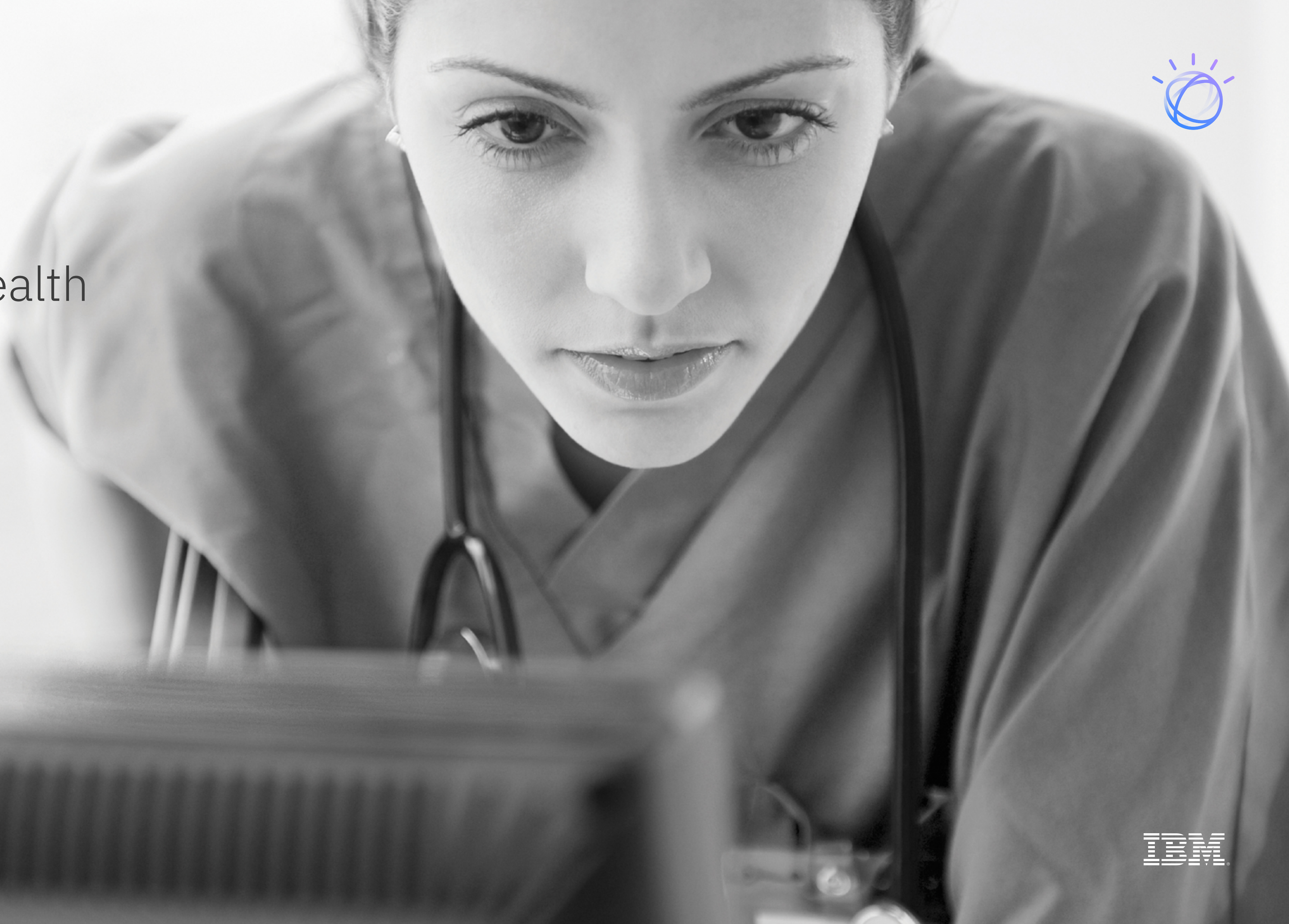
IBM Watson Health in Oncology

Scientific Evidence
2019



Contents

Foreword

Nathan Levitan, MD, MBA
Chief Medical Officer
IBM Watson Health Oncology & Genomics

As an oncologist, I've seen first-hand the very human toll of cancer. With the rising incidence and mortality of cancer globally, physicians and patients around the world face unprecedented complexity in navigating treatment while health systems are strained managing care for growing populations of patients.

As demand for oncology care rises, the global oncology workforce has not kept pace, leading to a shortage of expertise. As a result, physicians face formidable productivity and workflow challenges. In the US, more than half of physicians experience burnout according to a 2014 survey.[1] EMR documentation and payer-preauthorization requirements are noteworthy. In some developing countries resource constraints are significant. Globally, many physicians are challenged by the need to keep up-to-date on the management of multiple neoplastic diseases, the proliferation of research publications, precision oncology, and clinical trial availability.

