



## 33° Foro Internacional OES

en alianza con la **Fundación Santa Fe de Bogotá**  
y **Planetree Internacional**

**Cartagena de Indias**

**Hotel Hilton**

14 al 16 de agosto de 2024



Our purpose



✦  
To improve people's  
health and well-being  
through meaningful  
innovation.

We aim to improve 2.5 billion lives per year by 2030. We will be the best place to work for people who share our passion, promoting personal development, inclusion and diversity. Together we will deliver superior, long-term value to all stakeholders, while acting responsibly towards our planet and society, in partnership with our stakeholders



# Using AI to revamp human-human interaction in healthcare

**Vladimir Ribeiro Pinto Pizzo**

Sr Clinical Product Manager – Patient Care Informatics

August 2024



# Agenda

- Challenges faced by Healthcare Ecosystem
- Quintuple aim
- Technology-enabled solutions to improve patient safety (CLMA)
- (Gen)AI use in Healthcare
- Electronic Health Record of the future

# Healthcare context



## Value based care



# Challenges Faced by Healthcare Ecosystem:

## – Data Security and Privacy:

- security and privacy
- cyber threats

## – Interoperability:

- seamless data exchange
- care coordination and information sharing

## – Healthcare IT Integration:

- new technologies
- existing healthcare IT infrastructure

## – Regulatory Compliance:

- HIPAA and GDPR, ...

## – Healthcare Workforce Shortages:

- shortages of healthcare professionals

## – Health Disparities:

- improving healthcare access for marginalized populations

## – Healthcare Costs:

- Rising healthcare costs
- efficient and cost-effective solutions

## – Data Overload and Information Management:

- information overload
- actionable insights

## – Resistance to Technology Adoption:

- healthcare professionals and patients
- resistant to adopting new technologies

– ...

# Quadruple Aim



# Five generations of EMR systems



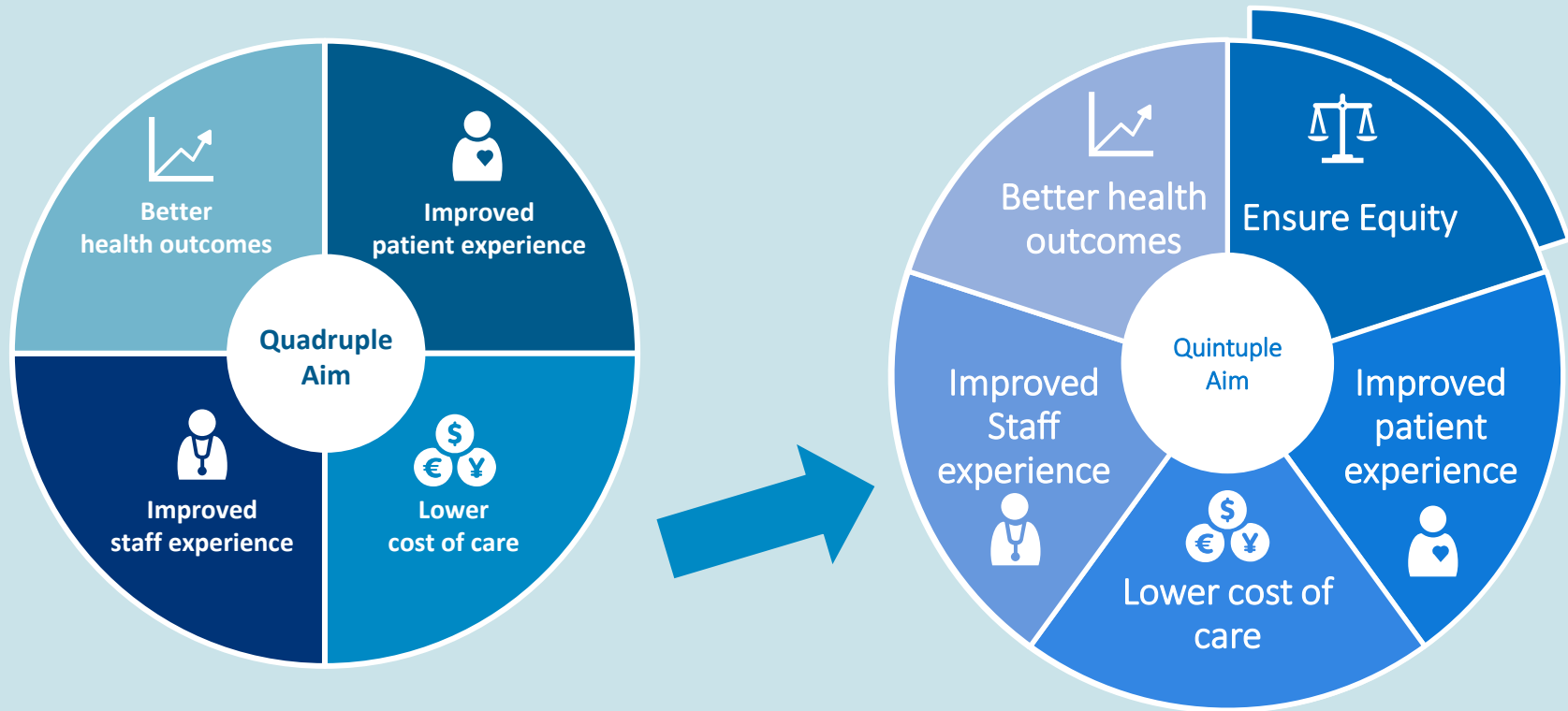
Gartner, 2007



# Closed Loop Item Administration Process

- [Sírio Libanês - Video - ENG - SUB.mp4 \(philips.com\)](#)

