

COMPARISON OF PERFORMANCES OF OPEN ACCESS NATURAL LANGUAGE PROCESSING BASED CHATBOT APPLICATIONS IN TRIAGE DECISIONS

Açık Erişimli Doğal Dil İşleme Tabanlı Sohbet Botu Uygulamalarının Triyaj Kararlarındaki Performanslarının Karşılaştırılması

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ABSTRACT

Objective: Being publicly available, easy to use, and continuously evolving, next-generation chatbots have the potential to be used in triage, one of the most critical functions of an Emergency Department. The aim of this study was to assess the performance of Generative Pre-trained Transformer 4 (GPT-4), Bard and Claude during decision-making for Emergency Department triage.

Material and Methods: This was a preliminary cross-sectional study conducted with 50 case scenarios. Emergency Medicine specialists determined the reference Emergency Severity Index triage category of each scenario. Subsequently, each case scenario was queried using three chatbots. Inconsistent classifications between the chatbots and references were defined as over-triage (false positive) or under-triage (false negative). The primary and secondary outcomes were the predictive performance of chatbots and the difference between them in predicting high acuity triage.

Results: F1 Scores for GPT-4, Bard, and Claude for predicting Emergency Severity Index 1 and 2 were 0.899, 0.791, and 0.865 respectively. The ROC Curve of GPT-4 for high acuity predictions showed an area under the curve (AUC) of 0.911 (95% CI: 0.814-1; $p<0.001$), while Bard showed an AUC of 0.819 (95% CI: 0.692-0.945; $p<0.001$) and for Claude this was 0.881 (95% CI: 0.768-0.994; $p<0.001$).

Conclusion: GPT-4, in its current form, was able to detect high acuity Emergency Severity Index scores in our case set and had close agreement with Emergency Medicine specialists, followed by Claude, while Bard's agreement was relatively lower. GPT-4 and Claude provided better results than Bard in case management recommendations. We believe that studies evaluating the effectiveness and limitations of chatbots in triage are important because of their future potential.

Keywords: Artificial intelligence, diagnosis, triage

ÖZ

Amaç: Herkese açık olan, kolay kullanılan ve sürekli gelişen yeni nesil sohbet botları, Acil Servisin en kritik işlevlerinden biri olan triyajda kullanılma potansiyeline sahiptir. Bu çalışmanın amacı, acil servis triyajına karar verme sırasında Generative Pre-trained Transformer 4 (GPT-4), Bard ve Claude uygulamalarının performansını değerlendirmektir.

Gereç ve Yöntemler: Bu çalışma, 50 vaka senaryosu ile yürütülen kesitsel bir ön çalışmaydı. Acil Tıp uzmanları her senaryonun referans Emergency Severity Index triyaj kategorisini belirledikten sonra, her vaka senaryosu üç sohbet botu kullanılarak sorgulandı. Sohbet botları ve referanslar arasındaki tutarsız sınıflandırmalar overtriyaj (yanlış pozitif) veya undertriyaj (yanlış negatif) olarak tanımlandı. Birincil sonlanım sohbet botlarının tahmin performansı ve ikincil sonlanım ise yüksek ciddiyetteki vakaların triyajını belirlemede aralarındaki farktı.

Bulgular: GPT-4, Bard ve Claude'nin Emergency Severity Index 1 ve 2'yi belirlemede F1 skorları sırasıyla 0,899, 0,791 ve 0,865'ti. Yüksek ciddiyet tespiti için ROC eğrilerinde; GPT-4'ün eğri altında kalan alanı (AUC) 0,911 (%95 GA: 0,814-1; $p<0.001$), Bard'ın 0,819 (%95 GA: 0,692-0,945; $p<0.001$) ve Claude'nin 0,881 idi (%95 GA: 0,768-0,994; $p<0.001$).

Sonuç: GPT-4, mevcut haliyle, vaka setimizde yüksek ciddiyetteki Emergency Severity Index skorlarını tespit edebildi ve Acil Tıp uzmanları ile yakın uyum gösterdi. Bunu Claude takip ederken, Bard ile uyumu ise nispeten daha düşüktü. GPT-4 ve Claude, vaka yönetimi önerilerinde Bard'a göre daha iyi sonuçlar verdi. Gelecekteki potansiyelleri nedeniyle, sohbet botlarının triyajdaki etkinliğini ve sınırlılıklarını değerlendiren çalışmaların önemli olduğunu düşünüyoruz.

Anahtar Kelimeler: Yapay zekâ, tanı, triyaj



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INTRODUCTION

Chatbots are computer applications designed to simulate human online conversation. Recently, many successive developments related to Chatbots have been made and this has extended even to the field of medicine, leading to an increased interest in evaluating the healthcare opportunities that can arise with the use of chatbots (1). Generative Pre-trained Transformer (GPT) is a large natural language processing model (LLM) of OpenAI, trained by Reinforcement Learning from Human Feedback (RLHF). The fourth version of the model was released on March 14, 2023, and this was claimed to be 40% more accurate than the previous version, even performing above the passing score on several standardized tests (2,3). Google's Bard and Anthropic's Claude are two recently released chatbots, similar to GPT in nature (4,5).

In triage areas of Emergency Departments (ED), medical professionals determine the urgency of patients being attended to in the light of data, including symptoms and vital signs. Multiple triage scales are used for the proper management of patient density and efficient use of resources (6). One of the most frequently used is the Emergency Severity Index (ESI) (6,7). ESI is a five-level triage system to categorize patients from level 1 (most urgent) to level 5 (least urgent), based on the acuity of their medical conditions and the resources required for their care (8). Factors such as ED crowding, training level or experience of the personnel may affect the accuracy of the triage decisions (9). The use of artificial intelligence (AI) systems in emergency triage has been studied frequently in recent years with the intention of identifying a way to help medical professionals to make rapid and accurate triage decisions (10–13). Although these studies show promising results, they are often of a retrospective nature (12,14), based on a single hospital or region (13,15), tested in only one language (12), require changes in hospital information systems and data records (10), or study datasets and code are not available (14), which ultimately make their generalization and widespread use difficult. Although they were not trained

specifically for health care, the fact that new models of open access natural language processing-based chatbot applications, namely GPT-4, Bard, and Claude, can be used by any user without requiring additional training or major changes in hospital information systems, are constantly evolving with feedback data, and not restricted to the English language (except Bard), gives them a potential to find a unique place in emergency triage (1,2,4,5).

The aim of this study was to determine Emergency Severity Index (ESI) triage estimation performances of OpenAI's GPT-4, Google's Bard, and Anthropic's Claude chatbots in case scenarios based on ED triage vignettes that included presenting symptoms and vital signs.

MATERIALS AND METHODS

Study Design and Setting

This was a preliminary cross-sectional study conducted with the case scenarios generated by Emergency Medicine (EM) specialists and based on the cases provided in the ESI handbook v4 (8). The study protocol was approved by the Kocaeli University Non-Interventional Clinical Research Ethics Committee (Date: 4/6/2023, Number: GOKAEK-2023/07.10). Since the study is experimental in nature and was not performed on humans or animals, informed consent was not required.

Study Protocol

The scenarios were limited to presenting symptoms and vital signs (Supplement 1). A total of 50 case scenarios were prepared. The case scenarios were electronically prepared and distributed to two independent EM specialists who were experts in the ESI triage scale to determine their triage category as multiple-choice questions. A third independent EM specialist was consulted in the case of conflicting categorization. ESI stages were defined as follow (8):

ESI Level 1 (Immediate) - Patients with life-threatening conditions requiring immediate medical intervention.

ESI Level 2 (Emergent) - Patients with high-risk situations or severe distress, necessitating rapid attention.

ESI Level 3 (Urgent) - Patients with multiple or complex problems, who require multiple resources but can tolerate a short wait.

ESI Level 4 (Semi-Urgent) - Patients with less complex issues, needing one resource and able to wait longer for care.

ESI Level 5 (Non-Urgent) - Patients with minor complaints, requiring minimal resources and able to wait without significant risk.

The agreed results of each case scenario were assumed as the reference triage category. Subsequently, each case scenario was queried with GPT-4, Bard, and Claude to determine the chatbot-determined triage category (Figure 1). The answers of each program were recorded as index triage categories (Supplement 2). Inconsistent classifications between the chatbots and references were defined as over-triage (false positive) or under-triage (false negative). For the prediction performance of high acuity cases, a two-tier classification was carried out. ESI-1 and ESI-2 were defined as high acuity, while ESI-3, ESI-4, and ESI-5 categories were defined as moderate and low acuity levels (16).

Outcome Measures

The primary outcome was the predictive performance of GPT-4, Bard, and Claude for each ESI triage category. The secondary outcome was the difference between GPT-4, Bard, and Claude in predicting high acuity (ESI-1 and ESI-2) triage.

Data Analysis

Interrater reliability was determined using Cohen’s Kappa. A confusion matrix was constructed with the predictions of GPT-4, Bard, and the reference triage categories. The precision, recall and specificity and F1 scores for each triage category were calculated. Calculation formulas were as follows:

- Precision (positive predictive value) = True positive / (true positive + false positive)
- Recall (sensitivity) = True positive / (true positive + false negative)

- Specificity = True negative / (true negative + false positive)
- F1 score = 2*[(precision*recall) / (precision+recall)]

The Receiver Operator Characteristic (ROC) curves of GPT-4 Bard and Claude for the prediction of high acuity patients (ESI-1 and ESI-2) were constructed. Area under the curves (AUC) were calculated.

RESULTS

A total of 50 case scenarios were analyzed by EM specialists and the three chatbots. Of the scenarios, nine were expert-evaluated as ESI category 1, 12 as category 2, 10 as category 3, six as category 4, and 13 as category 5, by the EM specialists. Distribution of reference and chatbot-determined triage levels are shown in Figure 1 and Table 1.