IBM Watson Health has developed a suite of artificial-intelligence-based solutions and capabilities to support oncology providers at the point of care across the globe; today, our oncology solutions are being used in over 15 countries. These include Watson for Oncology Trained by Memorial Sloan Kettering, Clinical Trial Matching, Watson for Genomics, and enhanced evidence capabilities to provide literature relevant to the scenarios of the patient under consideration.

We are tackling the early application of AI in cancer care by working closely with our users to understand their needs and evolve our products. Throughout this journey, we recognize the strengths of our clients and partners, viewing our progress as a continuous evolution that must be rooted in scientific data that provides insight into how our products are impacting care teams today in the real world. To-date, more than 70 studies have been conducted including the evaluation of our products' efficacy. Here we provide a sample of these publications for your consideration.

1 Shanafelt TD et al. Mayo Clin Proc. 2015; 90(12):1600-12

Gretchen Purcell Jackson,
MD, PhD, FACS, FACMI, FAMIA
Vice President and Chief Science Officer
IBM Watson Health

As a practicing pediatric surgeon and health informatician, I know well the important role of scientific evidence in supporting clinical decisions as well as informing technology investment decisions. IBM Watson Health is a leader in combining data, analytics, and artificial intelligence (AI) techniques to create solutions that empower clinicians with actionable insights that can help them improve health and healthcare delivery. With IBM's long history of leading with science, we are proud to present a robust set of scientific studies that support the performance and impact of Watson solutions in the field of oncology and genomics.

The process of validating the science behind these tools is multi-faceted, requiring a progression of studies to demonstrate the validity, applicability, and value of these tools. The first step in evaluating any health information technology is ensuring the output is technically accurate or correct. For Watson for Oncology, we have demonstrated its therapeutic options have excellent agreement with decisions made by expert multidisciplinary tumor boards,[2,3,4] and Watson Oncology Literature Insights can accurately identify relevant publications from bibliographic databases.[5] In a study conducted by the Highlands Oncology Group, they were able to determine that Watson for Clinical Trial Matching could reliably exclude ineligible patients in the process of screening patients for clinical trials.[5] Watson for Genomics has been shown to identify actionable mutations from next generation tumor sequencing data not identified by the manual analysis of an expert molecular tumor board.[7,8,9]

Once technical performance has been demonstrated, the next step in evaluating a clinical AI tool involves conducting studies of usability and workflow in the clinical setting. Our scientific portfolio contains studies providing evidence of the usability of Watson for Oncology and satisfaction of its output for provider users and their patients from across the world. Ultimately, IBM Watson Health strives to create tools to help clinicians as they work to improve oncology care, and despite being a young business unit with relatively new products, there is already emerging evidence of the impact of its solutions. When used in multidisciplinary tumor board settings, studies have found that Watson for Oncology helped physicians identify treatment options they had not previously considered in 5% of cases[10] to 13.6% of cases.[2]

At the Mayo Clinic, Watson for Clinical Trial Matching has increased enrollment in breast cancer trials by 84%[11] and reduced screening time by 50% in lung cancer trials.[12] Watson for Genomics has not only identified actionable mutations of genes with FDA-approved targeted therapies, but also provided additional therapeutic insights in a third of cases surveyed,[7,13] and completed analysis of sequencing data in a fraction of the time required for manual curation.[7,14] We are grateful to our pioneering collaborators who have provided evidence for the performance, usability, and effects of IBM Watson Health oncology and genomics solutions. As adoption increases, we look forward to multicenter and across-solution studies that further illustrate our impact.

2 Somashekhar SP, Sepúlveda MJ, Shortliffe EH, Kumar RC, Rauthan A, Patil P, Yethadka R. A prospective blinded study of 1000 cases analyzing the role of artificial intelligence: Watson for oncology and change in decision making of a Multidisciplinary Tumor Board (MDT) from a tertiary care cancer center. J Clin Oncol 37, 2019 (suppl; abstr 6533).

3 Suwanrusme H, Issarachai S, Umsawasdi T, Suwanvecho S, Decha W, Dankwa-Mullan I, Wang CK, Urman A, Kiatikajornthada N. Concordance assessment of a cognitive clinical decision support tool in patients with solid tumors. J Clin Oncol. 2018;36 (suppl; abstr e18584).

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5 Suarez Saiz FJ, Sanders C, Stevens RJ, Nielson R, Britt MW, Preininger A, Jackson G. Use of machine learning to identify relevant research publications in clinical oncology. J Clin Oncol 37, 2019 (suppl; abstr 6558.

