AI Use Cases in Pharma

Department	Pain Points/Use Cases	Sources
Medical education & Patient/ Physician support	● Providing accurate and up-to-date information on drug products, indications, contraindications, dosages, interactions, side effects, etc. to health care professionals and patients	Drug labels, package inserts, clinical trials, scientific publications, guidelines, etc
	● Recurring & emerging reasons for calling (e.g. complaint, formulation information, side effect, drug-drug interactions, patient reported outcomes) ○ Topic and Sentiment Analysis ● Caller demographics	Call center transcripts
Compliance	● Detecting and reporting adverse events (AEs) or product quality complaints (PQCs) from various sources of data in a timely and accurate manner2	Call center transcripts, emails, web forms, social media posts, patient forums, blogs
	● Generating and submitting periodic safety reports to regulatory authorities	Safety report templates, guidelines, regulations, etc.
Marketing	● Generating high-quality written content, such as blog posts, social media updates, and marketing copy, to attract and engage potential customers/HCPs	clinical trials, scientific publications, media sources
	● Drafting personalized and engaging email content to improve open and click-through rates for email marketing campaigns to HCPs	HCP data, segmentation, personas, media sources
	● Optimizing web pages and landing pages for search engine ranking and conversion	Web analytics, A/B testing, Keyword research
Commercial Analytics	● Identifying trends, patterns, and gaps in the market using natural language processing and generation	Market research databases, publications, reports, media source
	● Analyzing, summarizing and deriving insights from survey responses, online reviews, consumer behavior, preferences,	Survey platforms, online review sites, social media platforms, patient forums, blogs, audio/video recordings, notes

	• prioritizing qualitative data from interviews and focus groups	
	• KOL identification - finding and engaging with key opinion leaders (KOLs) who are influential and respected experts in a specific therapeutic area. KOLs can help pharma companies with various activities, such as drug development, clinical trials, marketing, education, and advocacy.	publications, presentations, media source
Clinical Trials	• Designing and optimizing clinical trial protocols, such as inclusion and exclusion criteria, endpoints, sample size, etc. using natural language processing and generation	Clinical trial databases, registries, publications
	• Automating the extraction and analysis of clinical trial data from various sources, such as electronic health records, medical images, wearable devices, etc. using natural language understanding and computer vision	Clinical trial data, outcomes
	• Enhancing patient recruitment and retention by matching patients to suitable trials, providing personalized information and reminders, and monitoring patient adherence and satisfaction	Clinical trial platforms, websites, apps, etc
	• Accelerated Clinical Trials: AI is being utilized to identify potential drug candidates from vast databases of molecules, cutting down the time and cost required for early-stage drug development. Machine learning algorithms can help predict the success of drug candidates and prioritize those with the highest likelihood of success for clinical trials.	Clinical trial data, outcomes, websites
R&D Drug Discovery	• Gene-disease mapping and target identification to understand which genes or other entities are potential	Research papers, databases

	biomarkers for particular diseases and to look for interactions	
	● Patent landscaping and competitive intelligence to identify high-investment targets for pharma companies	Patent documents, publications, reports
	● Drug repurposing and combination to find new indications or synergies for existing drugs	Drug labels, clinical trials,
	● Drug Discovery and Target Identification: AI and machine learning algorithms are helping pharmaceutical companies identify potential drug targets and biomarkers more efficiently. By analyzing vast amounts of biological data, AI can predict which genes, proteins, and molecules to target, accelerating the drug discovery process and reducing the number of failed experiments.	Clinical trials, scientific journals and publication, websites
Real-World Evidence (RWE) Analysis	● AI and advanced data analysis are enabling pharmaceutical companies to monitor how drugs perform in the real world. By efficiently processing post-launch patient data, AI provides valuable insights on drug efficacy, patient response, and overall outcomes. This information is essential for regulators and for developing new drugs.	electronic health records, social media, patient forums
Payer	● Subrogation in potential cases, ○ Identifying and recovering the costs of medical claims from the liable third parties Reducing the time and effort required for manual review and verification of claims	Insurance claims notes, accident reports, legal documents
	● Fraud detection ○ Detecting and preventing fraudulent or abusive claims from providers or patients 	Insurance claims notes, billing records, medical records, etc

	Saving the costs and resources associated with fraud investigation and litigation	
	● Claims Management ○ Topic and Severity Analysis of the claims in order to direct them to appropriate agents so that the client receives the right treatment	Insurance claims notes, billing records, medical records, etc
	● Insights on root causes for incidents	Incidence reports
	● Value-Based Contracting and Pricing: As the pharmaceutical industry adopts new contracting and pricing models, such as value-based contracting tied to patient outcomes, AI and RWE will play a critical role. AI can handle and process detailed post-launch patient data, providing valuable insights for pricing strategies and decision-making.	Websites, report, scientific journal and publication,
Disease Prediction	● Dermatology: Early detection of skin cancer can be challenging ○ Analyze images of skin lesions to detect abnormalities, classify them, and identify potential cancerous growths.	Electronic Health Records, Medical Records, Medical Imaging Databases
	● Lung Cancer: Early Detection, Diagnosis and Radiologist Workload are challenging ○ Any abnormalities, such as nodules or masses, on the X-ray image and CT scans are analyzed.	Radiology Department, Public Datasets
	● Histopathology: The issue at hand is the laboratory workload, which is leading to delays in generating and delivering reports. ● Calculating Risk Assessment of Patients- AI can help extract and analyze relevant information from	Pathology (ASCP), Publicly Available Datasets

	textual data, such as clinical notes, reports ● AI can also help generate natural language summaries or reports based on histopathology data	