Title:
Role of artificial intelligence play in optimizing treatment decision-making and patient management in oncology?

Full Name:
Dr Narendhar Gokulanathan

Name of the Institution:
Apollo Hospitals, Bangalore

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
An anonymized Agentic-AI platform to synthesize overlapping geriatric oncology data and triage toxicity prediction/management, dose/frequency individualization, avoid clinical oversights, and provide actionable clinical triggers along with research-ready structured data capture. It also helps in better patient counselling, shared decision-making and supportive care planning, thereby improving treatment compliance.

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.):
In geriatric oncology, tools such as G8, CARG, CRASH, SCOPE-C, and CGA have substantial overlap across their domains and are time-consuming, and difficult to implement in busy oncology clinics. They do not capture the physiological reserve, polypharmacy, socio-financial constraints.
Methods:
Each patient will be assigned a unique anonymized barcode ID linked to a primary-site theme and blinded to the AI engine. Dual input data (patient and clinician generated) will be captured in phases:
1. **Pre-visit / waiting area:** Patient or attendant enters comorbidities, concomitant medications, falls, ADLs/IADLs, neuropsychiatric, social, financial, and nutritional data through a visual, pre-populated interface (derived from streamlined validated questionnaire sets).
2. **First oncology visit:** Clinician enters age, ECOG, Mini-Cog/MMSE, organ function, cancer site, stage, histopathology, molecular findings, and planned chemotherapy/treatment course. Incorporate automated ESMO MCBS assignment for quantifying benefit-risk. Patient-directed goals-of-treatment can also be obtained.
3. **During treatment cycles:** Labs, doses, CTCAE toxicities, interruptions and interventions are updated. PROs can also be obtained.
4. **From EMR/discharge summaries:** The system flags polypharmacy, high-alert drug interactions, pathology/radiology response, and cumulative toxicity patterns.

Full Name:
Himaprathyusha Parupalli

Name of the Institution:
MNJIORCC Osmania Medical College, Hyderabad

State:
Telangana

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
AI-Enabled Admission and Symptom Triage System for Optimizing Resource Utilization in High-Volume Oncology Centres
Objective of the Solution:
To develop a structured, AI-assisted triage system that supports clinicians in making consistent, data-driven admission decisions, reduces unnecessary hospitalizations, and improves utilization of limited oncology care resources.

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.):
Overcrowding in oncology centres is frequently driven by unnecessary admissions due to lack of structured triage, patient anxiety, and limited health literacy. This leads to inefficient bed utilization and increased clinician workload.
This proposal introduces a two-phase triage system:
Rule-based triage: Standardized clinical protocols categorize patients based on symptom severity and urgency
AI-assisted triage: A predictive model integrates diagnosis, laboratory values, and symptom profiles to recommend admission, day-care management, or outpatient care
The AI model is trained on institutional data and continuously improves through feedback loops. It functions as a decision-support tool, with final decisions made by clinicians.
Example: A chemotherapy patient presenting with mild nausea is managed through day-care rather than admission, preserving beds for high-risk cases such as febrile neutropenia.
This system improves consistency in decision-making, reduces unnecessary admissions, and enhances efficiency in high-volume oncology settings.

Full Name:
Sakthi Vignesh D

Name of the Institution:
Government Kilpauk Medical College (GKMC), Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
Role of AI in optimizing treatment -
Various stakeholders of a patient journey are - Primary care physician, diagnostic center - radiologist, pathologist, Primary oncologist along with medical oncologist, surgical oncologist, radiation oncologist, other allied super specialists based on the site specific disease, such as urologist, nephrologist, gastroenterologist, neuro-surgeon, caretakers, staff nurses, para-medical staffs, psychologists, dietician, office staff who schedule finance & appointments. Data sources will be handled by dedicated software professional team, who work both at the front end & back end and co-ordinate the integration of patient data at each level, ensuring smooth interpretation by AI, and at the same time, ensure that privacy is maintained & data are encrypted to prevent theft.

AI can be helpful to interpret data from complex available data & reduce the noise of intensive data & help physician take a clear and validated decision. It can help various medical specialists in oncology, in their own way, which we all know.

For patients, it can help to co-ordinate follow-up & assess toxicity & response assessment & may serve to act as a bridge between doctor & patient, where AI can keep a checklist for each timeframe & alert the patient to visit doctor, earlier than some complications arises. Helps identify other factors such as financial factors, socio-economic factors, compliance to suggested treatment, assess psychological components, assess cachexia, asthenia, sarcopenia - which can be routinely missed by the caretakers and treating physicians.

For caretakers and nursing staff & office staff, it may help to sync all data & help in guiding future appointments and alert them about what patient may need at each time frame & treat them with that anticipation, at the earliest.

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.):

To improve AI itself continuously, following can be done.

A. Enable continuous machine learning & natural language processing.

We can set up a central database, that can be fully accessed by the AI. Patients data - from history to diagnosis, their treatment pattern, their response, treatment outcomes, further management plans, their outcomes of regular follow-up till death should be entered in the data. Both image and their corresponding reports of radiology & pathology should be uploaded - allowing for machine learning & interpret future data with accuracy. By uploading all the details of natural course of disease, AI can accurately predict the PFS & OS of future cases presenting in the same manner. By uploading all the latest guidelines, as & when published, it can help integrate these plans in shared-decision making. Also by uploading the real-world evidence of the disease & the treatment, AI can be fine-tuned to the differences observed & generate plans accordingly. Currently there are plenty of data of treating western population, but no data of Indian population. By integrating AI, as & when the data is updated, AI can fine-tune itself and generate data according to the Indian population. To ensure privacy, data of patient should be encrypted at each stage and confidentiality maintained.

B. Systems that can be put for continuous improvement-

To prevent fabrication, hallucination, the data generated by AI should be scrutinised by a team of experts regularly. The data should be validated, before following decision of the AI. Validated decisions can be stored in memory for future precise data generation. Non-validated data should be corrected by professionals, so that machine learning keeps it in the mind and doesn't make the same mistake again.

Some data can be uploaded erroneously in the AI. Care should be taken quality of data is maintained. Whenever AI flags the data as inappropriate or erroneous, when it is uploaded, it can be manually validated as right or wrong by the specialists, so that AI can store the info & use it for future references. Periodic analysis of AI performance and check the areas where it falters and update the info related it, so that it can function better next time.

Full Name:
Foram Joshi

Name of the Institution:
Kidwai Memorial Institute of Oncology, Bengaluru

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
In 2026 era with AI research at its peak, it is very crucial for professional like us to embrace the technology before its too late. Patient attenders and patient themselves are thoroughly aware about their disease, therapeutic options, outcomes through these applications prior to visiting clinician. The biggest challenge to professionals in this setting is quality counselling which is both convincing and tailored to individual care