6 Beck J, Vinegra M, Dankwa-Mullan I, Torres A, Simmons C, Holtzen H, Urman A, Roper N, Norden A, Rammage M, Hancock S, Lim K, Rao P, Coverdill S, Roberts L, Williamson P, Howell M, Chau Q, Culver K, Sweetman R. Cognitive technology addressing optimal cancer clinical trial matching and protocol feasibility in a community cancer practice. J Clin Oncol. 2017;35 (suppl; abstr 6501). doi: 10.1200/JCO.2017.35.15_suppl.6501

7 Patel N, Michelini V, Snell J , Balu S, Hoyle A, Parker J, Hayward M, Eberhard D, Salazar A, McNeillie P, Xu J, Huettner C, Koyama T, Utro F, Rhrissorrakrai K, Norel R, Bilal E, Royyuru A, Parida L, Earp H, Grilley-Olson J, Hayes D, Harvey S, Sharpless N, Kim W. Enhancing next-generation sequencing-guided cancer care through cognitive computing [published online November 20, 2017]. Oncologist. 2018;23(2):179-185. doi: 10.1634/theoncologist.2017-0170

8 Zhang X, Chen Y, Yang Y, Guo W, Xie Z, Yan W, Yin K, Zhang Q, Wu Y. Comparative analysis of target gene exon sequencing by cognitive technology using next generation sequencing platform in Chinese patients with lung cancer. J Clin Oncol. 2018;36 (suppl; abstr e24254).

9 Kim M, Snowdon J, Weeararatne SD, Felix W, Lim L, Dankwa-Mullan I, Lee YK, Lee E, Jeon Km Lee JS, Zang DY, Kim HJ, Kim HY, Han B. Clinical insights for hematological malignancies from an artificial intelligence decision-support tool. J Clin Oncol 37, 2019 (suppl; abstr e13023).

10 Jiang Z, Xu F, Sepúlveda MJ, Li J, Wang H, Liu Z, Yin Y, Yan M, Song Y, Guo J, Roebuck M, Geng C, Tang, J. Concordance, decision impact and guidelines adherence using artificial intelligence in high-risk breast cancer. J Clin Oncol. 2018;36 (suppl; abstr e18566).

11 Haddad T, Helgeson J, Pomerleau K, Makey M, Lombardo , Coverdill S, Urman A, Rammage M, Goetz M, LaRusso N. Impact of a cognitive computing clinical trial matching system in an ambulatory oncology practice. J Clin Oncol. 2018;36 (suppl; abstr 6550).

12 Levantakos K, Helgeson J, Mansfield AS, Deering E, Schwecke A, Adjei A, Molina J, Hocum C, Halfdanarson T, Marks R, Parikh K, Pomerleau K, Coverdill S, Rammage M, Haddad T. Implementation of artificial intelligence (AI) for lung cancer clinical trial matching in a tertiary cancer center. Annals of Oncology. 2019; 30(Supplement_2): //doi.org/10.1093/annonc/mdz065.

13 Kim M, Snowdon J, Weeararatne SD, Felix W, Lim L, Dankwa-Mullan I, Lee YK, Lee E, Jeon Km Lee JS, Zang DY, Kim HJ, Kim HY, Han B. Clinical insights for hematological malignancies from an artificial intelligence decision-support tool. J Clin Oncol 37, 2019 (suppl; abstr e13023).

14 Wrzeszczynski K, Frank M, Koyama T, Rhrissorrakrai K, Robine N, Utro F, Emde A, Chen B, Arora K, Shah M, Vacic V, Norel R, Bilal E, Bergmann E, Vogel J, Bruce J, Lassman A, Canoll P, Grommes C, Harvey S, Parida L, Michelini V, Zody M, Jobanputra V, Royyuru A, Darnell R. Comparing sequencing assays and human-machine analyses in actionable genomics for glioblastoma [published online July 11, 2017]. Neurol Genet.2017;3(4):e164. doi: 10.1212/NXG.0000000000000164

Clinical decision support

Many early publications pertaining to Watson for Oncology (WfO) decision support were feasibility studies, looking at the concordance of WfO recommendations relative to those of individual tumor boards in countries around the globe. In some cases, clients have demonstrated rates of concordance between Watson for Oncology and local tumor boards at rates in excess of 90%. Even more important than concordance, however, is the opportunity for a decision support tool to inform treatment decisions. In two of the studies that follow, physicians reviewed and ultimately chose treatments that they had not previously considered based on recommendations from WfO.[15,16]

Other studies reflect potential use cases for WfO to address variability of care, demonstrate shared decision making, support evidence curation, boost patient confidence in their care plans, and improve physician and patient satisfaction.

Artificial intelligence-driven oncology decision support that brings sub-specialized expertise to practitioners with global reach is a novel endeavor. The ongoing enhancement of WfO is a journey that we carry out in close partnership with physician users across the globe.

15 Jiang Z et al. Concordance, decision impact and guidelines adherence using artificial intelligence in high-risk breast cancer. J Clin Oncol. 2018;36 (suppl; abstr e18566).

16 Lee KA et al. Concordance, Decision Impact, and Satisfaction for a Computerized Clinical Decision Support System in Treatment of Lung Cancer Patients. European Lung Cancer Congress; April 11, 2019; Geneva, Switzerland

A prospective blinded study of 1000 cases analyzing the role of artificial intelligence: Watson for Oncology in change of decision making of a multidisciplinary tumor board (MDT) from a tertiary care cancer centre*

Somashekhar SP et al. ASCO Annual Meeting 2019
*no contributing IBM author

Link to study →

> "The study suggest[s] that cognitive computing decision support system[s] holds substantial promise to reduce cognitive burden on oncologist[s] by providing expert, updated, recent evidence-based [evidence-informed] insights for treatment-related decisions making.