Table 1: Distribution of results regarding ESI levels

Chatbot-determined triage	Reference Triage					
	1	2	3	4	5	
1	GPT-4	7	1	0	0	0
	Bard	5	2	1	0	0
	Claude	6	0	0	0	0
2	GPT-4	2	8	0	1	0
	Bard	3	7	0	2	2
	Claude	3	7	0	0	0
3	GPT-4	0	2	1	6	1
	Bard	1	3	4	6	10
	Claude	0	4	8	2	3
4	GPT-4	0	1	4	3	8
	Bard	0	0	1	2	1
	Claude	0	1	2	4	10
5	GPT-4	0	0	1	0	4
	Bard	0	0	0	0	0
	Claude	0	0	0	0	0

ESI: Emergency Severity Index, GPT-4: Generative Pre-trained Transformer 4

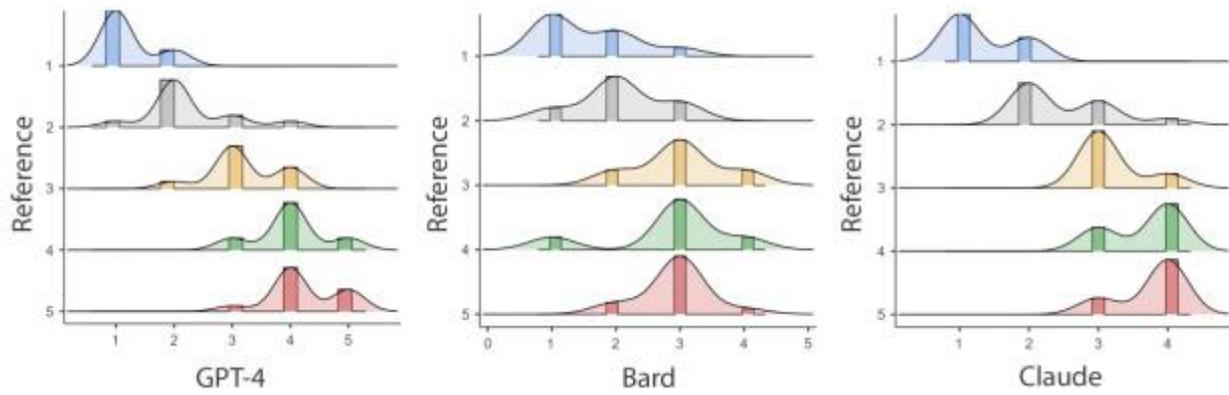


Figure 1: Distribution of chatbot-determined triage levels

Predictive performances of GPT-4, Bard, and Claude for each ESI level are shown in Table 2. For ESI 1, Claude showed the highest precision (100%) and specificity (100%), while GPT-4 had the highest recall (sensitivity) at 77.8%. For ESI 2, GPT-4 showed the highest precision, recall and specificity (72.7%, 66.7%, 92.1%, respectively). However, GPT-4 showed a higher F1 scores in all triage levels (Table 2).

Table 2: Predictive performance of chatbots for each ESI triage category

		ESI 1	ESI 2	ESI 3	ESI 4	ESI 5
Precision (%)	GPT-4	87.5	72.7	60	25	80
	Bard	62.5	50	25	25	NA
	Claude	100	70	47.1	23.5	NA
Recall (%)	GPT-4	77.8	66.7	60	66.7	30.8
	Bard	55.6	58.3	60	16.7	NA
	Claude	66.7	58.3	80	66.7	NA
Specificity (%)	GPT-4	97.6	92.1	90	72.7	97.3
	Bard	92.7	81.6	55	93.2	NA
	Claude	100	92.1	77.5	70.5	NA
Accuracy (%)	GPT-4	94	86	84	72	80
	Bard	86	76	56	84	NA
	Claude	94	84	78	70	NA
F1 Score	GPT-4	0.824	0.696	0.600	0.364	0.445
	Bard	0.588	0.538	0.353	0.200	NA
	Claude	0.800	0.636	0.593	0.348	NA

ESI: Emergency Severity Index, GPT-4: Generative Pre-trained Transformer 4, NA: Non applicable

In the 2-tier triage classification, 21 scenarios were labeled as high acuity, while 29 scenarios were in the moderate and low acuity class. GPT-4 showed a higher performance for predicting high acuity triage followed by Claude and then Bard (F1 score of 0.900, 0.865, and 0.791, respectively). The confusion matrix and predictive performances are shown in Table 3 and Table 4. Reliability analysis showed a Cohen’s kappa of 0.834 for GPT-4, 0.633 for Bard and 0.788 for Claude and EM specialists.

Table 3: Confusion matrix for high and low acuity prediction of chatbots

Chatbot-determined triage	Reference triage		
	High Acuity (ESI 1 and 2)	Moderate and low Acuity (ESI 3 to 5)	
High Acuity (ESI 1 and 2)	GPT-4	18	1
	Bard	17	5
	Claude	16	0
Moderate and low Acuity (ESI 3 to 5)	GPT-4	3	28
	Bard	4	24
	Claude	5	29

ESI: Emergency Severity Index, GPT-4: Generative Pre-trained Transformer 4

Table 4: Predictive performance of chatbots for 2-tier triage

		High Acuity (ESI 1 and 2)	Moderate and low Acuity (ESI 3 to 5)
Precision (%)	GPT-4	94.7	90.3
	Bard	77.3	58
	Claude	100	85.3
Recall (%)	GPT-4	85.7	69.6
	Bard	81	82.8
	Claude	76.2	100
Specificity (%)	GPT-4	96.6	85.7
	Bard	82.8	81
	Claude	100	76.2
Accuracy (%)	GPT-4	92	92
	Bard	82	82
	Claude	90	90
F1 Scores	GPT-4	0.900	0.786
	Bard	0.791	0.682
	Claude	0.865	0.921

ESI: Emergency Severity Index, GPT-4: Generative Pre-trained Transformer 4, NA: Non applicable

The ROC curve of GPT-4 for high acuity predictions showed an area under the curve (AUC) of 0.911 (95% CI: 0.814-1; $p < 0.001$), while the ROC curve of Bard showed an AUC of 0.819 (95% CI: 0.692-0.945; $p < 0.001$) and for Claude these values were 0.881 (95% CI: 0.768-0.994; $p < 0.001$) (Figure 2).

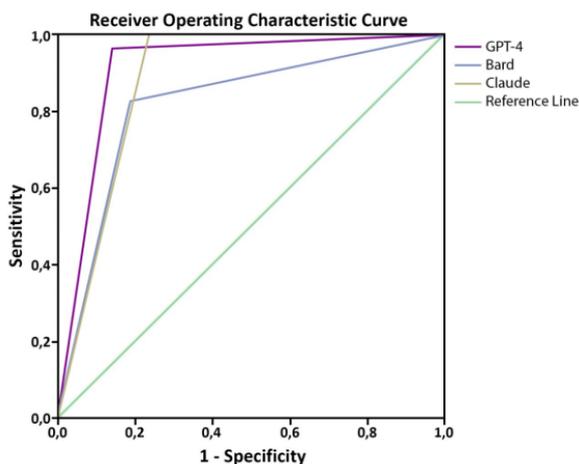


Figure 2: ROC curve for GPT-4, Bard and Claude for determining high-acuity triage level

Interpretation and reasoning

The reference diagnosis list and the preliminary diagnoses provided by the applications are given in Supplement 3.

While the answers given by GPT-4 and Claude to the questions and the scores seemed more consistent, it was observed that there was often a discrepancy between Bard's answers and scores. For example, in question 36, Bard and Claude were able to correctly assess the presence of a foreign body in the eye, while GPT-4 did not mention this, evaluating the case as "eye burning due to irritation". However, although Bard was correct in the preliminary diagnosis, it assigned the wrong score (ESI 3), while GPT-4 and Claude gave a score consistent with their own interpretation.

Again, for questions 41 and 42, Bard over-triaged, although it was correct on the preliminary diagnosis, that the patient needed only one resource, and that there was no need for urgent intervention. In question 43, it answered that there was a risk of deterioration for a "sore throat" and gave ESI 2 triage to the patient. In question 45, Bard assigned an ESI 3 score for "tooth decay", while GPT-4 gave comprehensive and accurate results as "no need for additional resources in the emergency department, pain management and discharge with a follow-up recommendation to the dentist".

GPT-4 and Claude give more accurate results regarding the methods to be used for diagnosis. For example, all three applications are able to correctly identify the source of the pain as gallstone in their answers to question 24, but GPT-4 mentioned an ultrasound scan will be required. In question 32, both GPT-4 and Bard correctly identify the presence of an abscess in the nail bed, but Bard gave the patient an ESI 3 score, stating that the patient needs an imaging method or lab test and should be seen within 30 minutes. GPT-4 and Claude correctly determined that only incision and drainage were needed.

DISCUSSION

In this study the performance of GPT-4, Claude, and Bard chatbots in predicting triage categories based on the ESI triage system was compared. Results showed that GPT-4 outperformed Claude and Bard in predicting ESI levels, with higher F1 scores across all triage levels. Furthermore, in the two-tier classification system, GPT-4 demonstrated superior performance in predicting high

acuity triage cases, followed by Claude and Bard. These findings suggest that GPT-4 exhibits promising potential for improving triage decision-making in emergency care settings.

The use of LLMs has become widespread in recent years, and models such as Bard and ChatGPT that can be used easily by everyone without the need for additional training have become a topic of research in healthcare (17,18). Studies have investigated the performance of LLMs for analyzing clinical documents, diagnosing, and admission or triage predictions (1,14,19).

Emergency department (ED) crowding and waiting times are major problems worldwide, and effective triage is seen as a crucial step in mitigating these issues (20). The ESI is one of the most widely used emergency triage systems globally (7,21). However, the accuracy of ESI depends on the practitioner, with factors such as patient age, comorbidities, mental status, and incorrect clinical assessment of vital signs potentially causing errors in triage with ESI (21). Despite these potential sources of error, inter-rater reliability has been shown to be high (22).

While numerous studies involving the chatbots mentioned in our article are either preliminary or preprinted studies, there is currently no published study that compares GPT-4, Bard, and Claude in the context of triage. Prior research into the application of LLMs in emergency triage has primarily focused on triage scoring, hospitalization estimation, and critical illness estimation (14). In a systematic review of 19 studies, LLMs were found to have an AUC of 0.89-0.96 in estimating triage data (14). Google BERT, for instance, demonstrated a 0.92 accuracy in tagging complaint data in 2020 (17). The model of Wang et al. that estimated ESI scores exhibited high performance with an AUC of 0.96 (23), while the model of Ivanov et al. accurately predicted the ESI score in 75.9% of cases, surpassing nurses and performing on a par with physicians, particularly in identifying high acuity patients (15). In the study of Tahayori et al., which compared their LLM model to emergency medicine (EM) physicians, the

algorithm achieved 83% accuracy, 0.88 AUC, and sensitivity, specificity, precision, and F1 scores of 72%, 86%, 56%, and 63%, respectively (24). The present study found that all three models—GPT-4, Claude, and Bard—outperformed the aforementioned model in terms of accuracy and F1 scores.