# Quadruple Aim → Quintuple Aim





**MD**

I WENT INTO  
MEDICINE  
TO WORK  
WITH PEOPLE  
AND NOT  
TO BE A  
DATA ENTRY  
CLERK

Shawn Jones, MD, FACS

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ANNALS OF MEDICINE NOVEMBER 12, 2018 ISSUE

# WHY DOCTORS HATE THEIR COMPUTERS

*Digitization promises to make medical care easier  
and more efficient. But are screens coming between  
doctors and patients?*

By **Atul Gawande** November 5, 2018



*Digitization promises to make medical care easier and more efficient; instead, doctors feel trapped behind their screens.* Illustration by Ben Wiseman

## Time allocation of a healthcare professional in an ED (USA)

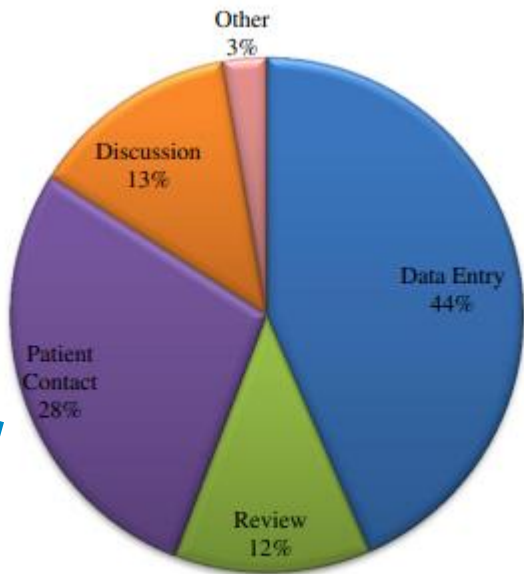
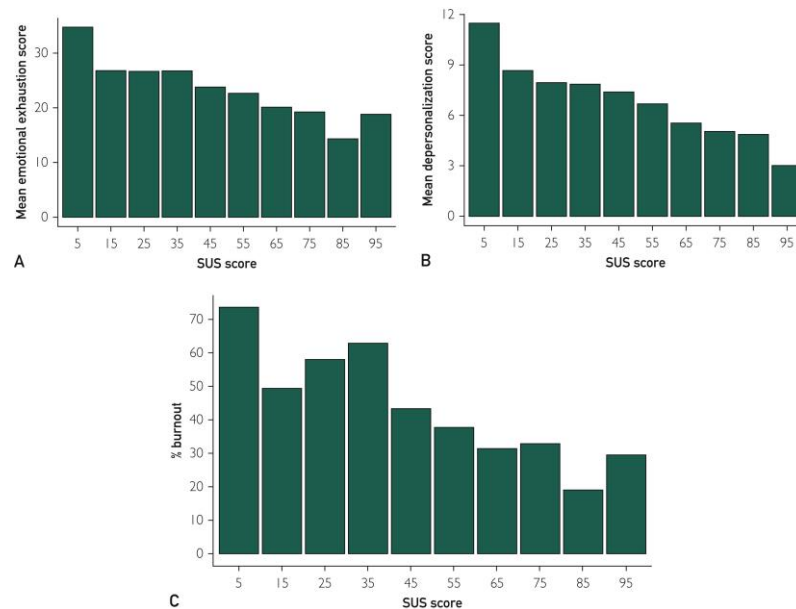
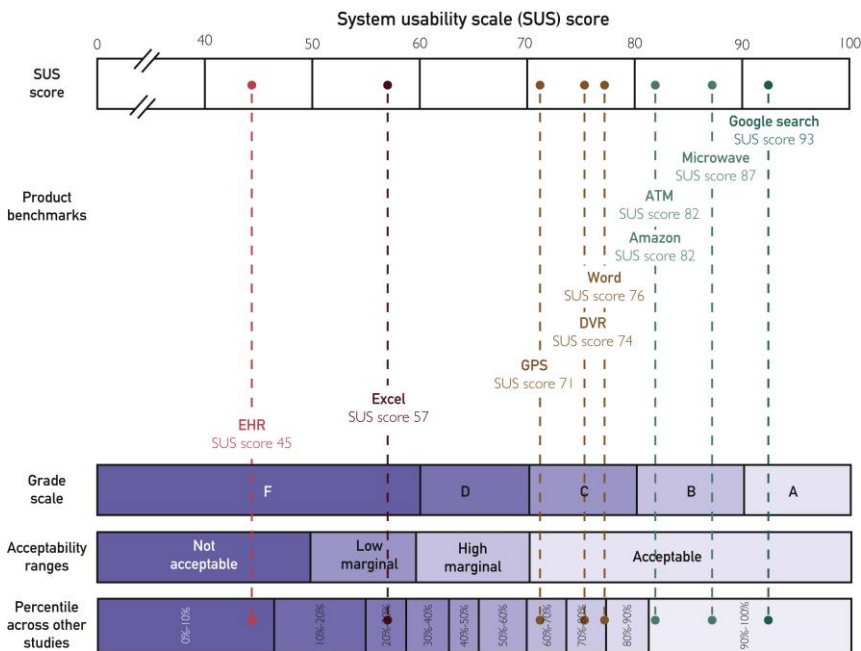


Fig. Emergency department practitioner time allocation.