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.):
Artificial intelligence is emerging towards revolutionizing the dynamicity in cancer care. AI can be helpful right from designing risk adoption model to identify and screening high risk individuals . Navigating these in practice will not only improvise in early detection but also translate in improved survival and quality cancer care. It can also cater to workforce shortage with report interpretation however validation of this strategy is still debated.
AI can play an important role in diagnosing cancer with interpretation of pathology reports, radiological imaging , molecular and ancillary investigation reports minimizing workforce burden but it must be used as assisting tool to human diagnostic ability rather sole reliability on AI. AI assisted models can help formulate treatment plan and develop outcome prediction models enabling quality counselling and estimation of financial requirements. AI models can also predict toxicity and assist clinician towards tailored treatment based on patient profile.
AI can be helpful tool in multidisciplinary team discussion with formulation of consensus by AI and by human experts and interpretation with incorporation of standard guidelines and assist in decision making towards improvised patient care.
AI can play an important role in improvising the precision and molecular oncology with development of biomarkers, genomics, immune profiling, identifying the tumor microenvironment and possible genes and targets towards improvising drug formulation and precision cancer care. AI and machine learning can minimize the turn over time of these investigations and expediate cancer care delivery.
AI can help with surveillance prediction models with incorporation of molecular oncology and parameters like Ct-DNA, circulating tumor cells, cell free DNA ,liquid biopsy which can help with early cancer recurrence detection way ahead to clinical and radiological progression thereby improving survival outcomes and mitigate incorporation of pre-emptive treatment strategies thereby improvising outcomes.
AI can help in development of models towards quality improvement of cancer care. These models are very crucial and must be designed incorporating the data analytics of each cancer center with regular revision and SOP formulation to enable quality cancer to all.
AI can mitigate fallacies in data analytics, improvise on data entry and ease data interpretation and hence channelizing its utility in data setting context is crucial . AI can help minimize the burden on professionals especially in resource limited settings with shortage in workforce and financial burden.
It is equally crucial to have quality collaboration with emerging AI startups which can collectively maximize towards improvisation of quality cancer care mainly by formulation of models and navigate technological fallacies in cancer care.
AI can help develop education platforms and improvise these for both healthcare professionals as well as patient and caregiver education. Hence it is very important towards have Application which can focus on quality information helping build mutual doctor patient trust and improvise compliance to cancer care.

These apps must be wholesomely designed with appropriate information, disease nature, treatment options, adverse events, nutritional counselling, calorie intake, physical exercise monitoring, psychological support. Having such common platforms can solve the biggest problem of doctor shopping, Google and Chatgpt mastered patients and attenders.
Healthcare professionals must realize that AI is beyond Chatgpt and improvising on microlearning of AI applications must be incorporated in curriculum thereby facilitating quality cancer care.

Full Name:
Abhinav Shah

Name of the Institution:
Regional Cancer Center, Trivandrum

State:
Kerala

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
The idea behind this system came from a very common problem that patients and families quietly struggle with every single day.
People spend years moving between hospitals, clinics, laboratories, and specialists, yet their medical history remains scattered everywhere. One report is in an old file at home, another is buried inside a WhatsApp chat, scans are stored on CDs nobody can open anymore, and important prescriptions are often missing when they are needed the most.
The objective of this platform is to build a patient-owned, AI-powered portable health record that brings all of this information together into one connected and accessible clinical timeline.
Using a QR-based access system, doctors across different healthcare institutions can quickly understand a patient's medical journey and make more accurate, timely, and informed clinical decisions.
At its core, the system is not only about technology. It is about reducing confusion, saving time, avoiding repeated suffering, and helping patients feel that their medical history finally belongs to them.

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.):
QR-Based Health Record System – Solution
Your History. Your Health. Your Hands.
Solution:
The system works through three practical layers.
Layer 1: Patient-Driven Digitization
Patients upload prescriptions, discharge summaries, lab reports, and imaging through a smartphone app. Multilingual OCR and NLP convert messy, scattered documents into organized clinical data stored on an encrypted cloud. The platform also handles DICOM-compatible radiology imaging (CT, MRI, and PET) via hospital CDs or PACS links—so doctors can review actual scans, not just written summaries. This can cut repeat imaging, unnecessary radiation, and avoidable delays. Voice-assisted input ensures elderly and less tech-savvy users aren't left behind. Healthcare technology only works if ordinary people can actually use it.

Layer 2: AI-Powered Clinical Summarization
The real problem isn't missing information — it's fragmented information. Doctors waste consultation time piecing together years of reports from multiple hospitals. The system generates a chronological medical timeline (disease progression, treatments, surgeries, imaging, outcomes) and a comprehensive clinical summary with auto-updated problem lists, medication reconciliation, drug interaction alerts, and critical lab flags. Low-confidence extractions get flagged for clinician review. The goal isn't replacing doctors — it's freeing them from paperwork so they can focus on patients.
Layer 3: Secure QR Code Access
Each patient gets a unique QR identity —on a card, phone widget, or wristband. Clinician access requires PIN/OTP authentication with 24-72 hour validity. An Emergency Access Mode provides instant offline access to allergies, blood group, anticoagulant use, and life-threatening conditions. During emergencies, families are frightened and can't always explain everything —accurate information at the bedside helps doctors act faster.
Clinical Impact
In oncology, it supports therapy sequencing and second opinions across institutions. In emergencies, it enables faster triage for unconscious patients. In chronic care, it reduces repeated investigations and the emotional burden of re-explaining history at every visit.
Pilot Plan
500 patients at one tertiary cancer center over six months, measuring time-to-history completion, medication errors, redundant investigations, and clinician satisfaction. The vision: medical information that travels with the patient, not lost between hospitals and paperwork.

Full Name:
Reshma Abraham

Name of the Institution:
Manipal hospital, Bengalore

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
How can artificial intelligence be integrated into the complex, data-intensive, and multimodal landscape of oncology to optimize treatment decision-making and patient management, including the role of diverse stakeholders and data sources, the clinical and patient-care impacts enabled by AI-driven insights, and the mechanisms required for continuous learning, validation, and improvement of these models over time?

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.):
1. Data-Intensive Areas
Oncology is uniquely multimodal. NGS generates large-volume mutational data, radiology produces high-volume DICOM imaging across CT, MRI, and PET with multiple reassessments scans, pathology with repeat tissue diagnosis at different time points Longitudinal EHR data, all adds complexity. Together these streams demand computational synthesis beyond human capacity. AI applications integrating these layers can enable comprehensive patient analysis.

2. Stakeholders and Data Sources

Stakeholders in AI-enabled oncology include the patient as the central participant, along with medical, radiation, and surgical oncologists, pathologists, radiologists, genetic counsellors, psycho-oncologists, and caregiving teams. Data is continuously generated from EHRs, PACS imaging systems, NGS laboratories, digital pathology platforms, and patient-reported outcome tools, with each stakeholder contributing a different layer of the patient journey can pitch in and participate. Integrating these streams through AI can create a dynamic, longitudinal patient flowchart capturing treatments, responses, toxicities, and progression - where we can have insight of each individual patient, their unique responses and depth of response, enabling individualizing precision care to all new level without much effort.

3. Clinical Decisions and Patient Impact

Predictive and deep learning models trained on large patient datasets —pathology, histology, imaging, metastatic patterns, treatment responses, toxicities, and regional demographics —can identify patterns beyond conventional human analysis and these can open up new avenues for research. This also enables early prediction of treatment response, recurrence, metastatic progression, and toxicities such as neutropenia and organ damage. At an individual level, models combining baseline ALC, NLR, and other immune biomarkers can stratify irAE risk even before initiation, and flag patients needing closer monitoring, and help time prophylactic measures and also directly supporting steroid stewardship in immunotherapy.

Radiomics on serial CT/PET can address recurring decisional dilemmas such as early pseudo-progression versus true progression on immunotherapy, helping close small but critical decision gaps through closer monitoring. In a diverse population like India, such models can also uncover regional and biological variations in chemotherapy and immunotherapy outcomes that may not be evident in clinical trials, generating new hypotheses for prospective validation. AI thus serves as an analytical tool, as an adjunct; helping oncologists understand evolving response patterns at a scale not humanly feasible.