In the context of ESI triage classification, accurately determining each level is important, but even more critical is ascertaining whether a case falls within the high acuity (triage levels 1-2) or moderate-to-low acuity (triage levels 3-5) categories, as this determines the need for immediate treatment (22). Our study revealed a high level of agreement between the reference values and GPT-4 when assessed these two groups, with 94.7% precision and 85.7% recall. There was also a high agreement with Claude (Precision: 100%, Recall: 76.2%), although the performance of Bard was lower (Precision: 77.3%, Recall: 81%). The accuracy of GPT-4, Claude, and Bard for the high acuity group were 92%, 90%, and 82%, respectively. The F1 score, which symmetrically represents precision and recall, demonstrated that GPT-4, Claude, and Bard had scores of 0.899, 0.865, and 0.791, respectively, for predicting high acuity cases. These results indicate that all applications perform well in high acuity cases, with GPT-4 exhibiting a slightly superior performance.

Various limitations and potential safety risks of LLMs are explained by the developers (2). Among these, we believe that special attention should be paid to “hallucinations”, overreliance, and data security. “Hallucination” is the risk that applications will produce results that seem quite convincing but are clearly false according to their training data. As users' trust in applications increases, the risk of overreliance increases, causing them to directly use the outputs they receive from applications without questioning them first. This situation may result in the deterioration of the quality of application responses, as applications are constantly fed by user feedback. For example, the fact that these applications facilitate the work of clinicians in triage or diagnosis and treatment recommendations may lead to a stage where the outputs of the applications are accepted

as correct without questioning, the level of knowledge of the clinicians about the guides decreases, and the applications lose the feedback to give accurate results due to the continuous reinforcement with wrong outputs (2,25). Since applications have the opportunity to save and use input data, it is also important that the questions presented to the applications do not contain personal information about the patients.

Our study has numerous limitations. First, it is dependent on the results of the compared applications at the time of the study. The performances of the applications may change depending on the data they are trained for after the study. In addition, chatbots mentioned in this study are not trained specifically with health data or primarily aim to be used in healthcare. They should be expected to perform better if they were fine-tuned with a focus on healthcare. This study, which was performed with a limited number of patient scenarios, may need validation with real data. The validation of the scenarios specified in the ESI handbook cannot be performed due to their potential to be included among the data on which chatbots are trained ("Contamination" risk). Triage guides have been prepared to guide experts. For this reason, it can be expected that there will be differences between the expert decisions according to expert opinions and the working environment conditions in which the guides are used. The output of the model is dependent on the prompt that is used as input, as well as the supplied context and the presence or absence of examples (so called Few Shot Learning or FSL). As greater understanding of the most effective way to prompt models emerges, one might assume improved performance. This is recommended as a subject of future study.

This study demonstrated that GPT-4 effectively detected high acuity ESI scores with strong agreement with emergency medicine specialists, outperforming Claude and Bard. Furthermore, GPT-4 and Claude offered better case management recommendations than Bard. Evaluating the effectiveness and limitations of natural language processing-based chatbot applications is

becoming more important due to their potential role in future triage systems.

Conflict of Interest: The authors İS, GBB and İÜÖ have no commercial associations or sources of support that might pose a conflict of interest. KG is the founder of Curistica, a Digital Health & Innovation Consultancy. He worked for Babylon company as Director of Digital Health, Innovation, and Clinical Product Management, and worked on the company's symptom checker. He no longer works for this company (Left in Dec 2022). He does not work for Google, Microsoft, Anthropic, or OpenAI, nor has he done any paid work for them.

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Concept/Design: İS, GBB, and İÜÖ;
Analysis/Interpretation: İS, GBB, İÜÖ, KG;
Data Collection: İS, KG;
Writer: İS, GBB, and İÜÖ;
Critical Review: İS, GBB, and İÜÖ;
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Supplement 1: Triage scenarios

1- A 30-year-old female patient is brought to the ED due to sudden onset of unconsciousness. On her arrival she appears comatose. Pupils were miotic, GCS: 6, BP: 100/60 mmHg, HR: 110, RR: 14, SpO₂: 90%, T: 98° F. First responders told you that they found an empty syringe at the scene.

2- A 60-year-old male patient presents to the emergency department with complaints of fainting and impaired consciousness. Vital signs on arrival: BP: 70/30 mmHg, HR: 25/min, RR: 15, SpO₂: 99%, T: 98° F.

3- A 90-year-old male patient is brought to the ED by ambulance. It is stated that the patient fainted in the toilet and his stool seemed bloody. He seems pale. Intense red blood is seen on the patient's diaper. Vital signs on arrival: BP: 65/30 mmHg, HR: 140/min, RR: 25. Medication history is notable for anticoagulants.

4- A 25-year-old male patient is brought to the ED by ambulance due to a gunshot wound to the abdomen. On arrival, he is conscious and oriented. The bullet entrance wound is located on the left upper quadrant of the abdomen. No other wounds were found in the primary evaluation. BP: 80/50 mmHg, HR: 120/min, RR: 20/min. It is learned that up to 500 ml of fluid was given during the transfer.

5- A 60-year-old female patient with a diagnosis of COPD is brought to the ED with respiratory distress. On arrival, her oxygen saturation is measured as 70%. BP: 90/55 mmHg, HR: 115/min, RR: 25/min.

6- A 65-year-old female patient presents with pressure-like pain located in the middle of the chest that has been going on for 1 hour. She appears to have a cold sweat. BP: 60/palp, heart rate: 140/min, RR: 25.

7- A 50-year-old patient with a history of heart failure and hypertension is brought to the ED with shortness of breath. BP: 190/90 mmHg, HR: 100/min, SpO₂: 78 %, RR: 30/min. A gasping sound when breathing is notable.

8- A 20-year-old male patient was found unconscious at home. Empty boxes of prescribed drugs he used for the treatment of depression were found next to him. On arrival he appears comatose. Pupils are miotic, GCS: 5, BP: 90/60 mmHg, HR: 110, RR: 10, SpO₂: 89%.

9- EMS is activated for a 30-year-old female patient who was found unconscious at home. First responders found the patient was in cardiac arrest and spontaneous circulation was established with successful CPR. On arrival to the ED BP: 90/50 mmHg, HR: 130, spo₂: 99%.

10- A 70-year-old patient who presented to the ED with abdominal pain. Seems pale. Capillary refill time is prolonged. Vital signs on arrival: BP: 60/palp, HR: 130, spo₂: 97%, T: 36° C.

11- A 36-year-old female presents to the ED. She has a history of severe allergic reaction due to a bee sting. She told you that a bee stung her arm. In a couple of minutes, she felt dizzy and nauseous. Vital Signs: BP 145/74, HR 117, RR 19, SpO₂: 98%, T: 97° F.

12- A 50-year-old male patient is admitted to the ED with complaints of palpitation and fainting that has been going on for a few hours. Vital Signs: BP: 100/40 mmHg, HR: 190, RR: 15, SpO₂: 99%, T: 98° F.

13- A 40-year-old female patient presents with pressure-like pain in the middle of the chest that has been going on for 2 hours. BP: 130/80 mmHg, HR: 70/min, RR: 14, T: 36.5° C.

14- A 30-year-old female patient comes with a sudden onset of severe headache and nausea after lifting a heavy object. She is conscious, oriented and cooperative and states that the pain is the most severe pain of her life. BP: 120/75 mmHg, HR: 80, RR: 15, T: 36.5° C.

15- A 25-year-old physician comes to the ED after a needle used while administering medication to her patient accidentally stabbed her hand.

16- A 26-year-old patient, who is 20 weeks pregnant, presents to the ED with the complaint of pain and "water breaking ". BP: 120/85 mmHg, HR: 90, RR: 15, T: 36.5° C.

17- A 50-year-old male patient presents to the ED with complaints of high fever, and chills. It is learned that he is on chemotherapy for lung cancer. BP: 120/69 mmHg, HR: 105, SpO₂: 96, RR: 16, T: 38.8° C.

18- An 18-year-old female patient was rescued by her relatives after an attempt to hang herself at home and brought to the ED by ambulance. There was no loss of consciousness. No markings are present on her neck. BP: 130/75 mmHg, HR: 100, SpO₂: 98, RR: 14, T: 36.8° C.

19- A 90-year-old male patient is brought to the ED because of the confusion that started on the same day. On arrival he is conscious, but gives confused answers. BP: 120/69 mmHg, HR: 80, SpO₂: 98, RR: 14, T: 36.6° C.

20- A 40-year-old female patient presents with severe left flank pain. Her skin looks pale. In her medical history, it is learned that she presented to the ED due to kidney stones before. Pain score is 9/10. BP: 140/90 mmHg, HR: 110, SpO₂: 98, RR: 17, T: 36.6 C.

21- A 20-year-old male patient presents to the ED with complaints of nausea and vomiting that started in the morning and pain localized to the right lower quadrant within hours. Pain score is 6/10. BP: 130/90 mmHg, heart rate: 100, SpO₂: 98, RR: 16, T: 36.4° C.