- “4000 Clicks: a productivity analysis of electronic medical records in a community hospital ED”

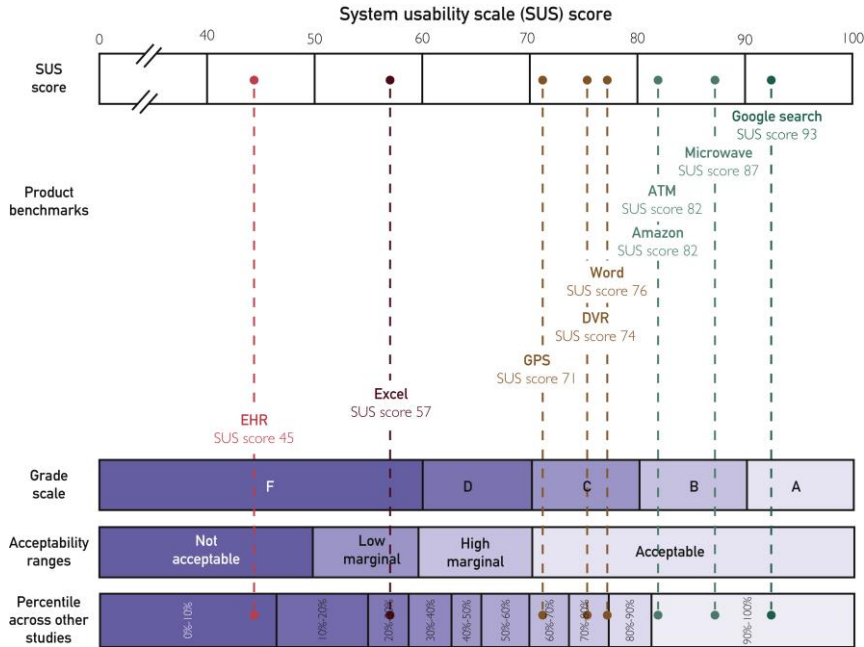
R.G. Hill Jr. et al. / American Journal of Emergency Medicine 31 (2013) 1591–159

# “The association between perceived Electronic Health Record usability and professional burnout among US physicians”

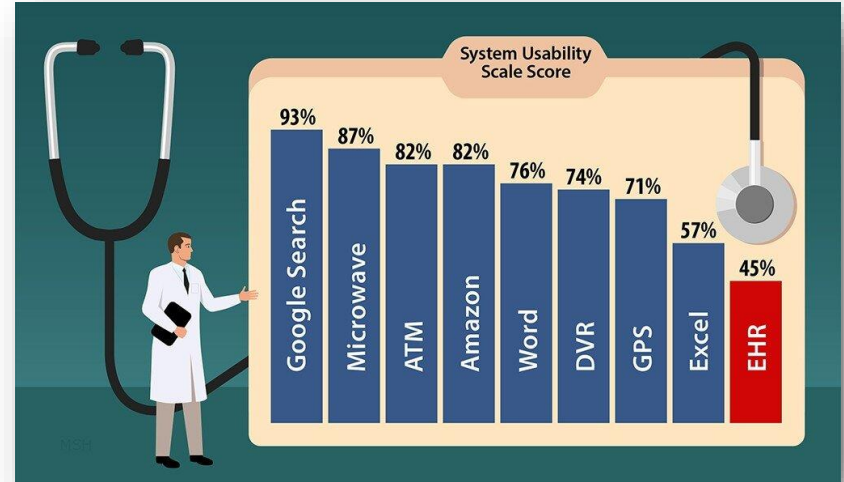


Mayo Clin Proc. 2020;95(3):476-487

# Usability and EHRs



Mayo Clin Proc. 2020;95(3):476-487



<https://news.yale.edu/2019/11/14/yale-study-doctors-give-electronic-health-records-f>

# Burnout and Critical Care Professionals

- **Critical care health care professionals** have one of the highest rates of burnout syndrome, with **nearly half of the workforce exhibiting symptoms**;
- Burnout rates are well over 40% in most clinician groups, including providers, nurses, mental health professionals, and social workers. **In some groups, the rate is over 80%**;
- Approximately **25 to 33 percent of critical care nurses manifest symptoms of severe burnout syndrome**. Up to 86 percent of critical care nurses have at least one of the three classic symptoms.

AACN, 2016

- American Nurse Foundation COVID 19 study of 12.000 nurses:

In the past 14 days, have you experienced any of the following feelings? *Select all that apply.*



(American Nurses Foundation, 2022)



# Ambient Documentation (clickable version)

- [Ideate - Ambient Documentation \(figma.com\)](#)

# Archetypical use cases with Gen AI



## Classify

Anomaly detection  
Sentiment detection  
Entity resolution  
Text categorization  
Prioritization  
Prediction



## Summarize

Brief recap  
Impression creation  
Patient review



## Extraction

Structuring data  
Tabulate data  
EMR pre-filling  
Medication  
Allergies



## Paraphrase

Text Simplification  
Patient-friendly report  
Medical terminology  
Tone-of-voice  
Personalization



## Translate

From-to language  
From-to culture  
From-to modalities



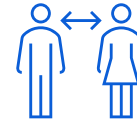
## Generate

Synthetic Data  
Data-to-text  
Care transition report  
Hand-over report  
Exam / test report



## Q&A

Complaints  
Service tickets  
User manuals  
Instruction for Use  
Protocol  
Guidelines  
Confidential data  
Exploratory Data  
Analysis  
Knowledge mgt



