer centres. Increased demand is limiting its availability, according to the ASHP and FDA. Unfortunately, this medication lacks an equal alternative.



# The Surprising Truth Behind Generic Drug Shortage



## The Paradox of Success

The trouble for generics started, paradoxically, with their success. The aim of generics was to make crucial medications affordable and accessible. Initially, this worked brilliantly. However, as more manufacturers entered the market, competition soared, and prices plummeted. The cost of many generic drugs has become so low that they're barely profitable. This economic paradox has a significant side effect. Producers, unwilling or unable to operate at a loss, are being driven out or simply cannot meet increased demands. High costs for raw materials, manufacturing, and quality control mean that there is a threshold below which these drugs simply cannot be sold to sustain viable business models for manufacturers.

### The Human and Economic Toll

The shortage of generic drugs is not just a financial headache for healthcare providers; it's a crisis that affects patient health, outcomes and, at times, survival. In many cases, alternative drugs may exist, but they are often much more expensive, putting both financial and health burdens on patients and healthcare systems. The solution to this complex problem isn't clear-cut. It involves a delicate balance between enforcing stringent quality regulations, ensuring fair compensation for manufacturers, and creating incentives that don't risk the safety and availability of these vital drugs.





# Addressing the Shortage of ADHD Medications



ADHD is a chronic neurodevelopmental disorder that affects both children and adults, characterized by symptoms of inattention, hyperactivity, and impulsivity. For many, the cornerstone of managing these symptoms is through a judicious regimen of medication. The benefits of these medications are profound, often leading to improved concentration, enhanced cognitive function, and a significant reduction in impulsive behavior. In a broader context, these drugs play a pivotal role in patient quality of life, academic success, and professional fulfillment. Therefore, safeguarding the availability of ADHD medications is tantamount to preserving the overall well-being of the ADHD population.

Pharmaceutical shortages have become a disturbingly common global healthcare issue, posing formidable challenges for medical treatment, patient management, and health systems' operation. The current ADHD medication shortfall stands as an exemplar of this disturbing trend, affecting patients' access to vital medications.

The magnitude of the shortage is not to be underestimated: a significant portion of the population relies on these medications to manage their symptoms effectively. Professionals and patients alike are experiencing the ripple effects of this shortfall, which transcend beyond mere inconvenience to directly influence the quality of care and health outcomes.



# Navigating Europe's GLP-1 Drug Shortage Crisis



## **EMA and HMA Recommendations**

To combat risks associated with falsified medicines, the EMA and HMA have issued specific recommendations. Patients are advised to only purchase GLP-1 receptor agonists with a medical prescription from pharmacies registered with national competent authorities in EU Member States.

Europe is grappling with a significant shortage of GLP-1 receptor agonists (GLP-1 RAs), crucial drugs for managing diabetes and obesity. These shortages have sparked an alarming rise in the online market for substandard and falsified medicines, posing severe health risks to patients.

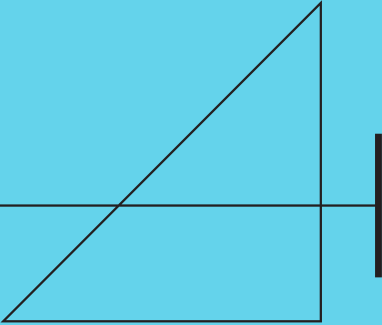
## ***The Rising Demand and Its Consequences***

*The demand for GLP-1 receptor agonists has skyrocketed for several reasons. Firstly, the increasing prevalence of type 2 diabetes and obesity has naturally led to higher demand. Secondly, clinical guidelines now recommend these drugs more frequently, expanding their use beyond just diabetes management to include weight loss and cardiovascular risk reduction.*

*However, this surging demand has outpaced supply, leading to widespread shortages. These shortages have serious implications for patient care, potentially disrupting treatment plans and causing health deterioration.*