- 22- A 20-year-old male patient presents to the ED with the suspicion of a fracture of the forearm after falling on his arm while playing basketball. A prominent displaced fracture is observed on the proximal wrist. Radial pulse is palpable and sensation and circulation are evaluated as normal.
- 23- A 34-year-old female patient comes with complaints of high fever and cough for two days. Describes chest pain that increases with coughing. She seems healthy. BP: 120/90 mmHg, HR: 100, SpO2: 98, RR: 16, T: 38.4° C.
- 24- A 40-year-old female patient presents with the complaint of pain in the upper quadrants of the abdomen that started after lunch today. She has a history of gallstones and DM in her history. BP: 130/80 mmHg, heart rate: 87, SpO2: 98, RR: 14, T: 36.2° C.
- 25- A 27-year-old female patient presents to the ED with complaints of nausea, vomiting and diarrhea that started about 1 day ago. She describes abdominal pain that is relieved by diarrhea and is not very severe. A few hours before her symptoms started, she had eaten a meal that "tasted strange". Diarrhea is watery and includes mucus and does not contain blood. Her skin appears dry but turgor is normal. BP: 140/90 mmHg, heart rate: 89, SpO2: 99, RR: 15, T: 36.4° C.
- 26- A 35-year-old female patient is presented to the ED due to the pain in her left leg for 2 days. She previously had traveled on intercontinental flights. The left leg appears to be edematous. Distal pulses are palpable. On examination, the Homans test is positive. BP: 130/88 mmHg, heart rate: 85, SpO2: 97, RR: 15, T: 36.4° C.
- 27- A 55-year-old male patient comes to the ED with the complaint of shortness of breath during exertion. No active complaints at the time of presentation. He states that he has arrhythmia and hypertension in his medical history. He doesn't use prescribed drugs. BP: 120/60 mmHg, HR: 97, SpO2: 95, RR: 16, T: 36.4° C.
- 28- A 45-year-old female patient is brought to the ED by ambulance for falling from the first floor balcony. She has an open fracture in her left leg. She states that she fell on her left foot and describes no other injury. She has not lost consciousness. Pain Score: 9/10. BP: 110/80 mmHg, HR: 100, SpO2: 99, RR: 15, T: 36.4° C.
- 29- A 3-year-old male patient is brought in with the complaint of slipping his foot and hitting his head on the cabinet door. There is a superficial laceration in the frontal head. He is alert. Family does not describe loss of consciousness. The family was worried because he vomited several times.
- 30- A 24-year-old female patient presents to the ED with severe abdominal pain. It is learned that there is a delay in menstruation and that the pregnancy test she did 2 days ago was positive. BP: 110/64 mmHg, HR: 70, RR: 14, T: 36.5° C.
- 31- A 22-year-old male patient comes with pain around the ankle following falling while running. No open wounds or deformity. Pain score is 8/10.
- 32- A 30-year-old male patient presents with swelling in the nail bed of the left index finger. The appearance of the abscess formed within two days. He complains of pain and throbbing. He has no fever.
- 33- A 40-year-old female patient comes with complaints of frequent and painful urination. No known medical condition. She does not describe abdominal pain. BP: 120/90 mmHg, HR: 70, SpO2: 99, RR: 14, T: 36.4° C.
- 34- A 15-year-old male patient comes with a complaint of edema in the nose after being hit with a ball while playing football. No deformity. No active nosebleeds. No history of syncope. No additional complaints. Oriented and cooperative. BP: 110/60 mmHg, HR: 70, SpO2: 99, RR: 14, T: 36.5° C.
- 35- A 23-year-old female patient fell down while jogging. Presents to the ED due to a superficial laceration on the forearm. Range of motion of joints is normal. She does not describe pain in the extremity. There is no active bleeding from the wound. There is a simple superficial laceration of approximately 3-4 cm in length.
- 36- A 30-year-old male patient comes with the complaint of eye itching after walking in windy weather. Thinks a particle of dust got in his eye. No known medical history. Pain score: 3/10.
- 37- A 77-year-old female patient with a history of heart valve replacement and on anticoagulants presents to the ED with a couple of bruises in her legs. No additional complaints. Describes no bleeding. BP: 110/75 mmHg, HR: 80, SpO2: 99, RR: 14, T: 36.5° C.
- 38- A 43-year-old male patient came to the ED because of an accidental knife cut on his index finger. The bleeding stopped with the dressing he applied at home. The cut seems superficial but may need some sutures. Distal sensory and circulatory examination is normal. Tendons and nerves seem intact. BP: 110/80 mmHg, HR: 80, SpO2: 99, RR: 14, T: 36.5° C.
- 39- A 60-year-old female patient comes because a splinter penetrated her foot while walking. It is seen that there is a splinter located on the sole of the foot which is protruding from the skin.
- 40- A 20-year-old male patient, who describes he has lost taste and smell for two days and suspects that he has contacted with COVID-19, is presented to the ED. He has no medical history. Respiratory sounds are normal. Seems healthy. BP: 130/85 mmHg, HR: 73, SpO2: 99, RR: 14, T: 36.7° C
- 41- An 8-year-old male patient presents with a burn with an area of 3 cm² due to scald injury on his left forearm the day before. No bullae. Pain score: 3/10.

- 42- A 10-year-old male patient comes to the Emergency Department with the complaint of itching and redness in both eyes. He has no fever. Vital parameters are normal. Does not describe pain.
- 43- A 40-year-old female patient presents to the ED with a sore throat for 3 days. No swallowing difficulties or hoarseness. Examination of the throat is normal. BP: 120/75 mmHg, HR: 80, SpO2: 98, RR: 14, T: 36.8° C.
- 44- A 20-year-old female patient has a history of nickel allergy. After wearing a metal bracelet, she complains of itching and redness on the area which contacts with the bracelet. No systemic reaction.
- 45- A 50-year-old female patient with caries on her left molar teeth comes with the complaint of pain in the same area that starts while eating. No facial swelling. Pain score: 4/10. No fever.
- 46- A 2-year-old female patient is brought to the ED with a runny nose and vomiting. She looks active and alert. Her mother states that her appetite is normal. Seems hydrated.
- 47- A 27-year-old female patient presents with complaints of pain in both legs with movement and palpation, which started one day after heavy exercise. BP: 120/90 mmHg, HR: 70, SpO2: 99, RR: 14, T: 36.4° C. No difference in diameter between the two legs. Urine color is normal.
- 48- A 10-year-old male patient presents with swelling in the nail bed of the right hand thumb. There is no pus-filled blister. He has no fever.
- 49- An 18-year-old female patient presented to the ED due to stepping on a rusty nail. On inspection, you can not see a wound. She has no additional complaints and no fever.
- 50- A 70-year-old male patient comes with pain on the left big toe while walking. He states that his complaints have been going on for about a few weeks. On palpation, a hard dark lesion is present located under the left big toe.

ED: Emergency Department, GCS: Glasgow Coma Scale, BP: Blood Pressure, HR: Heart Rate, RR: Respiratory Rate, T: Temperature, COPD: Chronic obstructive pulmonary disease, DM: Diabetes Mellitus

Supplement 2: Reference and index triage categories and answers

NO	Ref. ESI outcome	BARD	GPT-4	Claude
1	1	Based on the information provided, the patient's ESI score is 1. The patient is unconscious and has miotic pupils, which are signs of a serious medical condition. The patient also has a low blood pressure, fast heart rate, and low oxygen saturation. These findings suggest that the patient is in need of immediate medical attention. The patient's ESI score is 1 because she is an immediate, life-saving intervention required without delay. The patient's condition is likely due to a drug overdose or a medical condition such as a stroke or a brain aneurysm. The patient needs to be stabilized and then transferred to a higher level of care, such as an intensive care unit.	ESI 1 - Immediate, life-saving intervention required without delay. The patient is comatose, has a low GCS of 6, and low SpO2 of 90%. The presence of an empty syringe at the scene suggests possible drug overdose, which requires immediate intervention to stabilize and manage the patient's condition.	Based on the information provided, I would triage this patient as ESI Level 1, as follows: ESI Level 1: The patient is comatose with GCS of 6 indicating critical illness. Major deviations in vital signs including hypotension, tachycardia, and hypoxia requiring immediate intervention. The history of an empty syringe at the scene raises suspicion of drug overdose which requires emergent care and close monitoring. This patient requires immediate life-saving interventions and should be the top priority. ESI Level 1 is most appropriate.
2	1	Based on the vital signs and history, this patient is an ESI 1. He is experiencing severe hypotension and bradycardia, which are life-threatening conditions. He needs immediate medical attention, including intravenous fluids and medications. The ESI 1 level is used for patients	ESI 1 - Immediate, life-saving intervention required without delay. The patient has a significantly low BP of 70/30 mmHg and an abnormally slow HR of 25/min, indicating potential cardiogenic shock or another life-threatening condition. Immediate intervention is necessary to	Based on the presented case, I would assign an ESI level of 1 to this patient, indicating a resuscitation priority. Justification: The patient is presenting with impaired consciousness (not alert and not responding to verbal stimuli).

		<p>who are experiencing immediate, life-threatening conditions. These patients need immediate medical attention and may require life-saving interventions. Some examples of ESI 1 patients include cardiac arrest, severe bleeding, and airway obstruction.</p> <p>The ESI 1 level is the most urgent level on the ESI scale. Patients who are assigned to this level should be seen by a doctor as soon as possible.</p>	<p>stabilize the patient and address the underlying cause.</p>	<p>This meets the criteria for ESI level 1.</p> <p>The patient also has hypotension (BP 70/30 mmHg) which is an unstable vital sign and indicates a critical condition requiring immediate attention.</p> <p>The patient's bradycardia (HR 25/min) also indicates acute clinical instability which requires resuscitation.</p> <p>The presentation of syncope (fainting) along with the other unstable clinical indicators strongly suggests a life-threatening condition that warrants emergent assessment and treatment.</p> <p>So in summary, the patient's presentation with impaired consciousness, hypotension and bradycardia necessitates immediate resuscitation and qualifies for ESI level 1 triage priority.</p>
3	1	<p>Based on the information provided, I would assign this patient an ESI score of 2. The patient is an elderly male with a history of anticoagulants who has fainted and has bloody stool. He is pale and his vital signs are unstable. These findings suggest that the patient may be experiencing a serious medical condition, such as a bleeding ulcer or a heart attack. The patient needs immediate medical attention and should be triaged to a higher level of care.</p> <p>The ESI rules are a tool that can be used to triage patients in the emergency department. They are based on the severity of the patient's condition and the resources that they require. An ESI score of 1 indicates that the patient is in immediate danger and requires immediate medical attention. An ESI score of 2 indicates that the patient is in high risk of deterioration and requires urgent medical attention. An ESI score of 3 indicates that the patient is stable but requires multiple resources to investigate or treat. An ESI score of 4 indicates that the patient is stable and requires only one resource to investigate or treat. An ESI score of 5 indicates that the patient is stable and requires no resources to investigate or treat.</p> <p>In this case, the patient meets the criteria for an ESI score of 2. He is an elderly male with a history of anticoagulants who has fainted and has bloody stool. He is pale and his vital signs are unstable. These findings suggest that the patient may be experiencing a serious medical condition, such as a bleeding ulcer or a heart attack. The patient needs</p>	<p>ESI 1 - Immediate, life-saving intervention required without delay. The patient presents with bloody stool, pallor, and intense red blood in the diaper, which suggest active bleeding. Additionally, the patient has a low BP of 65/30 mmHg, an elevated HR of 140/min, and a history of anticoagulant use. These factors indicate a life-threatening hemorrhage, necessitating immediate intervention to stabilize the patient and manage the bleeding.</p>	<p>Based on the provided case details, I would assign an ESI triage level of 1 to this patient, indicating that this is an immediate/resuscitation priority patient requiring immediate medical attention.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is showing signs of severe hypovolemic shock with a systolic BP of 65 mmHg and tachycardia, indicating acute blood loss. - There is evidence of lower GI bleeding based on the bloody stool and bloody diaper. The anticoagulant use puts the patient at high risk of severe bleeding. - The patient's age of 90 years old also places him at higher risk of hemodynamic instability from blood loss and complications. - An ESI level 1 triage indicates a need for immediate resuscitation and treatment to prevent imminent risk to life or limb. This patient meets several criteria indicating a need for emergent stabilization and management of the bleeding.