Excerpt from abstract

MDT evaluated 1,000 breast, lung, and colorectal cancer cases

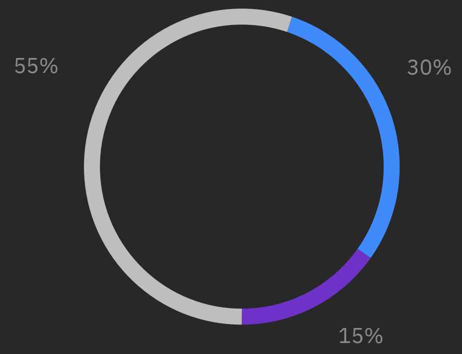
MDT was presented with Watson for Oncology's treatment options

MDT reviewed and finalized their decision

The MDT changed their decision in 13.6% of the cases.

Reason for decision change:

- Evidence for newer treatments(s)
- More personalized treatment alternatives
- New genotypic, phenotypic and clinical insights



Concordance, decision impact and guidelines adherence using artificial intelligence in high-risk breast cancer*

Jiang Z et al. ASCO Annual Meeting 2018
*no contributing IBM author

Link to study →

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When treatment decisions were altered, the newly selected therapies showed greater adherence to professional treatment guidelines.

Excerpt from abstract

1,997
breast cancer cases from CSCO database

Disclosure of Watson for Oncology options resulted in prescriber treatment changes in 106 or 5% of cases

106 cases (5%)

The guideline adherence rate improved in the 106 cases where decision changes were made from 89 to 97%

97%

The establishment of a new medical model for tumor treatment combined with Watson for Oncology, MDT and patient involvement*

Fang J et al. ASCO Annual Meeting 2018
*no contributing IBM author

Link to study →

“

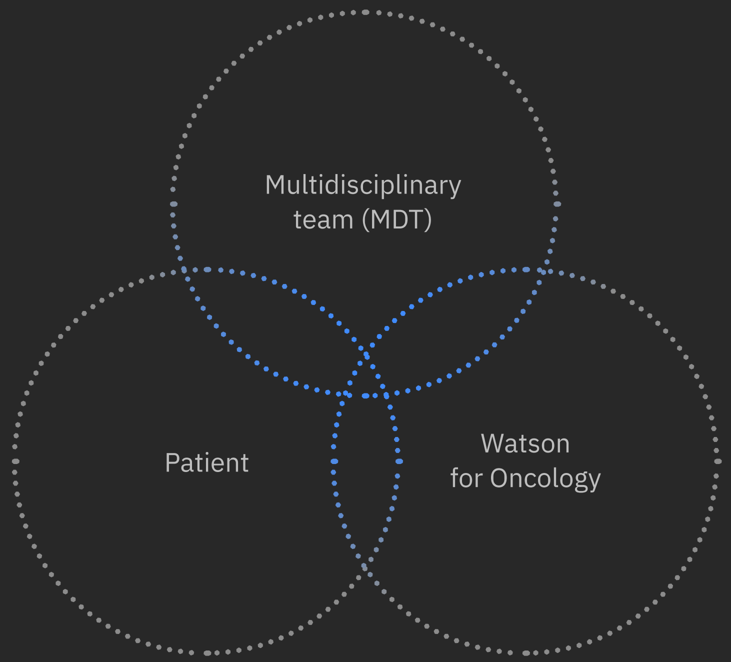
The new model combined with human brain, artificial intelligence (AI) and cancer patients enriches the traditional MDT [multidisciplinary team] model. It is a new kind of medical model which is more effective.

Excerpt from abstract

Doctor and patient survey results indicated:

Standardization and personalization of treatment recommendations

Greater patient engagement in decision making



An evaluation of artificial intelligence-based clinical decision supports use in Brazil

Rocha H et al. ASCO Annual Meeting 2019

Link to study →

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In this study base[d] on an established framework for evaluation, oncologists felt WfO met the Five Rights for CDS.

Excerpt from abstract

The Clinical Decision Support (CDS) Five Rights framework[17]:

The right information > The right person > In the right intervention format > Through the right channel > At the right time in the workflow

The goal of the study was to investigate how the implementa-tion of Watson for Oncology (WfO) affects clinical decision-making and workflow at the Instituto do Câncer do Ceará in Brazil.