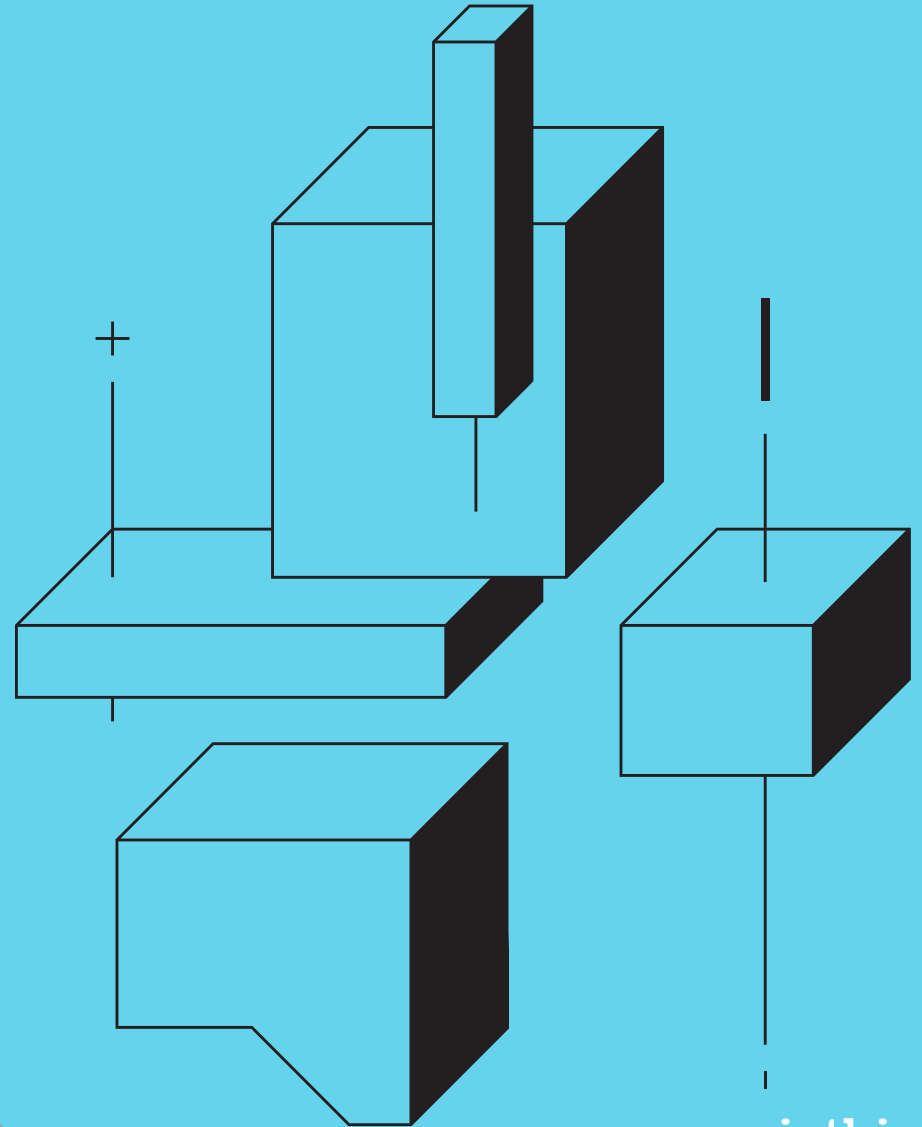
## ***The Risk of Substandard and Falsified Medicines***

*Desperate patients may turn to online sources to obtain their medications, often unaware of the risks involved. Falsified medicines can be ineffective or harmful, containing incorrect doses or dangerous contaminants.*