4. AI Models for Supportive Care

-In countries like India, heavy patient load and limited physician time spent per patient in OPD/IP; often compromise supportive care and patient education. National bodies such as the National Cancer Grid could develop standardized, evidence-based patient education modules relevant to Indian population and FAQs for specific chemotherapies, analogous to NCCN patient guidelines. Delivered through multilingual AI applications in patients' native languages, these tools could improve awareness of complications such as febrile neutropenia and extravasation, reduce misinformation from unverified internet sources, strengthen physician-patient communication, support caregivers, and optimize limited consultation time.

5. AI as a Clinical Assistant

Beyond population-level analytics, AI can function as a close clinical assistant in everyday oncology practice. Voice-note entries against each patient, capturing what to specifically watch for in subsequent cycles, pending investigations, or planned dose modifications. These can be structured by AI and surfaced as pop up reminders at the next visit.

-This supports closer monitoring and steroid stewardship at the bedside, particularly across busy chemotherapy day-care settings.

-AI for clinical documentation, where AI scribes draft the consultation note from the audio of the encounter, oncologists can focus on human interaction and communication than documentation.

Full Name:
Rajalakshmi Radhakrishnan

Name of the Institution:
Madras Medical College, Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
The primary objective of this solution is to develop an AI-enabled oncology decision-support and patient-management system that integrates clinical, radiological, pathological, laboratory, and patient-reported data to assist clinicians in delivering personalized, timely, and evidence-based cancer care.

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.):
This proposal aims to develop an AI-driven Clinical Decision Support System (CDSS) for oncology using machine learning models integrated with hospital electronic medical records (EMR). The platform will collect structured multimodal oncology data including demographics, ECOG performance status, comorbidities, pathology, radiology, molecular markers, treatment history, laboratory values, toxicity profiles, and survival outcomes.
The implementation will begin with retrospective data extraction from tertiary cancer centers such as Madras Medical College. The dataset will be anonymized and used to train supervised machine learning algorithms including Random Forest, XGBoost, and Deep Neural Networks for prediction of chemotherapy toxicity, hospitalization risk, treatment response, and progression-free survival.
Natural Language Processing (NLP) tools will convert unstructured clinical notes and pathology reports into analyzable datasets. Radiology imaging data can later be integrated using deep learning-based image recognition models for automated response assessment.
The AI platform will generate real-time risk scores for febrile neutropenia, immune-related adverse events, early mortality risk, and treatment non-adherence. A dashboard integrated into the oncology OPD workflow will categorize patients into low-, intermediate-, and high-risk groups, helping clinicians prioritize admissions, supportive care, dose modifications, and follow-up intensity.
Patients will also report symptoms through a multilingual mobile/WhatsApp interface. The system will use rule-based algorithms and machine learning triage models to generate automated alerts for fever, diarrhea, dyspnea, mucositis, or severe fatigue requiring urgent intervention.
Continuous model improvement will occur through periodic retraining using real-world clinical outcomes, physician feedback, and updated oncology guidelines, thereby creating a scalable AI-enabled precision oncology ecosystem for high-volume Indian cancer centers.

Full Name:
Habeeb K A

Name of the Institution:
VPS Lakeshore Hospital, Kochi

State:
Kerala

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

- Harness AI to enable early, accurate, and accessible cancer detection
- Integrate imaging, pathology, and clinical data for precision diagnosis and treatment planning
- Deliver personalized, patient-centered, and resource-sensitive cancer care
- Monitor treatment in real time to reduce complications and improve outcomes
- Support continuous follow-up, early relapse detection, and quality-of-life focused care

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.):

Every cancer patient carries a story told through data —scans, blood tests, symptoms, lifestyle, and family history. No single doctor can process it all at once. AI helps by connecting these pieces, acting as a supportive partner rather than a replacement, bringing clarity to complex decisions.

At the earliest stage, AI can read simple inputs like chest X-rays, routine labs, or even smartphone images to flag warning signs —often before symptoms appear. This is especially valuable in resource-limited settings where specialists are not always available, helping prioritise who needs urgent attention.

During diagnosis, AI brings together imaging (CT, MRI) and pathology, linking what we see on scans with what is happening at the cellular level. With AI-assisted radiomics, it goes a step further —extracting hidden patterns from images to predict tumour behaviour, aggressiveness, and response to treatment without additional invasive tests, improving precision early in the journey.

In treatment planning, AI helps personalise care. Through software or app-based platforms, it can suggest the best and second-best treatment options tailored to the individual —considering general condition, stage, comorbidities, affordability, and potential side effects. This makes decisions clearer, practical, and more patient-centered, while also helping patients understand and participate in their care.

Importantly, in resource-constrained settings, AI adapts recommendations —offering safe, feasible alternatives when ideal treatments are not possible, ensuring care remains realistic and effective without compromising safety.

During treatment, AI tracks patient-reported symptoms and wearable data to detect early complications like infections or toxicity, allowing timely intervention and reducing avoidable hospitalisations.

After treatment, it supports follow-up, detects early relapse, and guides transitions to supportive or palliative care —focusing not just on survival, but quality of life and dignity throughout the cancer journey.

Full Name:
Dr Mohamed Thanish

Name of the Institution:
Stanley Medical College, Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To identify the high value clinical applications of AI across the oncology patient journey, map the data ecosystem that enables these applications, and propose a framework for responsible implementation with built in mechanisms for continuous model improvement.

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.):
Oncology is one of the most data intensive fields in medicine, and the areas where that complexity most frequently overwhelms unaided human judgment are exactly where AI has demonstrated genuine, reproducible value. Radiology and pathology are the clearest examples. AI assisted CT analysis for lung nodule characterization, automated tumour volume measurement for response assessment, and computational pathology for whole-slide image analysis including PDL1 scoring standardization and Ki-67 quantification are areas where AI reduces inter-observer variability, which is a real and under appreciated source of clinical error. Genomic data interpretation, particularly variant classification in next generation sequencing reports, is another domain where AI handles a volume and complexity of data that no individual clinician can process reliably without assistance. The stakeholders generating data across a patient's journey include primary care physicians, radiologists, pathologists, surgeons, medical and radiation oncologists, nurses, pharmacists, and patients themselves through wearable and patient-reported outcome platforms. Each of these touchpoints generates data that, in isolation, gives an incomplete picture. AI's most transformative potential is in integrating these streams clinical, imaging, molecular, and patient reported into a unified decision support layer. At the point of clinical decision making, this integration can enable treatment matching based on tumour molecular profile, early identification of patients at high risk for toxicity, and recurrence prediction that triggers earlier surveillance. For patients, AI driven tools that synthesize their longitudinal data can personalise supportive care recommendations and flag deterioration before it becomes clinically apparent. For continuous improvement, models need to be federated trained on data from multiple institutions to avoid single centre bias and subject to prospective outcome tracking that feeds back into model retraining on a defined cycle. Governance frameworks must ensure that AI recommendations are always advisory, with final clinical accountability remaining with the treating physician.

Full Name:
Dr. Chilamkurty Maitreyi

Name of the Institution:
Stanley Medical College

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
Problem statement: Breaking bad news is one of the most emotionally demanding and challenging aspects of cancer care. Oncologists are expected to communicate life altering diagnosis, disease progression, treatment failure, recurrence, palliative care while simultaneously interpreting complex multimodal clinical data, addressing emotional distress, explaining treatment pathways, managing high patient volume load within limited consultation time. This causes oncologists significant cognitive and emotional burden often resulting in rushed conversations, incomplete patient understanding, increased anxiety, poor treatment adherence and follow up. patients frequently leave consultations overwhelmed, unable to grasp critical information, uncertainty in next steps, vulnerable to delay in decision making and default.
Objective:--To develop and implement an AI powered integrated oncology care ecosystem that aims to transform a stressful, fragmented Physician dependent process into a structured , compassionate, AI Augmented communication pathway that reduces clinician burden, enhances patient understanding, supports emotional preparedness and improves informed evidence based treatment decision making, strengthens patient communication .