## Dialogue

Diatribes  
Discourse  
Debate  
Consultation  
Counseling  
Therapy session  
Exam  
Questionnaire  
Appointment  
Social chat  
Conversation



## Image gen

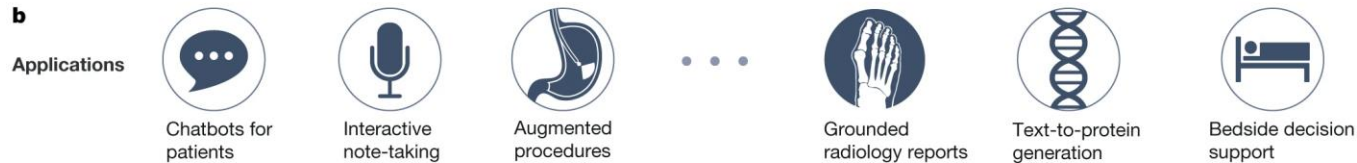
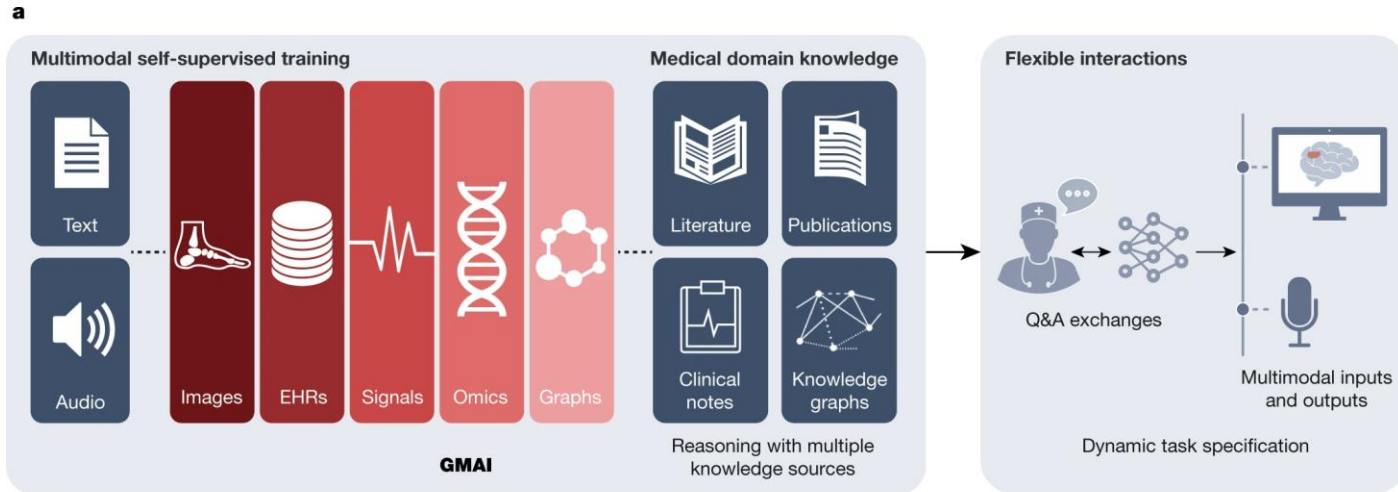
Product images  
Usage contexts  
Clinical images  
3D renders  
Illustrations  
Concepts  
Video fragments  
Animations



## Data viz

Data charts  
Process flows  
Info graphics  
Sankey diagrams  
Flow charts  
Organograms  
Data plots

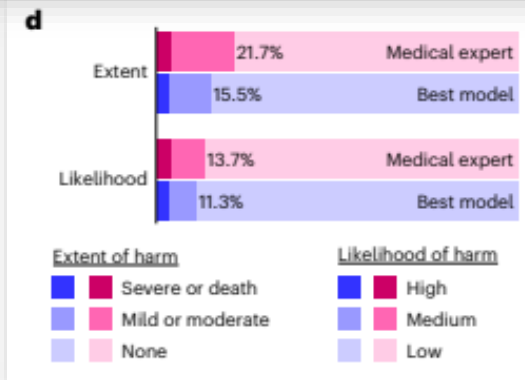
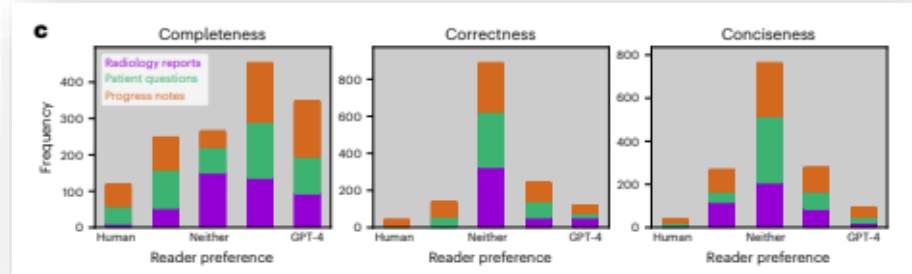
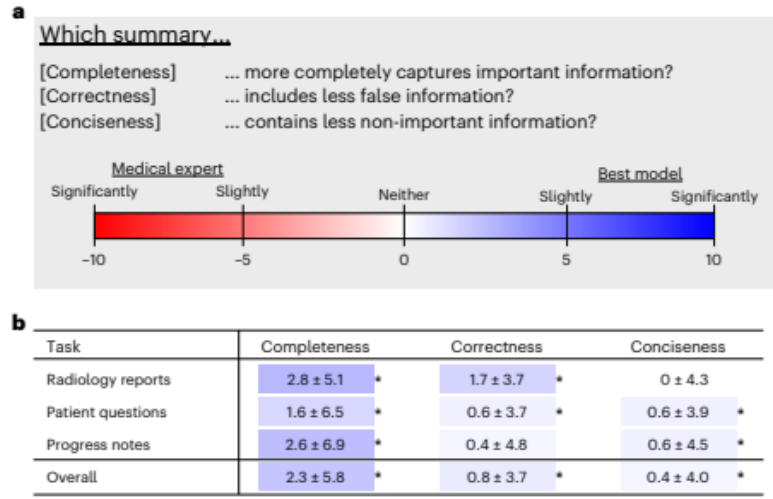
# “Foundation models have the potential to transform healthcare”