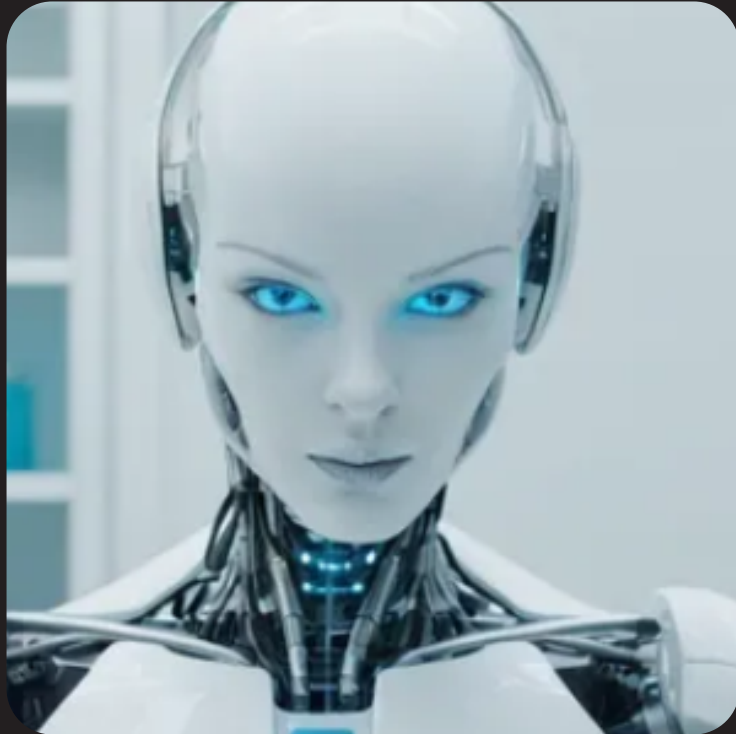


Several real-world examples highlight the positive impact of AI in healthcare. For instance, AI-powered diagnostic tools have shown promise in detecting diseases such as cancer at earlier stages, leading to better treatment outcomes. Additionally, AI-driven personalised treatment plans have improved patient adherence and satisfaction.

# World of AI







## The Ethical Crossroads of AI in Healthcare

Artificial Intelligence (AI) has gradually woven itself into various facets of our lives, with healthcare being one of the most promising yet contentious fields. The advent of large language models (LLMs), particularly since the emergence of ChatGPT in 2022, has ignited both excitement and concern among researchers and healthcare professionals.



# The Rise of AI in Healthcare

## The Promise of Enhanced Data Analysis

AI's ability to process and analyse vast amounts of data offers unparalleled opportunities for healthcare. By sifting through medical records, research papers, and clinical studies, AI can identify patterns and correlations that might elude human analysis. This enhanced data analysis can lead to more accurate diagnoses, personalised treatment plans, and improved patient outcomes.

## Decision Support Systems

LLMs can serve as decision support systems for healthcare professionals. By providing real-time access to the latest medical research and guidelines, these systems can assist doctors in making informed decisions. For instance, an AI system could suggest potential diagnoses based on a patient's symptoms and medical history, helping to ensure that no critical piece of information is overlooked.

## Streamlining Administrative Tasks

Beyond clinical applications, AI can also streamline administrative tasks in healthcare settings. From scheduling appointments to managing patient records, AI-driven systems can reduce the administrative burden on healthcare staff, allowing them to focus more on patient care.

# Ethical Concerns in AI Deployment

## Fairness and Bias in AI Systems

One of the most pressing ethical concerns surrounding AI in healthcare is fairness. AI systems, including LLMs, are trained on vast datasets that may contain inherent biases. These biases can lead to unfair treatment recommendations, particularly for underrepresented or marginalised groups. For example, if an AI system is trained predominantly on data from a specific demographic, it may not perform as well for patients from different backgrounds.

## Transparency and Accountability

Transparency is another critical issue when deploying AI in healthcare. Understanding how an AI system arrived at a particular recommendation is essential for ensuring trust and accountability. However, the complex algorithms used in LLMs can make it challenging to interpret their decision-making processes. This lack of transparency can hinder healthcare professionals' ability to validate AI recommendations and hold systems accountable for errors.

## Privacy Concerns

Patient privacy is paramount in healthcare, and the use of AI introduces new challenges in this regard. LLMs require access to vast amounts of data, including sensitive patient information. Ensuring that this data is securely stored and used ethically is crucial. Any breach of patient privacy could have severe consequences, undermining trust in AI systems and healthcare providers.