The results from 7 oncologists who were surveyed on the use of Watson for Oncology and the CDS Five Rights Framework found:

71.4%
expressed positive statements pertaining to the use of WfO

86%
agreed that WfO provides actionable information about treatment decisions

86%
agreed that WfO provides information about treatment decisions at the right time in a clinician’s work flow

17 AHRQ. Section 2—Overview of CDS Five Rights. ibm.biz/CDSFiveRights Accessed April 20, 2019

Artificial intelligence-based clinical decision-support system improves cancer treatment and patient satisfaction*

Zonghe ZW et al. ASCO Annual Meeting 2019
*no contributing IBM author

Link to study →

“

[...] patients build stronger confidence with their health care team and are willing to believe they will benefit from the treatment plans.

Excerpt from abstract

Enhanced patient knowledge around disease and treatment options can increase confidence in achieving positive outcomes. A new model of cancer care consultation assisted by Watson for Oncology was evaluated.

The new 7-step model assisted by Watson for Oncology was compared to non-CDS system method (n = 70; new = 50; traditional = 20)

The 7-step model:

Introduce WfO to patients

⌄

Patients express desires

⌄

Oncologist presents medical condition

⌄

Discussion with team

⌄

Input patients info WfO and review options

⌄

Discuss and finalize options with patients

⌄

Patient feedback

Patients in 7-step process indicated higher satisfaction in treatment options, confidence in health care workers, and willingness to follow treatment regimen.

“A tool, not a crutch”: patient perspectives about IBM Watson for Oncology trained by Memorial Sloan Kettering*

Hamilton et al. J Oncol Pract. 2019; 15(4):e277-e288
*no contributing IBM author

Link to study →

“

Importantly, in this study, we observed high levels of patient interest, perceived value, and acceptance of WfO, although with caveats that will be critical to address as WfO expands in its scope and dissemination.

Excerpt from manuscript

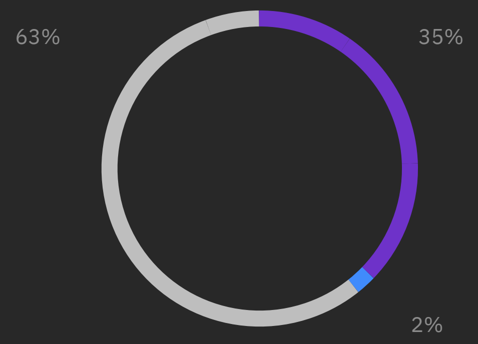
46
patients

Patient’s response to the phrase
“I believe IBM Watson for Oncology helped my doctor decide the best chemotherapy for me”

Strongly agree / Agree

Not sure

Disagree



Foreword

Key studies:
Clinical decision support
Clinical trials
Genomics

Bibliography

Patient satisfaction with oncology clinical decision support in South Korea

Lee K et al. ASCO Annual Meeting 2019

Link to study →

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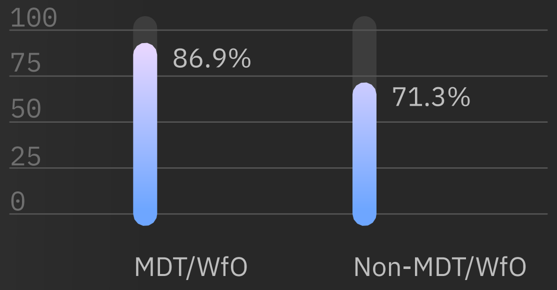
Patients reported greater satisfaction in the explanations they received in the MDT-WfO group, consistent with their more positive impression of GM[C] after treatment decisions were made.

Excerpt from abstract

Cancer patients at Gachon University Gil Medical Center (GMC) were surveyed on satisfaction levels after reviewing and choosing treatment options presented by a multidisciplinary tumor board (MDT) augmented with Watson for Oncology (MDT/WfO) or recommendations from one or more oncologists augmented by WfO (non-MDT/WfO).

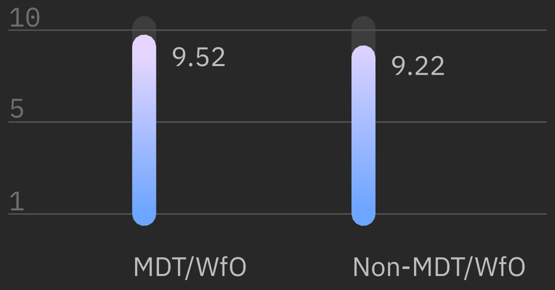
Out of 290 cancer patients (9 cancer types), 44.8% selected the options provided by MDT/WfO and 55.2% selected the non-MDT/WFO option.

Positive view of GMC after treatment decisions made



Patient satisfaction with the explanation from medical staff

Scale of 1–10; $p = 0.029$



Enhancing evidence-based medicine skills in oncology training with cognitive technology

Chen CY et al. ASCO Annual Meeting 2019

Link to study →

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These preliminary results are consistent with better learning outcomes for students using WfO in the colon cancer module.

Excerpt from abstract
Study was performed in a non-clinical setting

Traditional search methods (TSM) for identifying evidence to inform practice are complex. Cognitive technology may offer an alternative approach.