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.):
Solution: Instead of fragmented cancer care, ONCONEXUS AI model creates single intelligent care continuum
ONCONEXUS AI-Transforming difficult conversations for Oncologists into compassionate Cancer Care with clarity, Empathy and Confidence**.**
1.Automated Data aggregation by Intelligence Engine-Integrates pathology, radiology, molecular/genomic reports, prior treatment history, lab trends, performance status, comorbidities, discharge summaries. It creates a unified clinical summary instantly, reducing manual chart review time.
2.Faster clinical Decision Support-Molecular biomarkers, guideline pathways (NCCN/ESMO/ASCO/Local), Therapy sequencing, Toxicity considerations, clinical trial options, supportive care recommendations. AI prescreens evidence-based options for physician review. Reduces cognitive overload, improves efficiency.
3.**Breaking Bad news communication support**-Emotionally difficult discussions consume clinician energy.AI can assist by preparing patient disease summary, prognostic communication cues, structured discussion frameworks, patient friendly explanations, culturally sensitive language suggestions and translation support, likely patient emotional concerns, education handouts. For example, "your cancer has spread but effective treatment options remain available. Our goal is disease control, symptom relief and maintaining quality of life." Impact better communication, empathy, clarity, consistency towards patients and caregivers with less repetitive effort**.**
4.Patient navigation copilot-AI follows patient beyond clinic for appointment reminders, treatment education, symptoms check-in, emergency red flag alerts, financial aid navigation, adherence monitoring.
5.Pharma Industry partners like Roche can support ONCONEXUS AI by educational content support, patient access programs, Toxicity surveillance programs, real world evidence infrastructure, trial matching, eligible patients recognised earlier, real world evidence generated strengthens pharmacovigilance, health economics and future research insights.

Example case scenario how ONCNEXUS AI works: A 52-Year-old female with metastatic Hormone positive /Her 2 Negative breast cancer from a tier-2 city faces fragmented care, delay reports, financial uncertainty , overwhelming confusion after hearing stage IV while her oncologist has only minutes to act. ONCONEXUS AI instantly integrates pathology, imaging, genomics, comorbidities, prior therapies to generate evidence-based treatment pathways, communication support and affordability solutions. It helps clinicians deliver difficult conversations with clarity in the patient's native language, transforming fear into informed understanding. Continuous AI monitoring detects early toxicity signals and triggers timely intervention before complications escalate. Benefits--reduced physician burden, faster precision care, improved adherence and more compassionate cancer journeys.

Full Name:
Santhosh Ramanan

Name of the Institution:
Madras Medical College, Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
AI positions oncology at the forefront of data-driven medicine, shifting from one-size-fits-most to hyper-personalized, efficient, and equitable care. By mastering multimodal complexity, engaging all stakeholders, powering precise decisions, and embedding continuous learning, AI will demonstrably elevate survival rates, quality of life, and system sustainability. Implementation with rigorous governance will realize this potential, making AI an indispensable ally in the fight against cancer.

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.):

1. **Data-Intensive, Complex, and Multimodal Areas in Clinical Oncology:**

Oncology generates some of the most challenging datasets in medicine due to cancer's heterogeneity, rapid evolution, and the need for integration across scales (molecular to population).
Key areas include:
-Medical Imaging and Radiology/Pathology: CT, MRI, PET scans, digital pathology slides, and mammograms for detection, staging, segmentation, response assessment (e.g., RECIST), and radiomics feature extraction.
-Genomics : Next-generation sequencing (NGS) for identifying mutations (e.g., KRAS, EGFR), tumor mutational burden (TMB), microsatellite instability (MSI), and biomarkers for targeted therapies/immunotherapy.
-Electronic Health Records (EHRs) and Clinical Data: Structured (labs, vitals, treatments) and unstructured data (clinical notes, pathology reports, patient-reported outcomes/PROs). Longitudinal patient journeys include comorbidities, treatment histories, toxicities, and progression events.
- Real-World Data (RWD) and Additional Modalities: Claims data, social determinants of health (SDoH), wearable/sensor data for remote monitoring, clinical trial criteria, and tumor board discussions.
Multimodal fusion (imaging + genomics + EHR) is essential for holistic views.
Multimodal AI (MMAI) excels here by integrating heterogeneous sources for superior performance.

2. Stakeholders in Patient Journey and Associated Data Sources

-Patients and Caregivers: Provide Patient Reported Outcomes (symptoms, quality of life via apps/portals), wearable data (activity, vitals), genomic samples, and preferences.

-Oncologists, Radiologists, Pathologists, and Multidisciplinary Teams (Tumor Boards): Decision-makers using imaging, pathology, molecular reports, and guidelines. Sources: EHR, PACS, LIS, genomic databases.

-Primary Care, Surgeons, Radiation Oncologists, Pharmacists, and Support Staff: Handle referrals, surgery, radiation planning, and supportive care.

-Payers/Insurers and Administrators: Focus on prior authorizations, cost-effectiveness, and outcomes.

-Researchers, Pharma, and Regulators: Use de-identified RWD for trial matching, post-marketing surveillance, and evidence generation. Sources: Registries (e.g., SEER, NAACCR), biobanks, ConcertAI datasets.

Comprehensive linkage (EHR + claims + genomics + SDoH + imaging) creates a 360° patient view, enabling end-to-end management.

3. AI-Enabled Clinical Decision-Making and Patient Impact

- Early Detection and Diagnosis: AI analyzes imaging for subtle lesions (e.g., breast, lung) and integrates with genomics for risk stratification, enabling earlier intervention and better survival.

-Personalized Treatment Planning: Predicts response to therapies (e.g., immunotherapy in lung cancer via mutation interactions), recommends optimal regimens/dosing, and matches to clinical trials. Supports precision oncology by simulating outcomes and identifying resistance mechanisms.

-Prognosis, Monitoring, and Adaptive Management: Forecasts progression, toxicities, recurrence; enables dynamic adjustments. It reduces unnecessary treatments and side effects.

-Operational Efficiency: Automates documentation, prior auth abstractions, trial eligibility screening, and tumor board preparation —freeing clinicians for patient interaction. AI "copilots" synthesize dashboards with timelines, biomarkers, and evidence-based options.

-Patient Impact: Improved survival and quality of life through tailored care; reduced disparities via better access in community settings; empowered shared decision-making (e.g., AI-explained reports); fewer adverse events; and holistic support (symptom management, navigation). Real-world evidence shows faster precision therapy access, especially in underserved areas.

AI augments—not replaces—physicians, preserving human judgment for complex, nuanced, and values-based clinical decisions.

4. Continuous Model Improvement: Systems for Self-Improvement.

-Feedback Loops: Clinician overrides, outcomes data (progression, survival, toxicities), and PROs feed back into retraining. Every interaction refines predictions (e.g., hybrid human-AI validation).

-Continuous Monitoring and Validation: Real-time performance tracking (AUC, calibration by subgroups); drift detection; automated alerts for model updates or suspension.

-Active Learning: Models query uncertain cases for labeling.

-Living Ecosystems and LLMs: LLM-assisted systematic reviews for guideline integration; multimodal platforms that update with incoming EHR/imaging/genomics data. Prospective trials and post-deployment surveillance ensure safety.

-Governance Structures: Multidisciplinary oversight (clinicians, data scientists, ethicists), bias audits, and regulatory-aligned processes (e.g., continuous validation frameworks at cancer centers).

These create a virtuous cycle: better data → better models → better outcomes → more high-quality data.

