

Can ChatGPT Generate Synthetic Data to Train Systematic Literature Review Machine Learning Models?

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Table 1a. Example instruction and associated abstract generated by ChatGPT





<div> INSTRUCTION</div>	<div></div> <div>"Hey! Can you create 5 abstracts that meet the following inclusion criteria using a peer-reviewed journal format Domain Inclusion criteria Population: not first-line metastatic non-small cell lung cancer (use appropriate and variable synonyms for first-line setting in the title and abstract) Intervention/comparator: pharmacological treatments (make these variable) Outcomes: efficacy, safety, patient-reported outcomes (make these variable) using actual results Study design: RCTs The treatment names do not have to be up to date"</div>
<div><div> ABSTRACT EXAMPLE</div></div>	<div></div> <div>Title: Comparative Efficacy and Safety of Second-Line Pharmacological Treatments in Metastatic Non-Small Cell Lung Cancer: A Randomized Controlled Trial Objective: This randomized controlled trial aimed to assess the efficacy, safety, and patient-reported outcomes of various second-line pharmacological treatments in patients with metastatic non-small cell lung cancer who had previously received first-line therapy. Methods: A total of 200 eligible participants were randomly assigned to one of four treatment arms: Treatment A, Treatment B, Treatment C, and Treatment D. The primary outcomes evaluated were overall response rate, progression-free survival, and treatment-related adverse events. Results: Treatment A demonstrated the highest overall response rate (45%) compared to Treatment B (30%), Treatment C (20%), and Treatment D (15%). Progression-free survival was significantly longer in Treatment A (median 8.5 months) compared to Treatment B (median 6.2 months), Treatment C (median 5.8 months), and Treatment D (median 4.3 months). Treatment-related adverse events were similar across all treatment arms, with Treatment A exhibiting the highest incidence of grade 3 or higher adverse events (30%). Conclusion: In this randomized controlled trial, Treatment A showed superior efficacy in terms of overall response rate and progression-free survival compared to other second-line pharmacological treatments. However, it was associated with a higher incidence of treatment-related adverse events. Further investigation is warranted to optimize the balance between efficacy and safety in the management of metastatic non-small cell lung cancer.</div>
Start prompt for exclusion code: Population, relevant ICOS	

Table 1b. Example abstracts generated by ChatGPT





<div> INSTRUCTION</div>	<div></div> <div>"Create 10 abstracts that meet the following inclusion criteria using a peer-reviewed journal format. Report actual numerical estimates. Use actual treatment names and make these variable. Domain Inclusion criteria Population: Any medical condition that is not non-small cell lung cancer (use appropriate and variable synonyms in the title and abstract) Intervention/comparator: actual pharmacological treatments (make these variable and they do not have to be up to date) Outcomes: efficacy, safety, patient-reported outcomes (make these variable) using actual numerical estimates.. Study design: RCTs"</div>
<div><div> ABSTRACT EXAMPLE</div></div>	<div></div> <div>Title: A Randomized Controlled Trial Comparing Olanzapine and Quetiapine in Patients with Schizophrenia: Efficacy, Safety, and Patient-Reported Outcomes Objective: This randomized controlled trial aimed to compare the efficacy, safety, and patient-reported outcomes of Olanzapine and Quetiapine in patients with schizophrenia. Methods: A total of 200 eligible participants with schizophrenia were randomly assigned to receive either Olanzapine or Quetiapine. The primary outcomes assessed were reduction in Positive and Negative Syndrome Scale (PANSS) scores, occurrence of adverse events, and patient-reported quality of life using the Short Form-36 (SF-36) questionnaire. Results: Olanzapine demonstrated a greater reduction in PANSS scores (mean reduction of 30%) compared to Quetiapine (mean reduction of 25%). The incidence of treatment-related adverse events was similar between the two groups. Patient-reported quality of life significantly improved in both treatment arms, with slightly greater improvements observed in the Olanzapine group (mean SF-36 score increase of 15 points) compared to the Quetiapine group (mean SF-36 score increase of 10 points). Conclusion: This randomized controlled trial suggests that Olanzapine may be more effective in reducing symptoms of schizophrenia compared to Quetiapine. Both treatments showed improvements in patient-reported quality of life. Further research is needed to optimize treatment strategies for patients with schizophrenia.</div>
Final prompt for exclusion code: Population, relevant ICOS	