		immediate medical attention and should be triaged to a higher level of care.		
4	1	<p>ESI 1</p> <p>This patient is a 25-year-old male with a gunshot wound to the abdomen. He is conscious and oriented, but his vital signs are unstable. He has lost a significant amount of blood and is in need of immediate life-saving intervention. He should be triaged as ESI 1 and given immediate attention.</p> <p>Justification:</p> <p>This patient is in immediate danger of life and limb. His vital signs are unstable and he has lost a significant amount of blood. He is in need of immediate life-saving intervention. He should be triaged as ESI 1 and given immediate attention.</p>	<p>ESI 2 - High risk of deterioration, or signs of a time-critical problem. The patient has a gunshot wound to the abdomen, which can potentially cause life-threatening internal injuries. His low BP of 80/50 mmHg and elevated HR of 120/min suggest the possibility of ongoing blood loss or hemodynamic instability. While the patient is conscious and oriented at this time, his condition could deteriorate rapidly, and he requires urgent evaluation and treatment.</p>	<p>Based on the description, this patient would have an ESI score of 1, indicating an immediate life-threatening condition requiring immediate physician assessment and treatment.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient has a gunshot wound to the abdomen which is a serious traumatic injury that can cause life-threatening internal bleeding. - Although the patient is currently conscious and oriented, the vital signs show hypotension and tachycardia indicating potential hypovolemic shock from blood loss. - Despite receiving fluids during transfer, the patient's blood pressure remains low. - Given the severity and urgency of the condition, this patient warrants immediate physician assessment, resuscitation and likely emergency surgery. Therefore ESI level 1 is most appropriate.
5	2	<p>The patient is a 60-year-old female with a diagnosis of COPD who is presenting with respiratory distress. Her oxygen saturation is 70%, her blood pressure is 90/55 mmHg, her heart rate is 115/min, and her respiratory rate is 25/min. Based on this information, I would assign her an ESI score of 2. She is at high risk of deterioration, and she requires immediate intervention.</p> <p>The patient's oxygen saturation is below 80%, which is a critical value. Her blood pressure is low, her heart rate is high, and her respiratory rate is high. These are all signs of respiratory distress. She is at risk of developing respiratory failure, which is a life-threatening condition.</p> <p>The patient needs to be treated immediately. She will need to be given oxygen, and she may also need to be given medication to help her breathe. She may also need to be hospitalized.</p> <p>I would recommend that the patient be triaged to the emergency department's resuscitation bay. She should be seen by a doctor immediately.</p>	<p>ESI 2 - High risk of deterioration, as the patient has a history of COPD and is experiencing respiratory distress with low oxygen saturation, low blood pressure, and an elevated heart rate.</p>	<p>Based on the information provided, I would assign this patient an ESI score of 2, indicating a high-urgency patient.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient has a significant medical condition (COPD) with respiratory distress and hypoxemia (SpO2 70%). - Vital signs indicate potential instability: Tachycardia (HR 115), increased respiratory rate (25/min), mild hypotension (BP 90/55). - Given the respiratory distress and abnormal vitals, this patient needs prompt medical assessment and treatment, consistent with an ESI level 2. Stabilization and respiratory support are likely needed.

6	1	<p>ESI score: 2 Justification: The patient is a 65-year-old female with a history of chest pain that has been going on for 1 hour. She is experiencing pressure-like pain, has a cold sweat, and her vital signs are abnormal. These findings are consistent with a heart attack, which is a time-critical problem. The patient will need to be evaluated by a cardiologist immediately. The ESI scale is a tool used by emergency physicians to triage patients according to the severity of their condition. ESI 1 is the highest level of severity, and ESI 5 is the lowest. ESI 2 indicates that a patient is at high risk of deterioration or has signs of a time-critical problem. This means that the patient needs to be evaluated and treated immediately.</p>	<p>ESI 1 - Immediate, life-saving intervention required without delay. The patient presents with chest pain, cold sweat, hypotensive BP of 60/palp, and an elevated HR of 140/min, which are suggestive of a potential acute coronary event or other life-threatening cardiac issue. Immediate evaluation and intervention are necessary to stabilize the patient and address the underlying cause.</p>	<p>Based on the presented history and vital signs, this patient would be triaged as ESI level 2 (Emergent). Justification: The patient is experiencing chest pain symptoms concerning for acute coronary syndrome (ACS), given her age and risk factors. Her blood pressure is very low (shock index > 1), heart rate is significantly elevated, and respiratory rate is increased, indicating potential hemodynamic compromise. According to the ESI guidelines, this constellation of symptoms and signs would warrant emergent evaluation and treatment within 10 minutes, corresponding to ESI level 2. The patient should be immediately evaluated with ECG, cardiac enzymes, and stabilization of her vitals. She likely needs urgent cardiology consultation and admission to the ICU for management of a possible acute myocardial infarction.</p>
7	2	<p>The 50-year-old patient with a history of heart failure and hypertension is an ESI 3. The patient has a high risk of deterioration, as evidenced by their shortness of breath, rapid respiratory rate, and low oxygen saturation. The patient also requires multiple resources to investigate or treat, as they will need an X-ray to assess their lung function and medications to control their blood pressure and heart rate. The ESI 3 category indicates that the patient is stable but requires timely intervention. The patient should be evaluated by a physician and receive appropriate treatment as soon as possible.</p>	<p>ESI 1 - Immediate, life-saving intervention required without delay. The patient has a history of heart failure and hypertension, and presents with shortness of breath, significantly elevated BP of 190/90 mmHg, tachycardia with HR of 100/min, critically low SpO2 of 78%, and increased RR of 30/min. The gasping sound during breathing is also concerning. These findings indicate a potential acute decompensation of heart failure or another life-threatening respiratory or cardiac issue, requiring immediate intervention to stabilize the patient.</p>	<p>Based on the presented signs and symptoms, I would assign an ESI score of 2 for this patient, indicating a high-risk situation requiring urgent evaluation and treatment. Justification: The patient has a history of heart failure and hypertension, indicating a higher risk condition. Vital signs show respiratory distress with tachypnea (RR 30/min), tachycardia (HR 100/min), hypoxemia (Spo2 78%), and hypertension (BP 190/90 mmHg). The gasping sound indicates a probable exacerbation of CHF or pulmonary edema. Given the severity of presentation, this patient requires immediate medical attention and treatment within 15 mins as per ESI level 2. A more prolonged wait could lead to respiratory failure. So in summary, based on the history of chronic illness, vital signs indicating life-threatening respiratory compromise, and gasping respiration, an ESI score of 2 is most appropriate. The patient needs urgent evaluation and treatment.</p>

8	1	<p>ESI score: 2</p> <p>This patient is in a high risk of deterioration, or signs of a time-critical problem. He is unconscious and has miotic pupils, which indicates that he is in a coma. His GCS is 5, which is the lowest level of consciousness. His BP, HR, and RR are all elevated, which indicates that he is in distress. His SpO2 is also low at 89%, which indicates that he is not getting enough oxygen.</p> <p>This patient needs to be seen by a doctor immediately. He may have a drug overdose or a head injury. He may also have a medical condition that is causing his symptoms. He needs to be stabilized and then transferred to the hospital for further treatment.</p>	<p>ESI 1 - Immediate, life-saving intervention required without delay. The patient is comatose with a low GCS of 5, low SpO2 of 89%, and decreased RR of 10, suggesting significant respiratory depression. The presence of empty boxes of prescribed antidepressant medications suggests a potential overdose, which requires immediate intervention to stabilize and manage the patient's condition.</p>	<p>Based on the presented case, I would assign an ESI score of 1 to this patient, indicating a life-threatening emergency requiring immediate life-saving intervention.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is unresponsive with a GCS of 5, indicating potential overdose and risk of respiratory failure or cardiopulmonary arrest. - Vital signs show hypotension, tachycardia and hypoxemia, indicating shock and possible organ dysfunction. - Prescription drug overdose is suspected based on history and empty pill boxes found. - This constellation of findings warrants emergent airway management, ventilatory support and hemodynamic resuscitation. - ESI level 1 is appropriate for this critically ill patient requiring immediate life-saving treatment.
9	1	<p>Based on the information given, the patient is an ESI 1. She is in cardiac arrest and requires immediate life-saving intervention.</p> <p>The ESI is a tool that helps emergency department staff triage patients quickly and efficiently. It assigns each patient a score from 1 to 5, with 1 being the most urgent and 5 being the least urgent. Patients with an ESI 1 score are the most urgent and need to be seen by a doctor immediately.</p> <p>In this case, the patient is in cardiac arrest and needs immediate life-saving intervention. She is an ESI 1 and should be seen by a doctor immediately.</p>	<p>ESI 1 - Immediate, life-saving intervention required without delay. The patient experienced cardiac arrest and required CPR to reestablish spontaneous circulation. Although her SpO2 is now 99%, her BP is still low at 90/50 mmHg and her HR is elevated at 130/min, indicating hemodynamic instability. Immediate evaluation and intervention are necessary to address the underlying cause of her cardiac arrest and to stabilize her condition.</p>	<p>Based on the information provided, I would assign an ESI level 1 to this patient, indicating a resuscitation priority.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient was found in cardiac arrest, requiring CPR. This meets the ESI criteria for "requires immediate lifesaving intervention". - Although circulation has been restored, the patient's vital signs indicate hemodynamic instability with hypotension and tachycardia. This suggests a critical condition requiring close monitoring and immediate treatment. - A patient who has just suffered a cardiac arrest would be considered extremely unstable and at high risk of recurrent arrest, warranting the highest acuity level in the ESI system. <p>So in summary, due to the cardiac arrest, critical condition and instability, I would triage this patient as ESI level 1 for resuscitation. Please let me know if you require any clarification.</p>