Full Name:
Monish Balaji S

Name of the Institution:
Kilpauk Medical College, Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To define the endless possibilities offered by AI in oncology.

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.):

Data-intensive and multimodal domains in oncology:

- Radiology imaging (CT, MRI, PET) and digital pathology whole-slide images capturing spatial tumor heterogeneity, microenvironment interactions, and treatment response patterns
- Multi-omics data (genomics, transcriptomics, proteomics, metabolomics) enabling molecular stratification, pathway discovery, and identification of actionable mutations
- Longitudinal Electronic health records, clinical notes, trial data, and wearable biosignals forming temporal patient trajectories, disease progression maps, and outcome prediction signals.

Stakeholders and data sources:

- Patients, oncologists, radiologists, pathologists, surgeons, nurses, payers, and pharma researchers collaboratively forming a multidisciplinary oncology ecosystem
- Data from EHR systems, PACS, LIS, genomic labs, cancer registries, and clinical trial networks providing structured and unstructured clinical intelligence
- Real-world evidence platforms and home monitoring devices contributing continuous feedback loops for treatment adjustment and population-level oncology insights.

AI-enabled clinical decision-making and patient impact:

- Early detection and risk stratification using multimodal pattern recognition across imaging, genomics, and clinical history data
- Personalized therapy selection, immunotherapy response prediction, and toxicity forecasting tailored to individual tumor biology and patient physiology
- Adaptive dosing, survival prediction, and relapse monitoring for proactive intervention and dynamic treatment optimization over time
- Workflow optimization reducing diagnostic delay, improving resource allocation, and enhancing multidisciplinary care coordination efficiency.

Model improvement and continuous learning systems:

- Federated learning across hospitals preserving privacy while expanding datasets through secure cross-institutional model training
- Human-in-the-loop validation from clinicians refining ground truth labels and improving model interpretability and trust
- MLOps pipelines with drift detection, bias audits, and automated retraining ensuring robustness, fairness, and clinical safety compliance
- Integration of real-world evidence and digital twin simulations for iterative refinement, scenario testing, and prospective treatment planning
- Emerging AI digital twins may simulate treatment pathways before therapy initiation, reducing trial-and-error clinical decisions.

Full Name:
Prasanna R

Name of the Institution:
Govt Kilpauk Medical College and Royapettah Hospital, Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
AI-Driven Clinical Decision Support for Precision Oncology using Real-World Data.
Objectives:
1) Modern oncology generates large volumes of clinical, imaging and molecular NGS (Next Generation Sequencing) data, but integrating them into treatment decisions remains difficult.
2) Complex NGS interpretation is challenging, especially in tertiary and resource-limited settings without molecular tumor boards or expert genomic guidance.
3) Most precision oncology decisions rely on Western data, while Indian real-world factors such as tumor biology, affordability, and treatment access remain underutilized.
4) There is a need for a scalable AI-based clinical decision-support system to provide faster, accurate decision-making and practical precision oncology recommendations.

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.):
Proposed solution:
1) We propose a simple AI-based clinical decision-support platform for routine oncology practice:
- Data Included -Clinical details and performance status, Comorbidities, Imaging findings
- Histopathology, Molecular NGS reports, Treatment received, Patient outcomes (response, survival, toxicity)
- The platform combines data from multiple cancer centers to create a real-world Indian oncology database.
- It is designed specifically for Indian patients and integrates clinical, molecular, and outcome data to support practical treatment decisions.

2) How It Works
For every new patient, the system:
- Analyses all available clinical and molecular data
- Matches the patient with similar previously treated cases
- Suggests treatment options based on:

NCCN/ESMO/ASCO guidelines
Real-world treatment outcomes
Drug availability and cost in India
The platform continuously improves as more patient data is added.

3) Where It Helps
- NGS Interpretation - Priorities important mutations and links them to targeted therapies
- Complex Cases - Supports decision-making in rare or difficult situations
- Smaller Centers - Provides tumour board–level guidance where expertise is limited.

4) Implementation Plan
- Phase 1: Pilot in major cancer centers
- Phase 2: Expand to regional hospitals
- Phase 3: Develop a nationwide learning cancer data network

5) Safety and Control
The system supports oncologists but does not replace them. Final treatment decisions remain with the treating oncologist and tumor board.

6) Expected Benefits

- More accurate treatment selection
- Faster clinical decisions (time reduction)
- Better confidence in complex cases
- Development of Indian real-world cancer data
- Improved access to precision oncology in smaller centers

7) Conclusion

- Large amounts of molecular data are generated in oncology practice, but their clinical use remains challenging.
- This platform converts complex molecular and clinical data into clear, practical treatment recommendations, making precision oncology more accessible and effective in real-world Indian settings.

Full Name:
Jarfin I M

Name of the Institution:
Gleneagles Health City, Chennai

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To use artificial intelligence in oncology not to replace doctors, but to reduce delays, improve precision, support overwhelmed systems and make high-quality cancer care more accessible.

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.):
Oncology is naturally suited for AI because it is deeply data-intensive and multimodal. Clinical notes, pathology slides, radiology, genomics, treatment responses, toxicities, survival data and quality-of-life metrics all interact continuously. Breast, lung, lymphoma and GI oncology especially involve enormous decision complexity.
The patient journey involves multiple stakeholders: patients, caregivers, oncologists, surgeons, radiologists, pathologists, nurses, pharmacists, palliative-care teams, insurance systems and public-health authorities. Data sources include EMRs, imaging, molecular reports, wearable devices, tumour registries and pharmacy records.
AI can support early detection, radiology triaging, pathology interpretation, toxicity prediction, recurrence-risk estimation, treatment selection, appointment prioritization and symptom monitoring. In resource-constrained regions of Tamil Nadu, AI-supported tele-oncology can help standardize care in peripheral centres and reduce unnecessary referrals. It can also identify patients at risk of treatment abandonment due to financial or logistic barriers.
However, AI should remain a “co-pilot,” not an unchecked authority. Every recommendation must remain clinician-validated and ethically auditable. Bias against rural, poor or underrepresented populations is a real danger if Indian datasets are not adequately represented.
Continuous improvement requires prospective validation, real-world outcome registries, toxicity tracking, clinician feedback loops and periodic retraining using updated local data. National Cancer Grid-style collaborations can create shared anonymized datasets. Roche can contribute through digital pathology infrastructure, AI-supported diagnostics and transparent academic partnerships.
The future of oncology will not belong to doctors competing against AI. It will belong to humane clinicians who know how to combine technology, evidence and empathy better than ever before.

Full Name:
Mohamed Farook M

Name of the Institution:
Madurai Medical College

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
AI-Based Photo Monitoring Application for Oral Cavity Malignancy Follow-Up (Can be applied for any Surface malignancies E.g., Melanoma and other skin malignancies)

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.):

Problem Statement - Post-treatment surveillance of Oral Cavity Cancer is heavily dependent on periodic specialist examination, resulting in delayed recognition of subtle mucosal recurrence, poor longitudinal documentation, limited accessibility in resource-constrained settings, and suboptimal patient adherence to follow-up protocols.

Proposed Solution - The proposed solution is a mobile and web-based AI application designed to support follow-up care of patients treated for Oral Cancer by enabling periodic photographic monitoring of the oral cavity.

Core Concept

Patients or healthcare workers periodically capture standardized intraoral photographs using a smartphone. The AI system analyzes sequential images to identify suspicious changes suggestive of recurrence and alerts clinicians for further evaluation.

