

Full Name:

Jagga Sankalp Harish

Name of the Institution:

Kidwai Memorial Institute of Oncology

State:

Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):

- To identify key barriers that limit patient access to innovative cancer diagnostics, therapies, and technologies, particularly in resource-constrained settings.
- To evaluate practical and scalable strategies for improving affordability, accessibility, and equitable delivery of cancer innovations.
- To develop a framework that integrates technology, policy, collaboration, and local evidence generation to ensure that advances in cancer care benefit a larger patient population

Describe your solution/proposal: Provide a detailed account of your solution/ proposal to this challenge. You could type your solution/ proposal here. (Disclaimer: Solution/proposal should not exceed more than 300 words):

Cancer care has witnessed remarkable innovations over the past two decades, including targeted therapies, immunotherapy, precision oncology, molecular diagnostics, liquid biopsies, robotic surgery, AI-driven decision support, and advanced radiation techniques. However, the benefits of these innovations are not equally available to all patients, particularly in low- and middle-income countries (LMICs) such as India. Bridging the gap between innovation and access is essential to ensure equitable cancer care and improved outcomes.

Key Gaps in Access to Cancer Innovations

1. **Financial Barriers:** Many innovative therapies, including immunotherapy, CAR-T cell therapy, and next-generation sequencing (NGS), remain prohibitively expensive. High out-of-pocket healthcare expenditure limits access for many patients.
2. **Diagnostic Inequity:** Precision oncology depends on molecular testing, but advanced diagnostics are concentrated in urban tertiary centers. Many patients never receive biomarker testing required for targeted therapies.
3. **Geographic Disparities:** Specialized oncology services are often unavailable in rural and remote areas, leading to delayed diagnosis and treatment.
4. **Workforce and Expertise Gaps:** There is a shortage of trained oncologists, molecular pathologists, genetic counselors, and oncology nurses, limiting the adoption of advanced therapies.
5. **Clinical Trial Accessibility:** Most global clinical trials are conducted in high-income countries, resulting in limited participation of Indian and other LMIC populations. This creates gaps in evidence generation and delays access to novel therapies.
6. **Regulatory and Reimbursement Challenges:**
 - Slow approval processes, lack of reimbursement mechanisms, and inconsistent insurance coverage delay patient access to innovative treatments.
 - Novel Ways to Bridge the Gap
 -

Resource-Stratified Innovation: Develop treatment guidelines adapted to different resource settings rather than adopting a single universal standard. This allows evidence-based care even when resources are limited.

- **Expansion of Generics and Biosimilars:** Encouraging local manufacturing of biosimilars and generic oncology drugs can significantly reduce treatment costs while maintaining efficacy.
- **Hub-and-Spoke Cancer Networks:** Establish regional cancer centers linked to peripheral hospitals through tele-oncology platforms, enabling expert consultation without requiring patient travel.
- **AI and Digital Health:** AI-based tools can assist in diagnosis, treatment planning, toxicity prediction, patient monitoring, and identification of clinical trial candidates, helping extend specialist expertise to underserved areas.
- **Molecular Tumor Board Networks:** Virtual molecular tumor boards can connect community oncologists with experts in genomics, pathology, and precision medicine, improving access to personalized treatment recommendations.
- **Decentralized Clinical Trials:** Conducting community-based and decentralized clinical trials can increase patient participation, generate local evidence, and improve access to emerging therapies.
- **Public-Private Partnerships:** Collaboration among governments, industry, academic institutions, and non-governmental organizations can improve infrastructure, diagnostic availability, and funding for innovative treatments.
- **Value-Based Cancer Care:** Adopt reimbursement models that reward meaningful clinical outcomes rather than treatment volume, ensuring sustainable use of expensive therapies.
- **Strengthening Screening and Early Detection:** The most cost-effective innovation remains early diagnosis. Investment in screening programs, awareness campaigns, and risk-based surveillance can significantly improve survival while reducing treatment costs.

The biggest challenge is not the lack of innovation but the unequal distribution of innovation. Future cancer care should focus on democratizing innovation, ensuring that advances in diagnostics, drugs, and technology reach patients regardless of geography or socioeconomic status. Innovation should be judged not only by scientific breakthroughs but also by how many patients can realistically benefit from them. A combination of affordable diagnostics, AI-enabled care, tele-oncology, biosimilars, and locally generated evidence can help transform cancer care from being innovation-rich but access-poor to truly equitable and patient-centered