Watson for Oncology training 50 medical students	TSM n=25	WfO n=25

Colon cancer assessment	Lung cancer assessment
WfO outperformed TSM (p=0.001)	No difference

Student search preference by level of clinical experience

Clinical experience	Preference	
Less	Watson for Oncology	p=0.002
More	Traditional search	p=0.005

Shared-decision making in prostate cancer with clinical decision-support

Rocha HAL et al. ASCO Annual Meeting 2019

Link to study →

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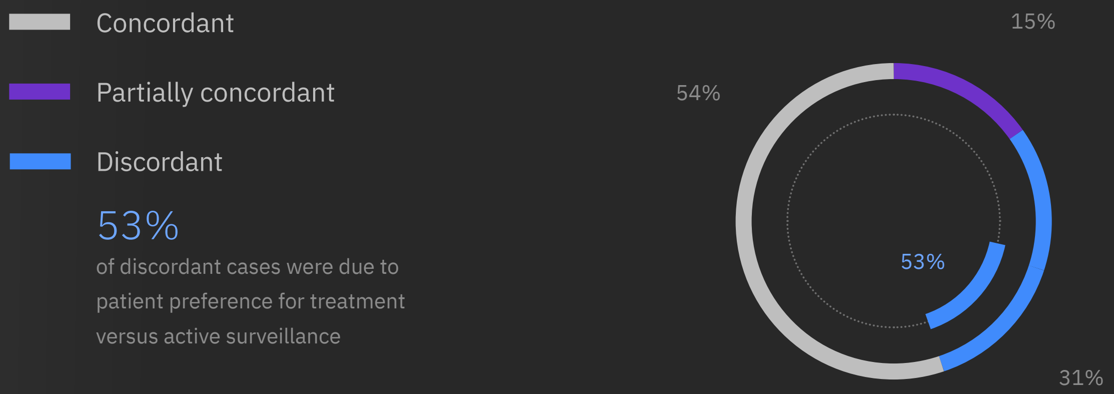
Variation in prostate cancer treatment exists. CDSS [clinical decisions-support systems] therapy options may be useful in quantifying and modifying unwarranted variations in prostate cancer treatment.

Excerpt from abstract

Clinical decision-support systems may play a role in facilitating shared decision making when a single standard of care is lacking.

Watson for Oncology facilitated a shared decision-making process for 48 patients in Brazil.

Concordance: WfO treatment option and chosen treatment



Watson for Oncology and breast cancer treatment recommendations: agreement with an expert multidisciplinary tumor board

Somashekhar SP et al. Ann Oncol. 2018;29(2):418-423

Link to study →

"This study demonstrates that the AI clinical decision-support system WFO may be a helpful tool for breast cancer treatment decision making, especially at centers where expert breast cancer resources are limited.

Excerpt from abstract

638
breast cancer cases

Treatment options generated by Watson for Oncology were concordant with a multidisciplinary tumor board 93% of the time.

93%

Use of machine learning to identify relevant research publications in clinical oncology

Suarez Saiz F et al. ASCO Annual Meeting 2019

Link to study →

“

The use of machine learning to identify relevant publications may reduce the time clinicians spend finding pertinent evidence for a patient.

Excerpt from abstract

A model was trained, using abstracts and titles from PubMed, to identify relevant clinical papers based on articles cited by 3 expert oncology sources:

NCCN
NCI-PDQ
Hemonc.org

Balanced training data:

On-topic set: cited in at least two expert sources

Off-topic set: published in lower-ranked journals

988 papers
were classified with:

0.93
accuracy
(95% CI, 0.9–0.96; $p < 0.0001$)

0.95
sensitivity

0.91
specificity

Clinical trials

Less than 3–5% of cancer patients in the US participate in clinical trials, and globally, these numbers are even lower.[18] In addition, enrollment differs significantly among demographic groups. Watson for Clinical Trial Matching (CTM) can ingest thousands of clinical trials, extract the eligibility criteria, and match patients with trials based on the attributes of the patient's clinical scenario.

The studies shown below demonstrate the potential impact of CTM to enhance clinical trial enrollment rates and to reduce the time spent by clinical trials unit personnel in screening patients for available trials. One client experienced an 84% increase in average monthly clinical trial enrollment for breast cancer patients,[19] while another experi-enced a 78% reduction in time to screen patients for clinical trials.[20]

18 Schuler, Peter and Buckley, Brendan, Re-Engineering Clinical Trials: Best Practices for Streamlining the Development Process. 2015.

19 Haddad T et al. Impact of a cognitive computing clinical trial matching system in an ambulatory oncology practice. J Clin Oncol. 2018;36 (suppl; abstr 6550).

20 Beck J et al. Cognitive technology addressing optimal cancer clinical trial matching and protocol feasibility in a community cancer practice. J Clin Oncol.

A pilot study to implement an artificial intelligence (AI) system for gastrointestinal cancer Clinical Trial Matching*

Jin Z et al. ESMO 2019

“

Implementation of Watson for CTM system with a CRC team may enable high volume patient screening for a large number of clinical trials in an efficient manner and promote awareness of clinical trial opportunities within the GI oncology practice.