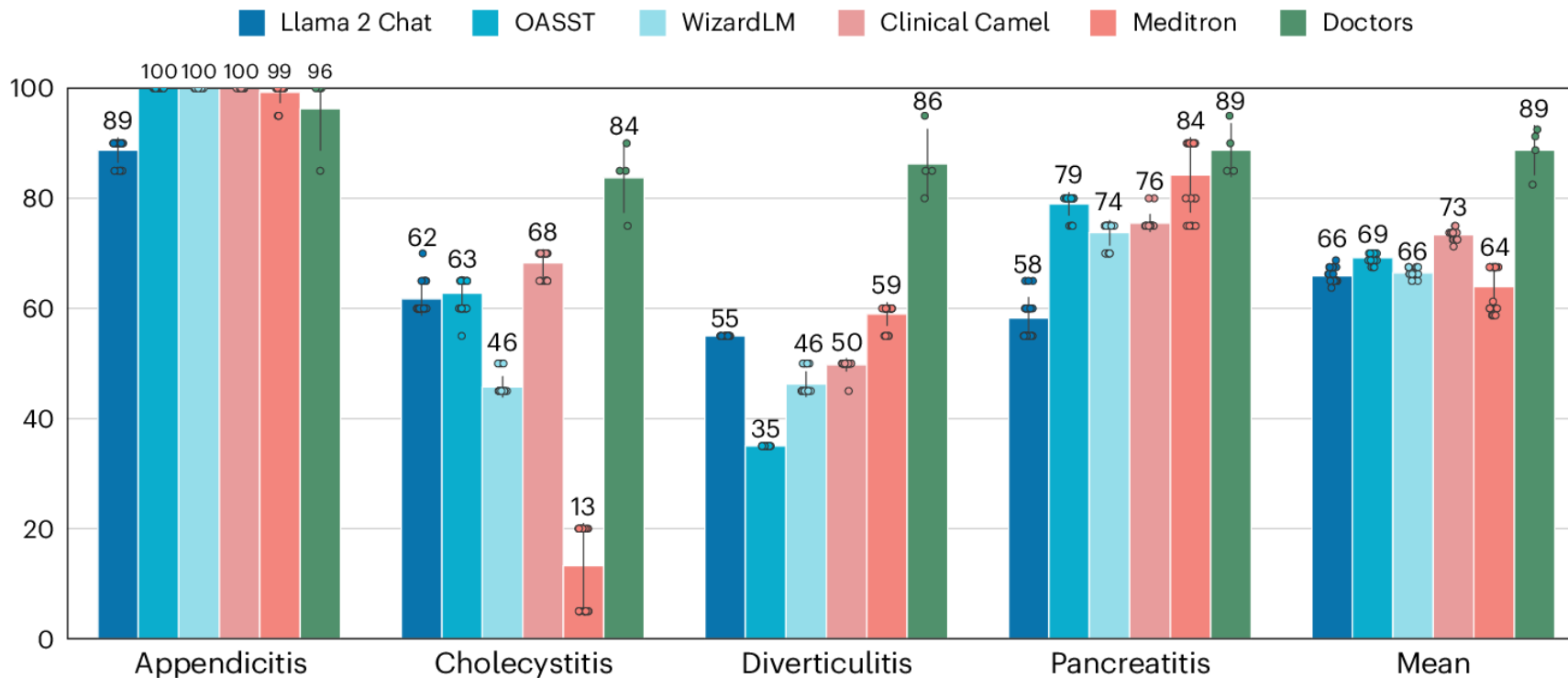
**Regulations:** Application approval; validation; audits; community-based challenges; analyses of biases, fairness and diversity