10	1	<p>The 70-year-old patient with abdominal pain seems pale and has a prolonged capillary refill time. His vital signs on arrival are BP: 60/palp, HR: 130, spo2:97%, Temperature: 36 C. Based on these findings, I would assign him an ESI score of 3. He is stable and does not require immediate intervention, but he does require multiple resources to investigate and treat his condition. The most likely diagnosis is abdominal aortic aneurysm, which is a life-threatening condition that requires surgery. He should be seen by a surgeon as soon as possible.</p> <p>The ESI score is a tool used by emergency department physicians to triage patients. It is based on the acuity of patients' health care problems and the number of resources their care is anticipated to require. ESI triage is based on the idea that patients who are more acutely ill should be seen by a physician more quickly than patients who are less acutely ill. The ESI score is a five-level scale, with level one indicating the greatest urgency. The levels are as follows:</p> <p>Level 1: Immediate, life-saving intervention required without delay Level 2: High risk of deterioration, or signs of a time-critical problem Level 3: Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging) Level 4: Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures) Level 5: Stable, with no resources anticipated except oral or topical medications, or prescriptions</p>	<p>ESI 1 - Immediate, life-saving intervention required without delay. The patient presents with abdominal pain, pallor, and prolonged capillary refill time, suggesting potential shock or significant blood loss. The hypotensive BP of 60/palp and elevated HR of 130/min indicate hemodynamic instability. Immediate evaluation and intervention are necessary to determine the cause of the patient's condition and to provide appropriate treatment.</p>	<p>Based on the presentation, I would assign an ESI level of 2 for this patient, indicating a high-risk situation needing immediate life-saving interventions.</p> <p>Justification:</p> <ul style="list-style-type: none">- Elderly patient with hypotension (BP 60/palp) and tachycardia (HR 130), indicating potential shock.- Prolonged capillary refill time suggests poor perfusion.- Though oxygen saturation is normal, the other vital signs are concerning for a life-threatening condition like internal bleeding.- An ESI 2 level warrants immediate bedside assessment and treatment to stabilize the patient. Blood tests, IV access, fluids and monitoring of vital signs would be priorities. <p>So in summary, the patient's age, vital signs and clinical condition indicate a potential medical emergency requiring prompt intervention and close monitoring, warranting an ESI level 2.</p>
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11	1	<p>Based on the information provided, the 36-year-old female patient has a history of severe allergic reaction due to a bee sting. She is currently experiencing dizziness, nausea, and elevated vital signs. This suggests that she is experiencing an allergic reaction and is in need of immediate medical attention. Therefore, I would assign her an ESI score of 1.</p> <p>The ESI scale is a tool used by emergency physicians to triage patients according to the severity of their condition. ESI 1 is the highest level of urgency and indicates that a patient requires immediate, life-saving intervention without delay. ESI 2 indicates that a patient is at high risk of deterioration or has signs of a time-critical problem. ESI 3 indicates that a patient is stable but requires multiple types of resources to investigate or treat. ESI 4 indicates that a patient is stable and only requires one type of resource to be treated. ESI 5 indicates that a patient is stable and only requires oral or topical medications or prescriptions.</p> <p>In this case, the patient has a history of severe allergic reaction and is currently experiencing symptoms consistent with an allergic reaction. This suggests that she is at high risk of deterioration and requires immediate medical attention. Therefore, I would assign her an ESI score of 1.</p>	<p>ESI 2 - High risk of deterioration, or signs of a time-critical problem. The patient has a history of severe allergic reactions due to bee stings and is experiencing dizziness and nausea following a recent sting. While her vital signs are relatively stable at the moment, she is at high risk for rapid deterioration due to a potential anaphylactic reaction. Immediate evaluation and treatment are necessary to prevent the development of life-threatening complications.</p>	<p>Based on the case description, I would assign an ESI score of 2 to this patient, indicating high urgency. Justification:</p> <ul style="list-style-type: none">- The patient has a known history of severe allergic reaction to bee stings, indicating a high risk of anaphylaxis.- Although the vital signs are stable at the moment, she is already experiencing symptoms of an allergic reaction like dizziness and nausea within minutes of the bee sting.- There is a high likelihood that her condition may deteriorate quickly without immediate treatment like epinephrine.- Therefore, this patient should be prioritized as ESI level 2, needing to be seen within 10 minutes. Prompt medical attention and monitoring is required in case she progresses to anaphylactic shock.
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12	2	<p>The ESI score for this patient is ESI 2. The patient has a history of palpitations and fainting, which are symptoms of a potential cardiac arrhythmia. The patient's vital signs are within normal limits, but the rapid heart rate and shortness of breath suggest that the patient is in some distress. The patient needs further evaluation to determine the cause of the palpitations and fainting, and to assess the patient's risk of deterioration.</p> <p>The ESI 2 score is assigned to patients who are at high risk of deterioration, or who have signs of a time-critical problem. This score indicates that the patient needs to be seen by a physician as soon as possible, but that their condition is not immediately life-threatening.</p> <p>The patient should be given oxygen and monitored for any changes in their condition. They should also be given fluids to prevent dehydration. The patient should be evaluated by a physician as soon as possible to determine the cause of the palpitations and fainting, and to assess the patient's risk of deterioration.</p>	<p>ESI 2 - High risk of deterioration, or signs of a time-critical problem. The patient has a very high heart rate (HR: 190) and low blood pressure (BP: 100/40 mmHg), which can indicate a potentially serious cardiac issue that needs urgent evaluation and treatment.</p>	<p>Based on the case details, I would assign an ESI score of 2 for this patient, indicating that this is an unstable emergency condition requiring immediate life-saving intervention.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is presenting with symptoms of palpitations and syncope (fainting) indicating potential heart rhythm issues. - The vital signs show tachycardia (HR 190) and hypotension (BP 100/40), which are signs of hemodynamic instability and shock. - This meets the criteria for an ESI level 2 - unstable emergency condition requiring immediate life-saving intervention. The patient needs immediate medical attention and treatment to stabilize the heart rhythm and blood pressure.
13	2	<p>Based on the information provided, I would triage this patient as ESI 2. The patient is a 40-year-old female with pressure-like pain in the middle of the chest that has been going on for 2 hours. Her vital signs are stable, but her pain is a sign of a time-critical problem. She may be having a heart attack, which is a life-threatening condition. She would need to be seen by a doctor immediately for further evaluation and treatment.</p> <p>The Emergency Severity Index (ESI) is a five-level triage algorithm used in emergency departments to assess the severity of patients' conditions. ESI 1 is the most urgent level, and ESI 5 is the least urgent level. ESI 2 is the second most urgent level, and it is used for patients who have a time-critical problem or who are at risk of deterioration.</p>	<p>ESI 2 - High risk of deterioration, or signs of a time-critical problem. The patient presents with chest pain lasting for 2 hours, which could potentially indicate an acute coronary syndrome or another serious cardiac condition that requires urgent evaluation and treatment. Although her vital signs are stable, the nature of her symptoms warrants a higher priority.</p>	<p>Based on the presented information, I would assign this patient an ESI score of 3, indicating urgent.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is hemodynamically stable with normal vital signs. However, the chest pain of unspecified origin that has been ongoing for 2 hours is concerning and requires prompt assessment and monitoring. - ESI level 3 is for patients who require urgent care but are not in immediate danger. They have a moderate risk of deterioration and should be seen within 1-2 hours. - The history of chest pain requires urgent evaluation, diagnosis and risk stratification for acute coronary syndrome or other cardiac conditions. Further assessment with ECG, cardiac enzymes and possibly chest imaging is needed. - The patient does not appear critically ill (ESI 1-2) but the chest pain is not minor (ESI 4-5). Therefore, an ESI score of 3 is most appropriate for this clinical scenario.

14	2	<p>The patient meets the criteria for ESI 1. She has a sudden onset of severe headache and nausea, which is a sign of a time-critical problem. Her vital signs are within normal limits, but her pain is severe and she is cooperative. This indicates that she is likely to deteriorate if she does not receive immediate treatment.</p> <p>Therefore, I would triage this patient as ESI 1 and recommend that she receive immediate attention.</p>	<p>Based on the information provided, this patient would be given an ESI score of 2 - High risk of deterioration, or signs of a time-critical problem. The sudden onset of severe headache and nausea, which is the most severe pain of her life, suggests the possibility of a life-threatening condition such as a ruptured aneurysm or bleeding in the brain. The stable vital signs do not necessarily rule out a serious condition. Further evaluation and intervention are required without delay to prevent deterioration and potential morbidity or mortality.</p>	<p>Based on the information provided, I would assign this patient an ESI score of 3, indicating an urgent condition.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is hemodynamically stable with normal vital signs. This rules out an ESI level 1 (Resuscitation) or 2 (Emergent) designation. - The sudden onset of severe headache and nausea suggests a concerning condition like subarachnoid hemorrhage, but the patient is still conscious and oriented. This is an urgent but not emergent presentation, warranting an ESI 3 score. - Additional testing like a CT scan of the head is needed to rule out a life-threatening cause of symptoms. However, the patient's vital signs are reassuring and not immediately concerning for an emergent condition. - An ESI 4 (Less Urgent) or 5 (Non-Urgent) score would be inappropriate given the acute onset of neurological symptoms. - In summary, the patient likely needs emergent workup and monitoring but is not in immediate distress, consistent with an ESI 3 designation. <p>Does this sound like an appropriate assessment and justification for the ESI score of 3? Let me know if you need any clarification.</p>
15	4	<p>ESI 1.</p> <p>The patient is a 25-year-old physician who has been stabbed in the hand with a needle while administering medication to a patient. This is a life-threatening injury that requires immediate intervention. The patient should be treated for the wound and given antibiotics to prevent infection. She may also need surgery to repair the damage to her hand.</p> <p>The ESI rules state that ESI 1 is for patients who need immediate, life-saving intervention without delay. This patient meets this criteria because she has a life-threatening injury that requires immediate intervention. She should be treated as a priority patient.</p>	<p>ESI 3 - The patient is stable, but multiple types of resources may be needed to investigate the injury, such as lab tests to screen for potential bloodborne pathogens and X-ray imaging to assess for any needle fragments or damage to the hand.</p>	<p>Based on the information provided, I would assign an ESI score of 3 for this patient, indicating that this is an urgent case that needs to be seen within 1 to 2 hours.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is not in immediate danger as there are no signs of anaphylaxis or severe bleeding. However, there is a risk of infection or transmission of blood borne viruses from the needle stick injury. - The patient is otherwise young and healthy. - Additional assessment and treatment such as blood tests, prophylactic medications may be needed within a couple of hours. - An ESI 2 or 1 is not warranted as the patient is not in distress and vital signs are likely stable. An ESI 4 or 5 can delay the necessary treatment and follow up. <p>So an ESI 3 score is most suitable for this presenting condition. Please let me know if you need any clarification.</p>