Table 2a. Example abstracts generated by ChatGPT

<div>” INSTRUCTION</div> <div>"Hey! Can you create 5 abstracts using actual medical conditions in a peer reviewed format. Ignore first-line non-small cell lung cancer when drafting the abstracts"</div>	
<div><div>ABSTRACT EXAMPLE</div><div><p>Title: "Assessment of Cognitive Impairment in Parkinson's Disease: A Cross-Sectional Study"</p><p>Abstract: Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by motor symptoms. However, non-motor symptoms, including cognitive impairment, are increasingly recognized as important contributors to disease burden. This cross-sectional study aimed to evaluate the prevalence and severity of cognitive impairment in a cohort of PD patients. Cognitive function was assessed using standardized neuropsychological tests, and demographic and clinical characteristics were collected. Results revealed a high prevalence of cognitive impairment in the PD population, with significant associations between cognitive decline and disease duration. These findings emphasize the need for routine cognitive screening and the implementation of appropriate interventions to optimize the management of PD patients.</p></div></div>	
Start prompt for exclusion code: Population, any ICOS	

Table 2b. Example abstracts generated by ChatGPT

<div>” INSTRUCTION</div> <div>Can you create 10 abstracts using actual medical conditions in a peer reviewed format. Ignore first-line non-small cell lung cancer when drafting the abstracts</div>	
<div><div>ABSTRACT EXAMPLE</div><div><p>Title: "The Impact of Hypertension on Cardiovascular Outcomes in Diabetic Patients: A Retrospective Cohort Study"</p><p>Objective: This retrospective cohort study aimed to evaluate the impact of hypertension on cardiovascular outcomes in diabetic patients. A total of 2,000 diabetic individuals were included and followed up for a median duration of 5 years. The primary outcome measure was the incidence of major adverse cardiovascular events (MACE), including myocardial infarction, stroke, and cardiovascular-related mortality.</p><p>Results: After adjusting for confounding factors, diabetic patients with hypertension demonstrated a significantly higher risk of experiencing MACE compared to those without hypertension (hazard ratio: 1.63, 95% confidence interval: 1.25-2.11). Subgroup analyses revealed that uncontrolled hypertension was associated with a further increased risk of MACE. Additionally, hypertension was significantly associated with an increased risk of individual cardiovascular events, including myocardial infarction and stroke, in diabetic patients.</p><p>Conclusion: Hypertension in diabetic patients is independently associated with a higher risk of major adverse cardiovascular events. The findings underscore the importance of aggressive blood pressure control and monitoring in this population to mitigate the burden of cardiovascular disease and improve patient outcomes.</p></div></div>	
Final prompt for exclusion code: Population, any ICOS	

Table 3a. Example abstracts generated by ChatGPT



<div>” INSTRUCTION</div> <div>"Hey! Can you create 5 abstracts that meet the following inclusion criteria using a peer-reviewed journal format Domain Inclusion criteria Population: first-line metastatic non-small cell lung cancer (use appropriate and variable synonyms for first-line setting in the title and abstract) Intervention/comparator: pharmacological treatments (make these variable) Outcomes: not any of the following: efficacy, safety or patient reported outcomes Study design: RCTs The treatment names do not have to be up to date"</div>	
<div> ABSTRACT EXAMPLE</div> <div>Title: Comparative Efficacy and Tolerability of First-line Pharmacological Treatments for Advanced Non-Small Cell Lung Cancer: A Randomized Controlled Trial Abstract: This randomized controlled trial (RCT) aimed to evaluate the comparative efficacy and tolerability of various first-line pharmacological treatments in patients with advanced non-small cell lung cancer (NSCLC). The study enrolled a diverse population of NSCLC patients in the first-line metastatic setting. The intervention arm received one of the pharmacological treatments under investigation, while the comparator arm received a standard treatment regimen. The primary outcomes assessed were not related to efficacy, safety, or patient-reported outcomes. The study design, employing a rigorous RCT methodology, aimed to provide valuable insights into the relative benefits and tolerability of different pharmacological interventions for first-line metastatic NSCLC.</div>	<div></div>
Start prompt for exclusion code: Outcome, relevant PICS	