*Nature* **616**, 259–265 (2023). <https://doi.org/10.1038/s41586-023-05881-4>

# “Adapted large language models can outperform medical experts in clinical text summarization”

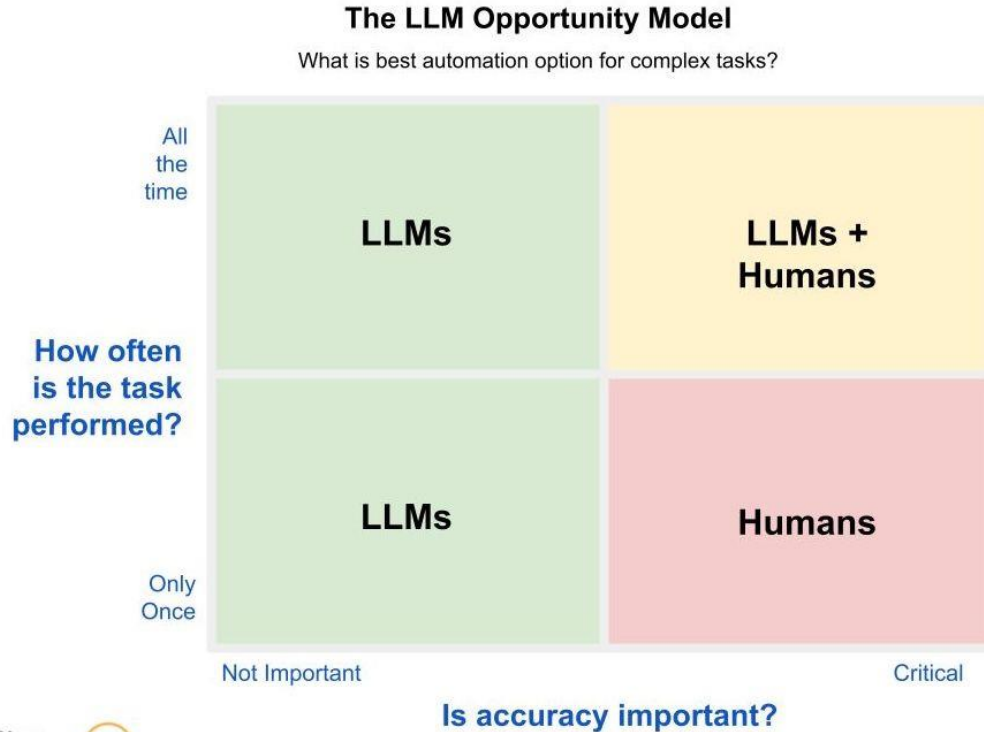


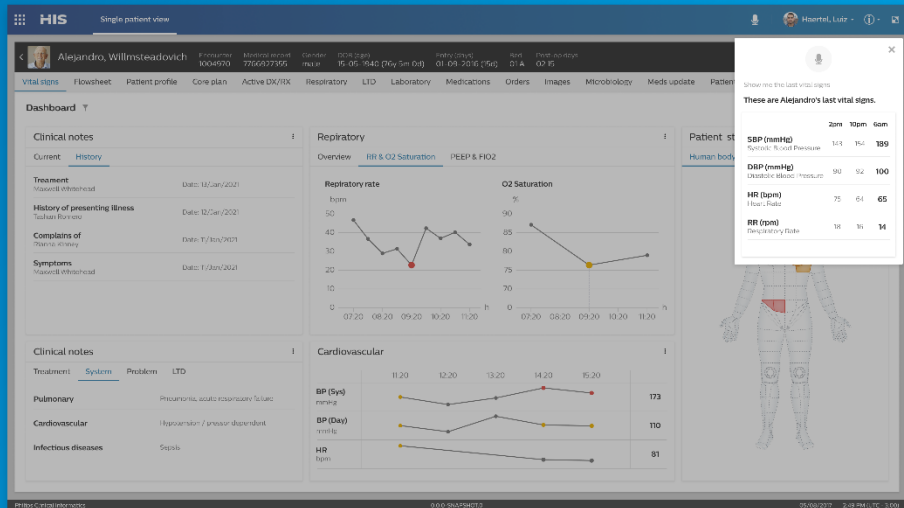
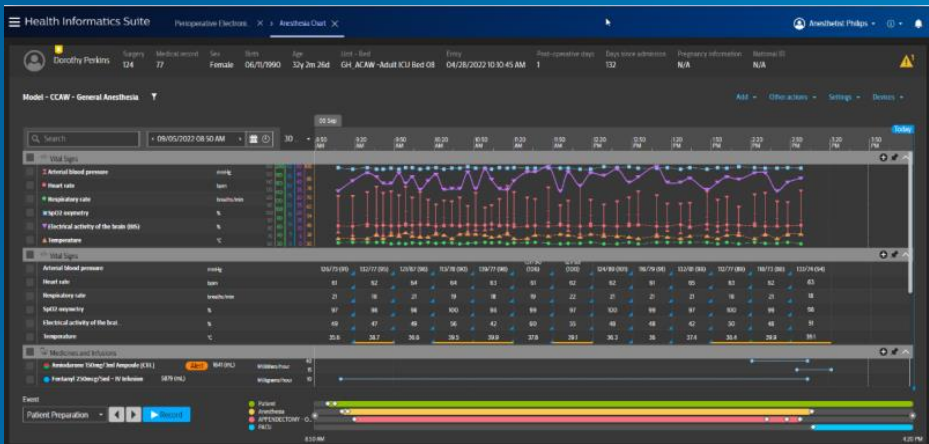
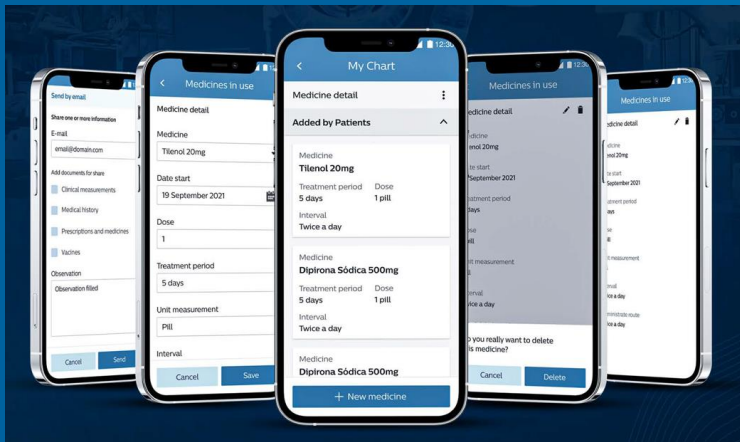
“Our main finding is that current models do not achieve satisfactory diagnostic accuracy.”