Excerpt from manuscript

Clinical trials are critical to expanding understanding of disease treatment; however, screening for clinical trial enrollment is complex and time-consuming, leading to low rates of enrollment for newly diagnosed cancer patients.

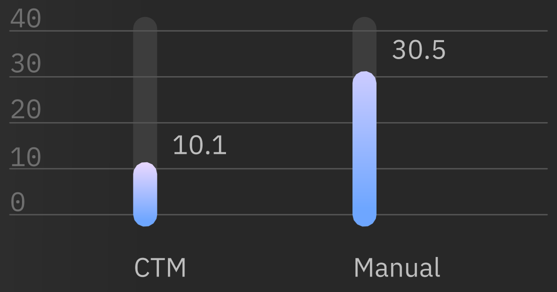
35
patients

50
clinical trials

35 patients with newly diagnosed gastrointestinal cancer screened for 50 clinical trials by clinical research coordinators with Watson for Clinical Trial Matching (CTM) and manual methods

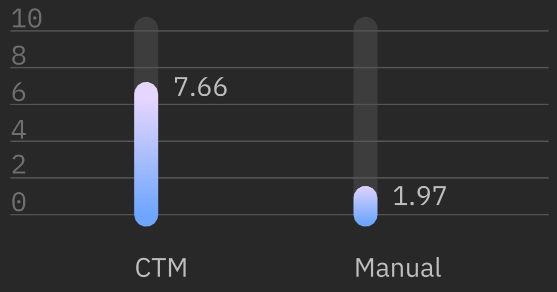
Average Time to Screen
(minutes per patient)

p<0.0001



Average trials found
(per patient)

p<0.0001



*Mayo Clinic has a business collaboration with IBM Watson Health. This activity is not undertaken to allow IBM to indicate Mayo Clinic endorsement of any IBM product or service.

Impact of a cognitive computing clinical trial matching system in an ambulatory oncology practice

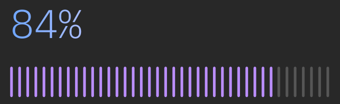
Haddad T et al. Journal of Clinical Oncology 2018

Link to study →

Cognitive technology supports increased enrollment in clinical trials for breast cancer.

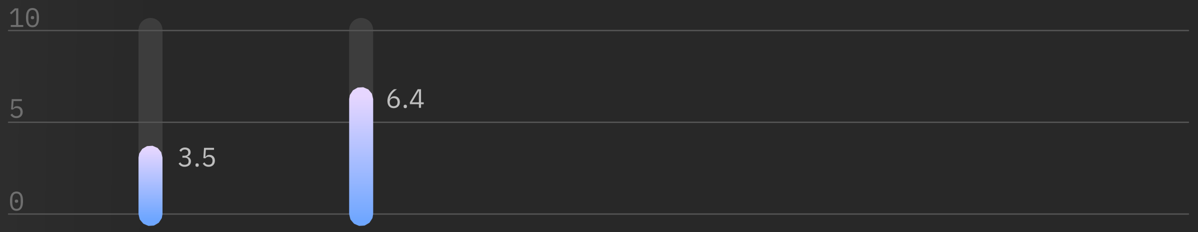
In July 2016, Mayo Clinic* implemented IBM Watson for Clinical Trial Matching with a team of screening clinical research coordinators in its ambulatory practice for patients with breast cancer at the Rochester campus.

In the 18 months after implementation, there was on average an 84 percent increase in enrollment to Mayo's systemic therapy clinical trials for breast cancer. The time to screen an individual patient for clinical trial matches also fell when compared with traditional manual methods.



Average monthly patient enrollment

Ambulatory breast cancer practice



Pre CTM

With CTM

84% increase in monthly enrollment

This was further increased to 8.5 patients/month when including accruals to breast cancer cohorts of multi-disease, phase I trials within the experimental cancer therapeutics program.

*Mayo Clinic has a business collaboration with IBM Watson Health. This activity is not undertaken to allow IBM to indicate Mayo Clinic endorsement of any IBM product or service.

Cognitive technology addressing optimal cancer clinical trial matching and protocol feasibility in a community cancer practice

Beck J et al. ASCO Annual Meeting 2017

Link to study →

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IBM Watson CTM can help expedite the screening of patient charts for clinical trial eligibility and therefore may also help determine the feasibility of protocols to optimize site selection and enable higher and more efficient trial accruals.