16	2	<p>The patient is 26 weeks pregnant and presents to the ED with the complaint of pain and "water breaking." Her vital signs are within normal limits. Based on the ESI rules, I would assess this patient as ESI 2. She is at high risk of deterioration, as she is experiencing premature labor. She will need to be monitored closely and may need to be hospitalized.</p> <p>The ESI rules are a tool that emergency physicians use to triage patients. The rules are based on the severity of the patient's condition and the resources that are needed to treat them. ESI 1 patients are the most critical and need immediate treatment. ESI 5 patients are the least critical and can be treated with oral or topical medications.</p> <p>In this case, the patient is not in immediate danger, but she is at risk of deterioration. She will need to be monitored closely and may need to be hospitalized. I would assess her as ESI 2.</p>	<p>ESI 2 - High risk of deterioration, or signs of a time-critical problem. This patient is experiencing pain and signs of premature rupture of membranes (water breaking) at 20 weeks pregnant, which can lead to serious complications for both the mother and the baby.</p>	<p>Based on the information provided, I would assign this patient an ESI level of 2, Urgent.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is pregnant, so this presents additional complexity and risk. - Although vital signs are stable, the complaint of water breaking at 20 weeks gestation indicates a potential obstetric emergency that needs prompt assessment and management. - An ESI level 2 suggests emergent risks or symptoms that require timely attention but are not immediately life-threatening. This seems to apply appropriately to this case based on a potentially complicated obstetric issue in a pregnant patient. - Higher acuity levels (ESI 1) would imply immediate life threat which does not seem to be the case here based on stable vital signs. Lower acuity (ESI 3 or higher) would imply lack of emergent risks which also does not fit with the presented complaint. <p>So in summary, ESI level 2, Urgent seems most appropriate based on the potential obstetric emergency in a pregnant patient requiring timely assessment and care but without immediate life-threatening features. Please let me know if you need any clarification.</p>
17	3	<p>The patient is a 50-year-old male with fever and chills. He is on chemotherapy for lung cancer. His BP is 120/69 mmHg, HR is 105, SpO2 is 96, RR is 16, and T is 38.8 C.</p> <p>Based on the ESI rules, this patient would be classified as ESI 2. He has a high risk of deterioration, or signs of a time-critical problem. He is on chemotherapy, which can weaken his immune system and make him more susceptible to infection. His fever and chills could be a sign of an infection, which could be life-threatening.</p> <p>He needs to be seen by a doctor immediately. He may need to be admitted to the hospital for further treatment.</p>	<p>ESI 3 - This patient is stable but requires multiple types of resources for further investigation and treatment, such as lab tests (including blood cultures) to identify the cause of fever and potential infections, and possibly imaging to assess the lung cancer status. The patient's history of chemotherapy for lung cancer increases the risk for infections and complications.</p>	<p>Based on the information provided, I would assign an ESI score of 3 for this patient, indicating an urgent/emergent case that needs to be seen within 30 minutes.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient has a high fever (38.8 C) while undergoing chemotherapy for lung cancer, putting him at high risk for complications from infection due to immunocompromised status. - Tachycardia (HR 105) and increased respiratory rate (RR 16), indicating infection is present. - Although vital signs are still stable, the patient's underlying condition and immunocompromised state elevate the acuity and he requires timely assessment and treatment. - ESI level 3 is appropriate for this urgent but not immediately life-threatening situation. The patient needs expedited care but not an immediate life-saving intervention.

18	2	<p>The 18-year-old female patient is in ESI 2. She has a history of a suicide attempt, which is a high risk of deterioration. She is also stable, with no loss of consciousness or markings on her neck. However, she requires further investigation and treatment, as she may have sustained injuries from the suicide attempt.</p> <p>The ESI rules are a tool that can help emergency physicians triage patients quickly and accurately. However, they should not be used in isolation. The physician should also consider the patient's individual circumstances and the resources available at the hospital.</p>	<p>ESI 2 - High risk of deterioration, or signs of a time-critical problem. The patient has attempted suicide and although her vital signs are stable, she requires immediate psychiatric evaluation and close monitoring for potential physical complications or further self-harm attempts</p>	<p>Based on the case details, I would assign an ESI level of 2 for this patient.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient has attempted suicide which is a potentially serious condition but there is no immediate life threat currently. - Vital signs are stable with no hypoxia or hypotension. - There are no signs of neck injury. - Patient is young and otherwise healthy. - Requires medical/psychiatric evaluation and monitoring promptly but not immediately life-threatening. - ESI level 2 is for patients with high-risk situations or potential threats to life or limb functions that require rapid medical intervention or delegated nursing triage. This case fits that category. <p>Lower ESI levels like 1 would imply immediate life threat requiring immediate physician assessment. Higher levels like 3 can wait longer for medical care. So ESI 2 is most appropriate here.</p>
19	2	<p>The patient is a 90-year-old male with confusion that started on the same day. His vital signs are stable, with a blood pressure of 120/69 mmHg. Based on the ESI rules, I would triage this patient as an ESI 2. Confusion is a common sign of a time-critical problem, such as a stroke or infection. The patient needs further evaluation to determine the cause of his confusion.</p> <p>The patient will need to be evaluated by a physician, who will order tests such as a blood test, urine test, and imaging studies to look for signs of infection, stroke, or other medical problems. The patient may also need to be admitted to the hospital for further treatment.</p>	<p>ESI 3 - The patient is stable, but may require multiple types of resources to investigate the cause of his confusion, such as lab tests and possibly imaging.</p>	<p>Based on the presented information, I would assign this patient an ESI score of 3, indicating an urgent condition that requires timely assessment and treatment.</p> <p>Rationale:</p> <ul style="list-style-type: none"> - The patient is 90 years old, indicating high vulnerability. - He is experiencing acute onset of confusion, which can be a sign of a serious medical issue at his age, such as infection, electrolyte imbalance or other condition. - While his vital signs are stable at present, his condition requires prompt assessment, diagnosis and treatment given his age and symptoms. - ESI level 3 is appropriate for this due to potential urgency and need for timely care, but lack of high-risk criteria that would warrant an ESI 2. Close monitoring of vitals and symptoms will be needed in case his condition deteriorates. <p>So in summary, ESI 3 is assigned due to:</p> <ul style="list-style-type: none"> - Age (high vulnerability) - Acute change in mental status - Potential for serious underlying condition - Need for timely assessment and diagnosis - Lack of immediate life-threat or unstable vitals (so not ESI 2) <p>Does this seem like an appropriate ESI assignment and rationale? Let</p>

				me know if you need any clarification.
20	2	<p>Based on the information provided, I would assign an ESI score of 3 to this patient. She is stable, but she requires multiple resources to investigate and treat her pain. She has a history of kidney stones, which is a time-critical problem that could deteriorate if not treated promptly. The fact that her skin looks pale suggests that she may be dehydrated, which would require intravenous or intramuscular fluids. She may also need pain medication, which would require a prescription.</p> <p>ESI 3: Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging)</p>	<p>ESI 3 - This patient is stable but likely requires multiple resources for investigation and treatment, such as lab tests (e.g., urinalysis, blood work) and imaging (e.g., CT scan or ultrasound) to assess for kidney stones or other causes of her severe flank pain.</p>	<p>Based on the presented case, I would assign an ESI score of 2 for this patient, indicating a patient who requires prompt medical attention but is hemodynamically stable.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is presenting with severe pain which requires analgesia and diagnosis. However, the pain alone does not seem to be life-threatening based on the information provided. - She seems hemodynamically stable based on the lack of mention of hypotension or other signs of shock. - Her medical history of kidney stones increases the likelihood of urolithiasis as a possible diagnosis which requires prompt diagnosis and management but is usually not immediately life-threatening. - An ESI 2 score would prioritize this patient to be seen by a physician promptly after initial triage for further assessment, pain management and diagnosis. But would not require immediate life-saving interventions. <p>In summary, this patient seems to require urgent care but lacks signs of immediate life-threat or hemodynamic instability based on the information provided to warrant an ESI 1 score. An ESI 2 score would be most appropriate to direct prompt medical attention for management of her condition.</p>
21	3	<p>ESI score: 3</p> <p>The patient is a 20-year-old male with nausea, vomiting, and right lower quadrant pain. The pain is localized and 6/10 in severity. His vital signs are stable, with a BP of 130/90 mmHg, HR of 100, SpO2 of 98%, RR of 16 breaths/minute, and a temperature of 36.4° C. He does not have any signs of a time-critical problem or a high risk of deterioration. The only resource anticipated is a diagnostic imaging study, such as an X-ray or CT scan.</p> <p>Based on the ESI rules, this patient should be triaged as a 3. He is stable and does not need immediate, life-saving intervention. He does, however, need a diagnostic imaging study to determine the cause of his pain.</p>	<p>ESI 3 - The patient is stable with vital signs within normal limits but presents with right lower quadrant pain and nausea/vomiting. This may require multiple types of resources for investigation, such as lab tests (e.g., complete blood count, basic metabolic panel) and imaging (e.g., ultrasound or CT scan) to evaluate for possible appendicitis or other causes of abdominal pain.</p>	<p>Based on the presented information, I would assign an ESI score of 3 for this patient, indicating that the patient should be seen within 30 minutes.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient is hemodynamically stable with normal vital signs apart from tachycardia, indicating the pain is relatively well tolerated. - The pain is localized in the right lower quadrant, which could indicate conditions like appendicitis that require timely assessment and management but are not immediately life-threatening. - The symptoms of nausea/vomiting and abdominal pain started relatively recently, so the condition is unlikely to be immediately critical but merits prompt evaluation. - The patient is young and otherwise healthy, without significant comorbid conditions. - An ESI 3 score indicates the need for timely evaluation and pain management but the condition is unlikely to deteriorate quickly or require immediate life-saving