Nat Med (2024). <https://doi.org/10.1038/s41591-024-03097-1>

# LLM Opportunity Model





# Data extraction (video)

- [Recording for Vlad-20240712\\_122542-Meeting Recording.mp4 \(philips.com\)](#)



# Full scope (video)

[Apresentação Hospitalar.mp4 \(philips.com\)](#)

# The Future of the EHRs



## Health Data



Individual



Population

- Vital signs, Lab exams, Images, Pathology, Devices, Wearables, Literature



In-hospital



Low resource



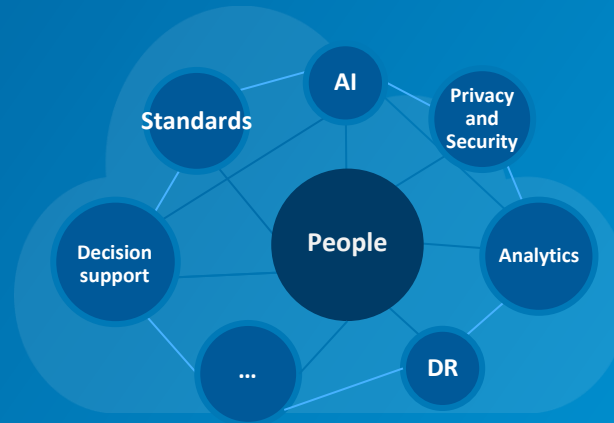
Remote / rural



In-home



## Integration with decentralization



## Engagement & Interventions

- Communication
- Appointments
- Diagnosis & Therapy
- Follow-up
- Active engagement lifestyle and adherence
- Early warning and triage
- Remote optimization and guidelines compliance
- Early referral for advanced therapies

*System of Records*

*System of Insights*

*System of Engagement*

Standards, Trustfulness, Reliability, Connectivity, Interoperability, Mobility, IoMT, Cloud, Voice, Cybersecurity, Privacy, Usability, AI, ...