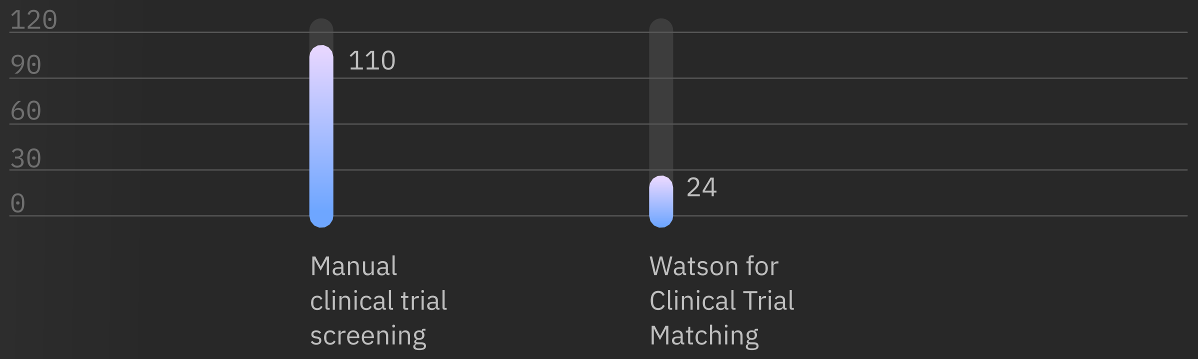
Excerpt from manuscript

2,620
visits by lung and breast cancer patients

78%
reduction in time compared to manual clinical trial coordinator screening when using IBM Watson for Clinical Trial Matching (CTM)

Watson for Clinical Trial Matching excluded 94% of the ineligible patients automatically, providing criteria level evidence regarding the reason for exclusion.

Screening minutes



Genomics

In many next-generation sequencing laboratories around the world, the variant calling format (VCF) file is curated by expert personnel using manual or semi-automated processes. These processes require familiarity with ever-expanding literature pertaining to the significance of specific mutations as well as the availability of therapeutic options that may target those mutations—whether those therapeutic options are FDA approved or investigational.

While this process is carried out effectively in most laboratories through manual curation, studies below demonstrate that Watson for Genomics (WfG) can classify and categorize actionable variants with great accuracy and in less time than is required when performed with conventional methodology. For example, one study found that Watson for Genomics accurately interpreted whole genome sequencing data for a glioblastoma patient in 10 minutes.

Other evidence indicates that WfG can identify new potentially actionable variants that were not identified manually.[21] With the rise of precision medicine, technologies that can quickly associate genomic data with potential therapeutic options play an important role in supporting oncology care providers in evaluating treatment options.

21 Patel N et al. Enhancing next-generation sequencing-guided cancer care through cognitive computing [published online November 20, 2017]. Oncologist. 2018;23(2): 179-185. doi: 10.1634/theoncologist.2017-0170

Clinical insights for hematological malignancies from an artificial intelligence decision-support tool

Kim M et al. ASCO Annual Meeting 2019

Link to study →

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WfG variant interpretation correlated well with manually curated expert opinion and identified clinically actionable insights missed by manual interpretation… WfG has obviated the need for labor-intensive manual curation of clinical trials and therapy, enabling our center to exponentially scale our NGS operations.

Excerpt from abstract

54
South Korean patient cases with hematological malignancies were analyzed by Watson for Genomics (WfG)

10
cases were randomly selected for manual interpretation analysis

71%
of cases had at least one clinically actionable therapeutic alteration

33%
of cases had genes that were targeted by a US FDA approved therapy

20%
of cases without therapeutic alterations, WfG identified additional diagnostic or prognostic insights

90%
of the manually interpreted cases were concordant with WfG analysis

WfG identified 9 more (33%) clinically actionable variants not found in manual assessment.

Enhancing NGS-guided cancer center care through cognitive computing

Patel N et al. The Oncologist. 2018;23(2):179-185

Link to study →

“

Molecular tumor boards empowered by cognitive computing can significantly improve patient care by providing a fast, cost-effective, and comprehensive approach for data analysis in the delivery of precision medicine.

Excerpt from abstract

1,018

Watson for Genomics analyzed 1,018 patient cases previously sequenced and analyzed

Providing current, accurate information on newly approved therapeutic options and open clinical trials requires considerable manual curation performed mainly by members of molecular tumor boards (MTBs).

Watson for Genomics’ automated analysis of genomic data took under 3 minutes per patient case.

under 3 min

In 32% of the patient cases, Watson for Genomics found additional potentially clinically actionable variants that a molecular tumor board had not identified.

32%

Comparative analysis of target gene exon sequencing by cognitive technology using next generation sequencing platform in Chinese patients with lung cancer*

Zhang et al. ASCO Annual Meeting 2018
*no contributing IBM author

Link to study →

“

These findings suggest the unique role for cognitive computing in the detection of genetic alterations which may inform opportunities for investigational targeted cancer therapies.

Excerpt from abstract

115
tissue samples

Study compared annotation and reporting differences between an actionable mutation list generated by Watson for Genomics to the list generated by a bioinformatics molecular tumor team at Guangdong Lung Cancer Institute.

Watson identified an average of 1.54 additional mutations

Watson found the same mutations as manual annotation

Bibliography

For insight into the scientific evidence of Watson Health Oncology, please reference these additional publications.

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