Key Features:

1.AI-Powered Image Analysis
- Detects visual abnormalities such as ulcers, mucosal discoloration, swelling, tissue irregularity, or non-healing lesions
- Compares current images with baseline and previous follow-up images

2.Longitudinal Tracking
- Maintains a timeline of oral cavity photographs for progression monitoring
- Enables visual comparison across visits

3.Automated Risk Stratification
- Categorizes findings into low, moderate, or high-risk recurrence suspicion

4.Remote Follow-Up
- Reduces unnecessary hospital visits
- Supports tele-oncology workflows

5.Clinician Dashboard
- Allows specialists to review flagged cases
- Provides patient history and image progression

6.Alerts & Reminders
- Automated reminders for periodic image uploads and follow-up appointments
- 7.Secure Medical Data Storage
- HIPAA/GDPR-compliant encrypted storage and controlled clinician access

Expected Impact

- Earlier detection of recurrence
- Improved follow-up compliance
- Reduced burden on tertiary care centers
- Better accessibility for rural and remote patients
- Cost-effective surveillance strategy
- Enhanced continuity of cancer care

Potential Future Extensions

- Integration with electronic medical records (EMR)
- AI-assisted lesion segmentation and measurement
- Predictive analytics using recurrence risk factors
- Multilingual patient guidance system
- Integration with telemedicine platforms.

Full Name:
Anirudh

Name of the Institution:
SAIMS

State:
Madhya Pradesh

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To develop an AI based system that helps integrate diagnosis, clinical system, differential diagnosis, molecular framework and evaluation, DNA based target mutations, evaluation of CHIP (esp in haematological malignancies), to offer the best possible treatment based on statistical data, comparison and shorten turnaround time (decision) lastly drug delivery and formulation as well as awareness regarding adverse events (esp pharmacogenomics, to avoid drug interactions). A physical should remember AI can assist or aid in diagnosis but not diagnose as the feeding mechanism is the physician. as much as AI is useful but it's the eye of a physician that is the real force behind a successfully executed treatment.

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.):
Its always interesting to provide solutions regarding such hot topics and its gets even more interesting considering how one can benefit from a small idea no matter how unreal it would be , such would be the case with use OF AI in Oncology , besides the regular purpose solving use of Ai in treating , well sought references , logical explanation , data backed precise therapy algorithms , awarenesses about things we have missed , overall every possible way to improve care delivery path and care giver experience. what modern day Ai lacks is patient centric therapy, it gives out solution for a 'blanket population', a population yardstick that fits almost every individual and takes into account the variations but human body being dynamic (example pharmacogenomics) can have different responses, adverse or therapeutic benefit that may vary. AI feeds of from a database that is backed by information or research does upto a certain threshold beyond which it doesn't hold valid, what we have to create is a individual centric AI use that can keep in mind the VUF, VUS and the current scenario of a patient (including the real time parameters, example ambient hot temperature, role of diet, albumin, inflammatory markers) that can have undesired effect of therapy. besides the molecular data and the data that helps fend the best possible treatment, we still don't know in which category fo the percentile our patient falls in, AI may be a way to solve that.

Full Name:
Ananda N S

Name of the Institution:
Kidwai Memorial Institute of Oncology, Bengaluru

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To integrate AI judiciously in oncology practice for improving treatment decision-making, patient management, and overall patient experience under clinician supervision.

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.):

Solution:
Oncology involves complex multimodal data including pathology slides, radiology imaging, genomics, laboratory values, electronic medical records, and patient-reported symptoms. Usage of AI in oncology is a double edge sword and should be always used with clinical discretion.

Role in Optimizing Treatment decision:

1. AI can be used in compiling patient history and investigation either through manual login or voice commands.
2. Through pattern recognition pattern, AI can be used in diagnostic field like pathology, radiology to flag any subtle abnormalities and aide conclusion under human supervision.
3. AI can be used in MDT discussion which aids in decision by referencing vast literature and guidelines and connecting dots in patient history
4. AI based predictive and prognostic score can be used in guiding the patients regarding prognosis.

Role in Patient Management:

- AI-assisted systems under supervision can improve patient experience and continuity of care.
- AI chatbot records basic complaints of the patient, and assists them fixing appointment with right specialist, logistics and insurance.
- During Treatment AI can monitor the patient vitals during procedure and gives alerts for abnormal trends. It helps comparing previous lab values and gives trend and helps in decision making. Based on daily notes, AI based discharge summary and billing can be prepared, later to be verified by clinicians.
- Post discharge, AI chatbot can monitor patients with simple queries, identifies red flags symptoms and book an early appointment with doctor. This improves trust among patients and ensures continuity of care and early toxicity identification.
- Stored digital data can support institutional research and future decisions.
- Continuous improvement of AI models can be achieved through clinician feedback, periodic auditing, multicentric validation, and integration of real-world treatment outcomes and updated guidelines.

Limitations of AI:
Unsupervised AI usage may create misinformation, fear, and treatment delays, sometimes referred to as “IDIOT syndrome” (Internet Derived Information Obstruction Treatment).

Conclusion:
AI significantly improves efficiency in oncology care but must always function under clinician supervision to ensure accuracy, legal accountability, and optimal patient outcomes.

Full Name:
D Srujana

Name of the Institution:
Kidwai Memorial Institute of Oncology, Bengaluru

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
As a medical oncology resident in a tertiary cancer centre in India, I frequently see patients whose cancers could have been diagnosed earlier. We have seen young women with inflammatory breast cancer thought as mastitis due to lack of diagnostic facilities, women with cervical cancer presenting late after ignoring symptoms, and oral cancer patients often dismiss non-healing ulcers as minor wounds and delay seeking care due to lack of awareness and access to biopsy services. After treatment initiation, many patients with do not come to us if any side effects occur until they become serious complications, as they have to travel long. To decrease such issues these, I want to propose accessible AI models tailored for our target population. By integrating AI-driven colposcopy and imaging triage tools, we can catch cervical and breast anomalies at the grassroots level. Furthermore, implementing proactive AI-based chatbot tracking can continuously monitor post-chemotherapy patients, instantly notifying us of early complications so we can call them back before it is too late.
To deliver maximum public health impact, Clinical AI initiatives in India must target the three most prevalent malignancies, namely breast, oral, and cervical cancers, along with supportive care and treatment.
Health AI should be treated as a living system rather than a one-time technology deployment.
The following are to be considered in developing an AI tool
The tool's impact on users and their existing workflows.
The availability, timeliness, completeness, and potential biases of the data.
The operational processes that either facilitate or restrict safe implementation.
The regulatory, ethical, and privacy standards required for deployment.

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.):
AI-driven thermal imaging (e.g., Thermalytix) (1), (radiation-free, non-contact, and particularly advantageous for younger populations) in regions with limited resources, costs 10-20% less than traditional mammography in breast cancer
AI apps on smartphones, detect abnormal oral lesions early from photos, and prioritise high-risk patients for biopsies.
AI-supported cervical cancer screening combines HPV self-sampling with automated image-based triage to create a scalable screen –triage –treat pathway. Women can collect HPV samples at home or in community settings, improving screening coverage in underserved populations. Among HPV-positive women, AI algorithms can analyse images obtained through VIA or colposcopy identifying at risk of lesions who require treatment or further evaluation.(2) This reduces dependence on specialist interpretation, improving the visual assessment, and enabling timely referral and treatment, reducing diagnostic delays, and preventing loss to follow-up, particularly in low-resource settings.(2)
AI automates radiation contouring, planning reducing workload, maximising limited infrastructure
AI can collect electronic patient-reported outcomes (ePROs) and monitor symptoms from home, predicting toxicities before serious complications enabling early intervention, reducing emergency visits, improving overall outcomes.