# The Role of Human Oversight

## The Importance of Human Judgment

Despite the advanced capabilities of AI, human oversight remains indispensable in healthcare. AI systems can provide valuable insights and recommendations, but they should not replace the judgment of trained healthcare professionals. Doctors and nurses bring a level of empathy, intuition, and contextual understanding that AI cannot replicate.

## Addressing Inaccuracies and Biases

Human oversight is particularly important in addressing inaccuracies and biases in AI systems. Healthcare professionals must critically evaluate AI recommendations and ensure they align with clinical guidelines and individual patient needs. By maintaining a balance between AI and human judgment, healthcare providers can mitigate the risks associated with biased or incorrect AI recommendations.

## Continuous Monitoring and Improvement

The deployment of AI in healthcare should be accompanied by continuous monitoring and improvement. Regular audits of AI systems can help identify and rectify biases, inaccuracies, and other ethical concerns. By fostering a culture of ongoing evaluation and refinement, healthcare organisations can ensure that AI contributes positively to patient care.

# AI in Healthcare: Three Bold Predictions for the Future



## 1. Personalisation of Medicine

**AI and Genomics:** The combination of AI with genomics promises radical advances in personalised medicine. By analysing vast datasets, AI algorithms can identify patterns and mutations in DNA that predispose individuals to specific diseases. This insight enables healthcare providers to tailor treatments to the genetic makeup of each patient, significantly enhancing the efficacy of treatments and minimising side effects.

**Predictive Analytics:** Predictive analytics powered by AI will facilitate early intervention strategies by predicting disease susceptibility based on genetic information and lifestyle factors. This proactive approach will shift the paradigm from treatment to prevention, reducing the overall disease burden and improving quality of life.



# AI in Healthcare: Three Bold Predictions for the Future



## 2. Streamlining Diagnostics and Administrative Tasks

**Diagnostic Accuracy:** AI has already demonstrated its ability to diagnose certain conditions with an accuracy that rivals, and sometimes surpasses, human practitioners. For example, AI-driven diagnostic tools for imaging, like CT scans and MRIs, can detect anomalies at earlier stages, enabling timely intervention. This precision will continue to improve, shortening diagnostic timelines and making healthcare delivery more efficient.

**Administrative Efficiencies:** AI's role in automating administrative tasks will alleviate the burden on healthcare workers, allowing them to focus more on patient care. From streamlining patient data management to automating appointment scheduling, AI will enhance operational efficiencies across the healthcare sector, reducing costs and improving patient experiences.





# AI in Healthcare: Three Bold Predictions for the Future



## 3. Democratizing Healthcare Access

**Breaking Down Barriers:** One of the most profound impacts of AI in healthcare will be its ability to democratise access to medical services. Telemedicine and mobile care solutions will bridge geographical and socio-economic divides, providing high-quality healthcare to remote and underprivileged populations.

**Advanced Diagnostic Tools:** The development of AI-driven diagnostic tools used remotely will further this trend, making expert-level diagnostics accessible. This will be impactful in areas with shortages of healthcare professionals, ensuring that more people have access to the care they need.

**Policy and Ethical Considerations:** While the prospects of AI in healthcare are predominantly positive, they also raise important ethical and policy considerations. Issues around data privacy, AI decision-making transparency, and the need for policy frameworks to guide the integration of AI into public health strategies will be critical to address.

The background is a solid light blue color. It features several abstract geometric elements: in the top left, a series of white-outlined cubes and rectangles; in the top center, a cluster of 3D cubes with black outlines and some black shading on their faces; in the bottom right, a series of overlapping white-outlined rectangles and planes, some of which are filled with solid black. There are also small black plus signs and a minus sign scattered among the geometric shapes.

# DRONE Technology

# Are Medical Drone Deliveries the Future of the NHS?

Imagine a future where life-saving medicines and vital supplies are delivered swiftly by drones, bypassing traffic and geographical barriers. This isn't science fiction—it's happening now in countries like the United States, Australia, Switzerland, and Rwanda. But what about the UK? With its well-developed road infrastructure and congested airspace, is there a need for medical drone deliveries? Are they safe? Could they be a viable option for the NHS? Let's explore the possibilities and challenges of integrating drones into the UK's healthcare system.





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