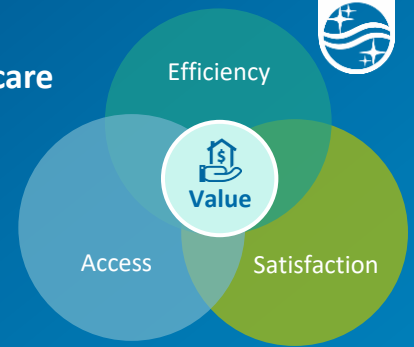


# Health ecosystem

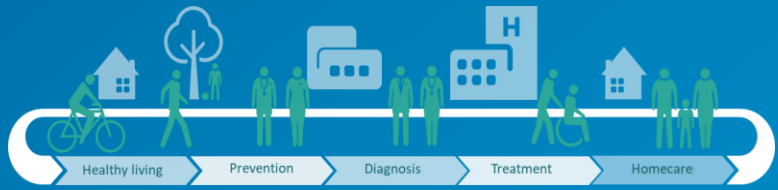


# Quadruple aim

# Value based care

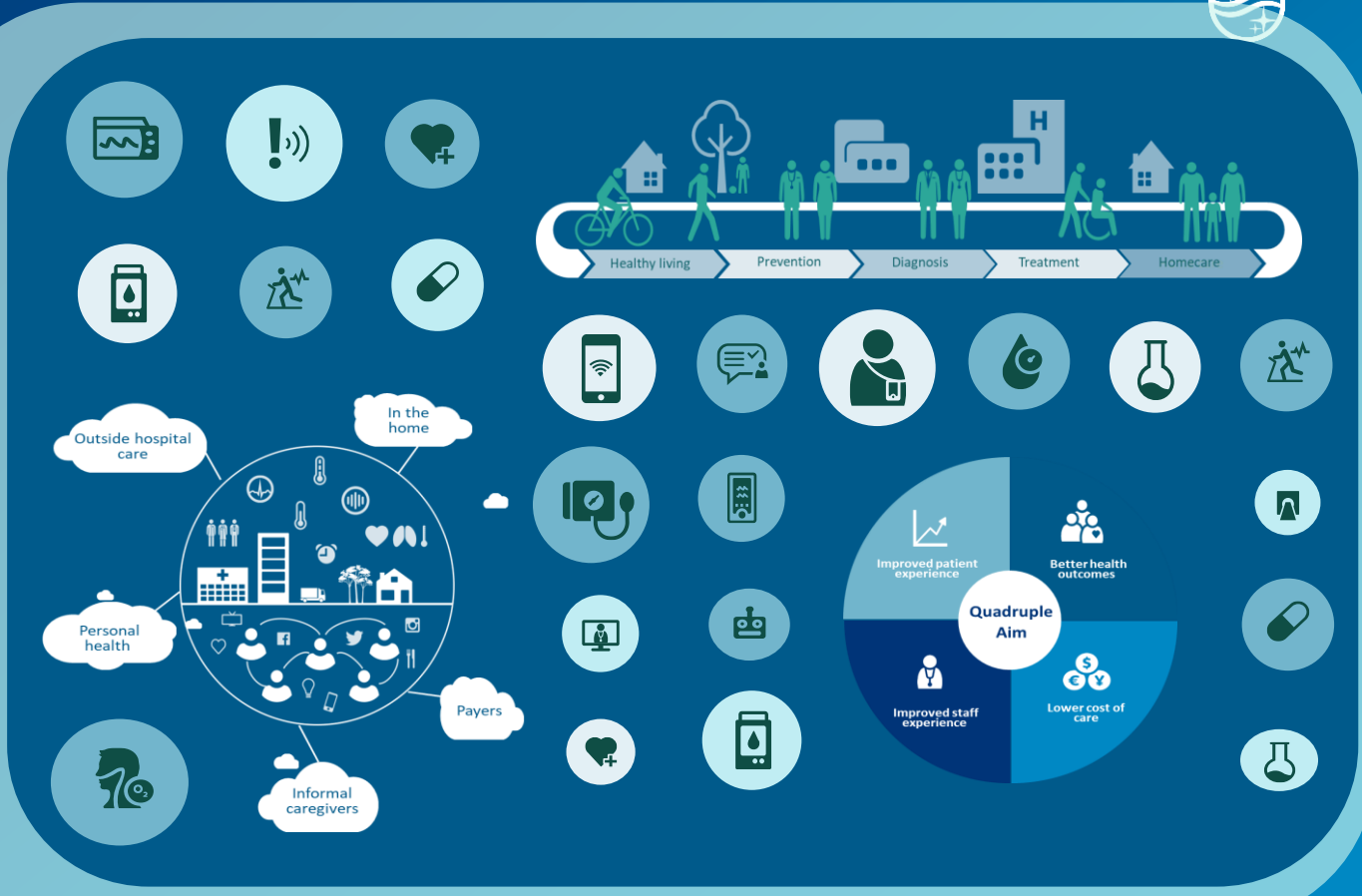


# Continuum of care

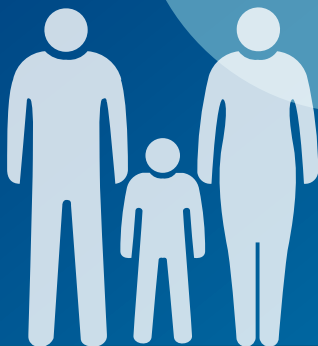




Value



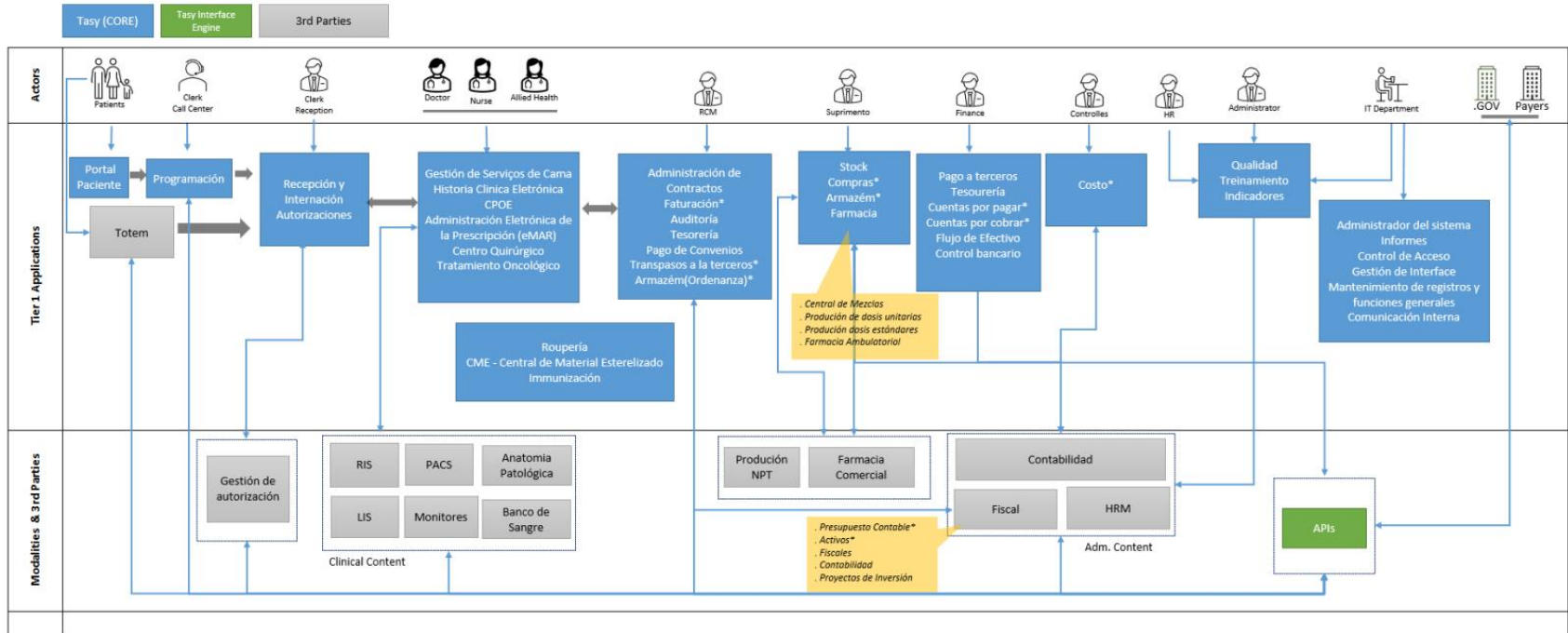
# Connecting the dots of care



# Ambient Documentation

[Ambient Documentation\\_HIMSS video short.mp4 \(philips.com\)](#)

# Tasy (Philips EMR) Product Offer - Colombia



\* May have restrictions (See functions list offering in the web portal)

[Private Medium General \(philips.com\)](http://philips.com)



# Want to know more?



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