Stakeholders involved should include:
Patients and Caregivers, Community Health Workers (ASHAs) and Patient Navigators: Trusted frontline personnel to mobilise communities,
Primary Care Physicians to evaluate early red flags,
Diagnostic Specialists (Radiologists, Pathologists, and Technicians), Specialised Oncologists: Utilise decision support software, participate in MDTs, to customise treatment regimens,
Clinical Nurses and Patient Advocates to triage & navigate digital tools
Hospital Administrators and IT Teams: Operational stakeholders to handle EMR implementation, security logs, and ensure strict compliance with regional data laws like the Digital Personal Data Protection (DPDP) Act.
Technology Innovators
Academic and Policy Bodies: National Cancer Grid (NCG) (3), Koita Centre for Digital Oncology (KCDO)(4), IndiaAI, and leading technical institutions (such as IIT Bombay) to provide the structural datasets, funding, validation, and federated learning infrastructure.
Data Sources in Clinical Oncology
Structured Clinical, Unstructured Textual Data: EMRs (demographics, labs, staging, dosages), clinical documentation.
Medical Imaging: Specialised point-of-care inputs, like thermal maps containing up to 400,000 localised temperature points. High-resolution photographs of cervix, oral cavity
Digital Pathology: slide images
Genomics and Omics Biomarkers: NGS, genomic assays
Patient-Reported and Activity Data: Remote patient monitoring logs, digital symptom checklists, and conversational text from patient support chatbots.
Operational and Compliance Logs: schedules, billing histories, and data access audit trails.
Diagnosis, Staging, Precision Therapy by integrating imaging, pathology, genomics, and EMRs, AI can support personalised treatment recommendations and optimise therapy, Shorter Time-to-Treatment and Improved Survival.
Tailoring Active Treatment De-escalation by identifying low-risk patients.
AI copilots can summarise records, generate evidence-based recommendations, and match patients to relevant trials.
AI chatbots and remote monitoring to detect complications triggering Proactive Management and Early Toxicity Intervention.
Community-based AI screening mitigates financial toxicity, improving access in rural. Decision-Making: by translating complex recommendations into simple multilingual explanations
Improvement of AI models:
AI should be linked with biopsy results, treatment decisions, and outcomes, creating a real-world feedback loop.
Periodic audits to identify model drift.
Governance mechanisms and confidence-threshold calibration to ensure safety.
Federated learning to learn from diverse populations without sharing raw data, to enable privacy.
India's KCDO and NCG established the LEAP initiative to standardise data. Continuous clinician feedback, transparent reporting, and digital health education will help create an ecosystem in which AI and healthcare professionals learn together.
The MeitY-NCG CATCH Grant funds(5) partnerships between AI developers and clinical institutions, bridging research and real-world validation and safety before implementation.

References:

1. Thermalytix: AI-Powered Breast Cancer Screening Test [Internet]. [cited 2026 May 30]. Available from: https://niramai.com/about/thermalytix/
2. Loaiza-Bonilla A, Basu P, Lucas E, Yost C, Arora S. Tech That Scales: A Practical Framework for Artificial Intelligenceâ€“Enabled Cancer Care in Low- and Middle-Income Countries and Underserved US Counties. Am Soc Clin Oncol Educ Book. 2026 Apr 24;46(3):e521200. doi:10.1200/EDBK-26-521200
3. National Cancer Grid and IndiaAI spotlight trusted AI solutions for cancer care at the India AI Summit 2026 [Internet]. [cited 2026 May 30]. Available from: https://www.pib.gov.in/www.pib.gov.in/Pressreleaseshare.aspx?PRID=2233623
4. Koita Centre for Digital Oncology (KCDO) | Koita Foundation, Tata Memorial Center and National Cancer Grid - Partnership [Internet]. [cited 2026 May 30]. Available from: https://www.koitafoundation.org/KCDO
5. Landing [Internet]. [cited 2026 May 31]. Available from: https://aikosh.indiaai.gov.in/home/competitions/details/5f2ba0f5-5612-4946-94da-93c128d8d0ac

---

Full Name:
Livin T

Name of the Institution:
Madurai Medical College, Kanyakumari

State:
Tamil Nadu

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
AI can help us - Pathologists reading complex tissue margins. Then medical oncology is tweaking systemic drug dosages to align with NCCN or ESMO frameworks. Add us on the surgical side trying to determine if a tumor is actually resectable.

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 is completely bogged down by raw data right now. We are constantly juggling chaotic electronic health records while trying to interpret massive genomic sequencing panels. And the sheer volume of high-resolution imaging we have to look at every single week is just overwhelming. This information doesn't even come from one place. It gets pulled together by totally different specialties across the patient's timeline. You have pathologists reading complex tissue margins. Then medical oncology is adjusting systemic drug dosages to align with NCCN or ESMO frameworks. And on the surgical side trying to determine if a tumor is actually resectable.(eg. borderline ca pancreas)
But this is exactly where plugging artificial intelligence into the clinic solves a major headache. If we can dump all that fragmented, multimodal data into a solid algorithm, it starts spotting subtle correlations that a busy tumor board simply overlooks. AI can accurately predict if a specific patient is actually going to respond to a targeted biologic. Or it can flag a borderline GI case that really needs a neoadjuvant approach before we even think about taking them to the OR. The clinical impact is massive. Patients finally get a treatment strategy that is truly personalized, rather than us just making an educated guess based on broad ASCO guidelines.

And these tools aren't just static pieces of software. They actively evolve. But we have to build strict feedback loops to make them work properly. Every time we log an actual clinical outcome—like achieving a clear R0 resection or managing an unexpected drug toxicity—that data needs to feed right back into the model. Setting up real-world data pipelines ensures the AI continuously recalibrates against our actual hospital survival rates. So the system literally gets sharper the longer we run it in our practice.

Full Name:
Shashanka K S

Name of the Institution:
Manipal hospital, Bangalore

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
Oncology clinical practice is becoming complex day by day, with precision oncology on rise which will further complicate the decision making. Many oncologist find it challenging to interpret complex sequencing, especially when NGS report does not match the clinical scenario. In upcoming years with advances happening in genomics, challenges further increases. As the cost of texts comes down with time, deep sequencing will become more and more common. In a country like us with massive population and case load. AI based tools to guide treatment in precision oncology will be a necessity.

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.):

1) Development of an AI platform, which can help in interpreting complex NGS.
2) AI needs to be trained in thousands of real-world scenarios taking into consideration of clinical details, etheric variations, performance status, previous treatments, sequencing method technicalities and its effects.
3) Validations are done with molecular tumor boards having clinicians, genomic scientists etc.
4) AI platform is fed with patient past treatment details, patterns of responses, to get individualized decisions.
5) Clinical outcomes are feed to analyze the patterns and associations.
6) Platform needs to be regularly updated to incorporate newer advances time to time.
7) Difference of expertise in precision oncology will be determining factor in delivering oncology care in future, with rapidly evolving field, medical oncologist in 1st tier cities may focus on specific systems or cancers, however same may not be possible in 2nd tier or rural places in India. Having same depth of knowledge in all cancers may not be realistic in future.
These AI tools may guide medical oncologists in right interpretation of NGS reports.
8) Similar AI models can be developed for different use in oncology. For example, to titrate the doses of chemotherapy in heavily pretreated individuals, based on past patterns of WBC counts, neutrophil, platelet counts, tolerance, taking into consideration of past treatments regimens, performance status, comorbidities, etc.
9) AI platforms for in generating patient summaries, records—Apps to upload records by patients generating clinical summaries, saves times of doctors in documentation.
10) AI based radionomics and pathognomics platform development and validation to provide standard of care diagnosis to rural and remote centers, helping to provide faster care.