Table 3b. Example abstracts generated by ChatGPT



<div>” INSTRUCTION</div> <div>"Create 10 abstracts that meet the following inclusion criteria using a peer-reviewed journal format. Domain Inclusion criteria Population: first-line metastatic non-small cell lung cancer (use appropriate and variable synonyms for first-line setting in the title and abstract) Intervention/comparator: use actual pharmacological treatments (make these variable and they do not have to be up to date) Outcomes: Do not mention any of the following: efficacy (OS, survival, PFS, ORR, response rate, DCR), safety (tolerability, adverse events) or patient reported outcomes (quality of life). Any other outcomes that are not clinical are okay. Report actual numerical estimates.. Study design: RCTs"</div>	
<div> ABSTRACT EXAMPLE</div> <div>Title: A Randomized Controlled Trial Investigating the Impact of First-Line Pharmacological Treatments on Healthcare Resource Utilization in Metastatic Non-Small Cell Lung Cancer Objective: This randomized controlled trial (RCT) aimed to evaluate the impact of different first-line pharmacological treatments on healthcare resource utilization in patients with metastatic non-small cell lung cancer (NSCLC). Methods: A total of 400 participants diagnosed with first-line metastatic NSCLC were randomly assigned to receive one of four pharmacological treatments: pembrolizumab, paclitaxel, bevacizumab, or erlotinib. The primary outcome measure was the number of hospitalizations due to treatment-related complications. Secondary outcomes included emergency department visits, outpatient visits, and duration of hospital stays. Results: The results demonstrated that treatment with pembrolizumab resulted in a significantly lower number of hospitalizations compared to treatment with erlotinib (mean hospitalizations: 0.9 vs. 1.8, p < 0.001). Treatment with bevacizumab showed a significantly shorter duration of hospital stays compared to paclitaxel (mean duration: 4.2 days vs. 6.8 days, p = 0.023). There were no significant differences in emergency department visits or outpatient visits between the treatment groups. Conclusion: In patients with first-line metastatic NSCLC, treatment with pembrolizumab was associated with a lower number of hospitalizations, indicating potential cost savings and reduced healthcare resource utilization. Additionally, treatment with bevacizumab resulted in shorter hospital stays compared to paclitaxel. These findings suggest that considering the impact on healthcare resource utilization may be an important factor when choosing first-line pharmacological treatments for metastatic NSCLC.</div>	<div></div>
Final prompt for exclusion code: Outcome, relevant PICS	

Table 4a. Example abstracts generated by ChatGPT

<div>” INSTRUCTION</div> <div>Hey! Can you create 5 abstracts using actual medical conditions using a peer reviewed journal format. Ignore efficacy, safety, and patient-reported outcomes when drafting the abstracts</div>	
<div><div>ABSTRACT EXAMPLE</div><div><p>Title: "The Role of Genetic Factors in the Development of Alzheimer's Disease: A Systematic Review"</p><p>Objective: This systematic review aims to investigate the role of genetic factors in the development of Alzheimer's disease (AD).</p><p>Methods: A comprehensive search was conducted in major scientific databases to identify relevant studies. The inclusion criteria encompassed original research articles focusing on genetic factors and AD. Data extraction and quality assessment were performed independently by two reviewers.</p><p>Results: A total of 50 articles met the inclusion criteria and were included in this review. The genetic factors investigated included apolipoprotein E (APOE) ε4 allele, presenilin 1 (PSEN1), and amyloid precursor protein (APP) mutations. The results indicated a significant association between the APOE ε4 allele and increased risk of AD. Additionally, mutations in PSEN1 and APP were found to contribute to early-onset familial AD. Other genetic variants, such as clusterin (CLU) and phosphatidylinositol binding clathrin assembly protein (PICALM), were also reported to be associated with AD susceptibility.</p><p>Conclusion: Genetic factors, particularly APOE ε4 allele, PSEN1, and APP mutations, play a crucial role in the development of AD. Further research is needed to elucidate the underlying mechanisms and identify potential therapeutic targets."</p></div></div>	
Start prompt for exclusion code: Outcome, any PICS	

Table 4b. Example abstracts generated by ChatGPT

<div>” INSTRUCTION</div> <div>Can you create 10 abstracts using actual medical conditions and a mix of study designs using a peer reviewed journal format. Ignore efficacy, safety, and patient-reported outcomes when drafting the abstracts</div>	
<div><div>ABSTRACT EXAMPLE</div><div><p>Title: A Randomized Controlled Trial Investigating the Impact of Physical Activity on Cardiovascular Health in Patients with Hypertension</p><p>Objective: This study aimed to assess the effect of a 12-week physical activity intervention on cardiovascular health markers in individuals diagnosed with hypertension.</p><p>Methods: A total of 100 hypertensive patients were randomly assigned to either an intervention group (n=50) or a control group (n=50). The intervention group participated in a supervised exercise program consisting of aerobic and resistance training three times per week, while the control group received standard care.</p><p>Results: After the intervention period, significant improvements in cardiovascular health markers, including blood pressure, resting heart rate, and lipid profile, were observed in the intervention group compared to the control group (p<0.05).</p><p>Conclusion: This randomized controlled trial demonstrates that a 12-week physical activity intervention can effectively improve cardiovascular health markers in individuals with hypertension. These findings suggest that incorporating regular exercise into the management of hypertension may have potential benefits for patients."</p></div></div>	
Final prompt for exclusion code: Outcome, any PICS	



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