Full Name:
Jagga Sankalp Harish

Name of the Institution:
Kidwai Memorial Institute of Oncology, Bengaluru

State:
Karnataka

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

- To identify data-intensive and multimodal areas in oncology where AI can support diagnosis, treatment planning, patient monitoring, and outcome prediction.
- To evaluate how AI can integrate data from multiple stakeholders and sources to improve clinical decision-making, personalize treatment, and enhance patient outcomes.
- To establish systems for continuous learning and validation of AI models through real-world data, clinician feedback, outcome monitoring, and quality assurance processes.

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.):

Artificial intelligence (AI) can help doctors in oncology by studying large amounts of patient data and giving support in treatment planning and patient care. Oncology is very data-intensive because it includes radiology scans, pathology reports, blood tests, genetic reports, treatment history, and patient symptoms. These data are complex and come from many different sources, so AI can help combine and analyze them faster.

Many stakeholders are involved in a cancer patient's journey. These include medical oncologists, radiation oncologists, surgeons, pathologists, radiologists, nurses, pharmacists, patients, and caregivers. Data sources include hospital records, imaging scans, laboratory reports, genomic testing, and follow-up records.

AI can support clinical decision-making by helping doctors detect cancer earlier, predict response to treatment, select personalized therapies, and identify side effects quickly. It can also help in scheduling appointments, monitoring patients remotely, and reducing treatment delays. For patients, this may improve survival, reduce complications, and provide better quality of care.

AI models improve themselves by learning from new patient data over time. Continuous improvement can happen through regular updating of datasets, feedback from doctors, validation studies, and monitoring of treatment outcomes. Hospitals can create systems where AI performance is checked regularly for accuracy and safety. Multidisciplinary team discussions and electronic medical records can also help improve AI systems continuously.

Full Name:
Dr. Rajul Jain

Name of the Institution:
Omega hospitals, Hyderabad

State:
Telangana

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
Cancer incidence in India is rising at an alarming pace, but the number of trained oncologists is not growing fast enough to match this burden. The modern oncologist must simultaneously interpret complex histopathology reports, PET-CT scans, NGS results, and clinical parameters - all varying significantly from patient to patient, with limited time and limited support. In tier-2 and tier-3 cities, experienced pathologists, nuclear medicine physicians, and molecular oncologists are often simply not available. At the same time, oncology is evolving so rapidly that even experienced physicians struggle to stay updated, and trainees at the beginning of their journey have little guidance when facing complex cases. This gap in workforce and knowledge directly affects the quality of decisions made and ultimately the outcomes of our patients.

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.):
Artificial intelligence can bridge this gap practically and effectively across four areas.
First, areas like sarcoma histopathology, PET-CT interpretation, and NGS analysis are among the most complex and expertise-demanding in oncology. These three often need to be correlated simultaneously for a single treatment decision. AI tools can assist pathologists, radiologists, and oncologists. Especially in tier-2 cities, by flagging abnormalities, suggesting diagnoses, and correlating multimodal data in real time.
Second, the patient journey involves multiple stakeholders -the general physician who first sees nonspecific symptoms, the radiologist, pathologist, surgical and medical oncologist, treating nurse, and caregiver, each generating critical data. AI can assimilate this data from all sources into a single, coherent clinical picture, saving time and reducing errors from information overload.
Third, AI can directly support clinical decisions at the bedside. For example, when an oncologist prescribes an AC chemotherapy regimen for breast cancer, the system should automatically prompt a four-drug antiemetic protocol. When FOLFOX or CAPOX is being considered in a patient with cardiac comorbidities, AI should raise a red flag for cardiotoxicity risk. These simple, automated decision supports can prevent avoidable harm and guide less experienced physicians confidently.
Fourth, for continuous self-improvement, a centralized patient data registry capturing every touchpoint from registration through treatment and follow-up, similar to systems already running in the USA and select Indian centers , would feed real-world outcome data back into the AI model regularly. This keeps the model updated with India-specific data, accounts for our unique patient population, and simultaneously generates retrospective research that India currently lacks at scale.
AI will not replace the oncologist. But in a country where cancer is outpacing our workforce, it can ensure that every patient regardless of where they are treated -receives decisions informed by the best available knowledge.

Full Name:
Dr. Chirag Gajera

Name of the Institution:
JNMC, Belagavi

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
To utilize artificial intelligence (AI) in oncology to improve data-driven clinical decision-making, enable personalized treatment strategies, enhance patient outcomes, and establish continuously improving systems for efficient cancer care delivery.

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.):
Oncology generates complex, multimodal data including pathology images, radiology scans, genomic profiles, electronic health records, laboratory results, treatment responses, and real-world clinical data. These data-intensive areas provide opportunities for AI applications in diagnosis, staging, biomarker identification, treatment selection, response prediction, and patient monitoring.
Key stakeholders include patients, oncologists, surgeons, radiation specialists, pathologists, radiologists, nurses, pharmacists, researchers, healthcare institutions, technology developers, and policymakers. Data sources include electronic medical records, imaging databases, pathology repositories, genomic sequencing platforms, clinical trial data, wearable devices, and population-based cancer registries.
AI can support clinical decisions by predicting treatment response, identifying high-risk patients, assisting precision medicine approaches, optimizing chemotherapy and radiotherapy planning, detecting disease progression earlier, and improving supportive care management. AI-enabled systems can enhance patient outcomes through timely interventions, reduced treatment toxicity, and personalized care pathways.
Continuous improvement of AI models requires high-quality standardized datasets, regular validation, clinician feedback, and real-world performance monitoring. Systems such as federated learning, data-sharing networks, model retraining, bias assessment, and regulatory oversight can ensure safe and effective AI evolution.
A collaborative framework involving clinicians, data scientists, patients, and healthcare organizations is essential to integrate AI responsibly and maximize its potential in oncology practice.

Full Name:
Thapashwi B G

Name of the Institution:
Sri Shankara Cancer Hospital & Research Centre, Bengaluru

State:
Karnataka

Objective of your solution: (Briefly define the primary outcome of your solution to this challenge):
In residency, I was asked a tumour board question: among our EGFR-mutant lung cancer patients who progressed on osimertinib, how many developed a second actionable mutation, and what did we do next? The answer was there. Just not in one place.
It sat across hundreds of discharge summaries, progress notes, and molecular reports, each written in a different style. I spent two weeks opening files and pulling data by hand. By the time I had a usable sheet, the patient who triggered the question had already been treated on a guess.
This is the bottleneck. Indian hospitals record detailed clinical data, but it lives as free text inside systems built for billing. Not decisions. Most oncology AI tools assume structured inputs. We don't have that. The problem isn't the model. The data itself is unreadable.

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.):
Lumiq is an LLM-based extraction engine. It turns unstructured oncology records into structured, usable data, the layer every other AI tool depends on.
I built it and used it to create my thesis cohort.

1. Messy, real-world data: Discharge summaries, notes, lab reports, scans, molecular panels. Multiple authors. Inconsistent formats. The facts that matter live here.
2. Extraction, not interpretation: Lumiq reads each record and pulls out key fields—stage, receptor and molecular status, lines of therapy, regimens, response, toxicity, survival. The same work a research assistant does, but faster and consistent.
3. Decisions at the point of care: Once structured, the data becomes usable. Clinicians and tumour boards can ask: what are our local outcomes for this regimen? Have we seen similar cases? Are we deviating from guidelines?
4. Human in the loop: Every field can be checked. Edits are logged. Accuracy is measured against verified data. Nothing is taken on faith.
5. Gets better over time: Verified records build a growing dataset. The system reprocesses data as templates improve, with versioning and controls to manage drift.