				intervention. The patient would be reassessed regularly in case the condition changes.
				So in summary, based on abdominal pain, vital signs, and clinical presentation, an ESI 3 score is most appropriate to indicate the need for timely evaluation of a condition that is concerning but not critical at the current time. The patient can wait up to 30 minutes to be seen but requires regular reassessment. Please let me know if you need any clarification.
22	3	<p>Sure. Here is my assessment and ESI score for the patient:</p> <p>Based on the patient's history, physical examination, and imaging studies, I would classify this patient as an ESI 3. The patient has a displaced fracture of the forearm, which is a time-critical problem that requires immediate treatment. The patient also has a radial pulse and normal sensation and circulation, which are good signs. However, the patient is still in need of multiple resources to investigate and treat the fracture, such as x-rays and surgery.</p> <p>ESI 3: Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging)</p>	<p>ESI 4 - Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures). The patient has a displaced fracture but has a palpable radial pulse and normal sensation and circulation, indicating that he is stable and likely requires only an X-ray for further evaluation and treatment.</p>	<p>Based on the description, I would assign an ESI score of 3 for this patient, indicating high urgency.</p> <p>Justification:</p> <ul style="list-style-type: none"> - The patient has a significant acute injury (displaced forearm fracture) requiring medical attention. - However, the injury is not immediately life-threatening or limb-threatening. Radial pulse is palpable, circulation and sensation are normal. - The patient is hemodynamically stable and can wait for diagnostic workup and treatment. - An ESI 3 is appropriate for this level of urgency - needs to be evaluated within 2 hours but not immediately. Lower scores of 1 or 2 would indicate a greater level of urgency which does not seem to apply here based on the information given.
23	3	<p>ESI Score: 4</p> <p>This patient is a 34-year-old female with a 2-day history of fever and cough. She describes chest pain that increases with coughing. She is otherwise healthy and has a normal blood pressure.</p> <p>The patient's vital signs are stable and she is not in any acute distress. She is not complaining of shortness of breath or chest pain that radiates to the arms or neck. She does not have any other symptoms such as nausea, vomiting, or diarrhea.</p> <p>The patient's history and physical examination suggest that she may have pneumonia. Pneumonia is an infection of the lungs that can cause fever, cough, and chest pain. It is a common infection that can be treated with antibiotics.</p> <p>The patient's ESI score is 4. This means that she is stable and does not require immediate intervention. However, she should be seen by a doctor as soon as possible to confirm the diagnosis and start treatment.</p>	<p>ESI 3 - Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging). The patient has a high fever and cough, which may indicate an infection like pneumonia, and requires further testing like blood work and chest X-ray to confirm diagnosis and determine appropriate treatment.</p>	<p>Based on the presented case, I would assign an ESI score of 3 for this patient, with the following justification:</p> <p>ESI 3:</p> <ul style="list-style-type: none"> - Ill-appearing but stable patients who need "prompt medical attention but are not high-risk, require a 2-hour treatment response time". - The patient is alert and describing chest pain, but seems otherwise stable (BP normal). - The symptoms of high fever, cough and chest pain suggest a possible respiratory infection, but the patient does not seem to be in severe distress at this point, and vital signs are stable. - However, a 2-hour treatment window is warranted given the possible progression of symptoms and to further assess, diagnose and initiate prompt treatment of the likely infection. - An ESI 2 would indicate the patient is in high-risk or unstable condition requiring immediate life-saving intervention, which does not seem to be the case based on the information provided.

		The patient's treatment plan should include antibiotics, rest, and fluids. She should also be monitored for signs of respiratory distress.		So in summary, ESI 3 due to moderately concerning symptoms of possible respiratory infection, but patient currently stable and not high-risk, requiring prompt medical attention within 2 hours according to the ESI guidelines. Please let me know if you need any clarification.
24	3	The 40-year-old female patient with a history of gallstones and DM presents with upper abdominal pain that started after lunch today. Her vital signs are stable, with a BP of 130/80 mmHg, heart rate of 87, SpO2 of 98, RR of 14, and T of 36.2 C. Based on the history and physical examination, I would classify this patient as an ESI 4. The patient is stable and does not require immediate intervention, but she does need further investigation and treatment. I would order an X-ray of the abdomen to rule out gallstones as the cause of her pain. I would also start her on oral medications for pain and nausea. Once the results of the X-ray are known, I can make a more definitive diagnosis and treatment plan.	ESI 3 - This patient is stable with vital signs within normal limits. However, her history of gallstones and diabetes, along with her current symptoms, may require multiple types of resources such as lab tests and imaging (e.g., ultrasound) to investigate and treat her condition.	<p>Based on the description, I would assign an ESI score of 3 for this patient, with the following justification:</p> <ul style="list-style-type: none">- The patient has abdominal pain in the upper quadrants, which is concerning for potential gallstone complications like cholecystitis. This constitutes an emergency condition that needs medical evaluation and treatment.- The vital signs are stable, though the heart rate is mildly elevated. This rules out an ESI score of 2, which would indicate high-risk/unstable conditions.- There are some comorbid conditions like diabetes and known gallstones that increase the complexity slightly, though not to an ESI 2 level.- Overall, this seems to be an emergency condition (gallstone complications) that needs prompt medical care but is not an immediate life-threat or highly unstable, warranting an ESI 3 score. The patient needs to be seen within 1 hour as per ESI 3 criteria. <p>Does this sound like an appropriate ESI assessment and justification for the described patient? Let me know if you have any other questions.</p>

25	5	<p>ESI Score: 3</p> <p>The patient presents with nausea, vomiting, and diarrhea that started 1 day ago. The abdominal pain is relieved by diarrhea and is not very severe. A few hours before the symptoms started, she had eaten a meal that “tasted strange”. The diarrhea is watery and includes mucus and does not contain blood.</p> <p>These symptoms are consistent with food poisoning. Food poisoning is a common cause of nausea, vomiting, and diarrhea. It is usually caused by eating food that has been contaminated with bacteria or viruses. The severity of food poisoning can vary depending on the type of bacteria or virus that is causing the infection.</p> <p>In this case, the patient does not have any severe symptoms, such as fever, chills, or dehydration. She is also not experiencing any bleeding or blood in her stool. These symptoms suggest that the patient does not have a serious infection.</p> <p>The patient is stable and does not require immediate medical attention. She can be treated at home with oral or topical medications, or prescriptions. She should also drink plenty of fluids to prevent dehydration.</p> <p>If the patient's symptoms worsen or if she develops any of the following symptoms, she should seek medical attention:</p> <ul style="list-style-type: none">FeverChillsDehydrationBleedingBlood in stoolSevere abdominal painVomiting that does not stop	<p>ESI 4 - Stable, with only one type of resource anticipated. The patient is stable and has symptoms suggestive of food poisoning or a gastrointestinal infection. A stool test or lab work might be needed for diagnosis, but the patient is not at high risk of deterioration or showing signs of a time-critical problem.</p>	<p>ESI 4 Justification: This patient appears stable with a likely diagnosis of food poisoning or viral gastroenteritis given the acute onset of symptoms after eating a strange tasting meal. She will likely need IV fluids and possibly some anti-emetics or anti-diarrheals, so one anticipated resource (IV fluids) qualifies her as ESI 4. Vital signs are not mentioned so assuming they are stable, otherwise this could potentially be ESI 3 if there were signs of mild dehydration.</p>
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26	3	<p>The patient has a positive Homans test, which is a sign of DVT. She also has edema in her left leg, which is another DVT risk factor. She is otherwise stable with no acute life threats. I would triage her as ESI 3. She needs further evaluation and treatment, but it is not an immediate emergency.</p> <p>The ESI score is a tool used to triage patients in the emergency department. It helps to determine the order in which patients should be seen by a doctor. ESI 3 patients are stable but need further evaluation and treatment. ESI 4 patients are stable and only need one type of resource, such as an X-ray or sutures. ESI 5 patients are stable and do not need any resources, such as oral or topical medications or prescriptions.</p>	<p>ESI 2 - This patient is at high risk of deterioration due to the possibility of deep vein thrombosis (DVT), which is indicated by her recent travel, edema in the left leg, and a positive Homans test. Immediate evaluation and intervention are needed to prevent complications such as pulmonary embolism. Her vital signs are stable, but the potential for a time-critical problem warrants the ESI 2 classification.</p>	<p>Based on the presented information, I would assign this patient an ESI score of 3, with the following justification:</p> <ul style="list-style-type: none"> - The patient has signs and symptoms of possible deep vein thrombosis (DVT) based on edema, positive Homans sign, recent prolonged flight travel which increases thrombosis risk. This would fall under the 'potentially serious condition' category in ESI triage. - Vital signs are stable. Patient can walk and talk. No signs of severe or life-threatening illness. So does not warrant an ESI 1 or 2. - Further testing like Doppler ultrasound is needed to confirm DVT diagnosis. ESI 3 is for patients who need further medical evaluation and treatment but hemodynamically stable. - In summary, this appears to be a potentially serious condition (suspected DVT) in a hemodynamically stable patient requiring treatment and diagnosis. So ESI 3 would be most appropriate. <p>Does this sound like an appropriate triage assessment and ESI score assignment for the presented patient scenario? Let me know if you need any clarification.</p>
27	3	<p>Based on the information provided, I would triage this patient as ESI 2. He has a history of arrhythmia and hypertension, and he is currently experiencing shortness of breath. These are all signs of a time-critical problem that could deteriorate if not treated promptly. He is also stable at the moment, so he does not need immediate, life-saving intervention. However, he does need to be seen by a doctor soon to determine the cause of his shortness of breath and to receive treatment.</p> <p>The ESI rules are a helpful tool for triaging patients in the emergency department. They provide a consistent way to assess patients and to prioritize care. However, it is important to remember that the ESI rules are just a guideline. The best way to triage a patient is to use your clinical judgment and to consider the specific situation.</p>	<p>ESI 3 - The patient is stable with no active complaints, but has a history of arrhythmia and hypertension. Multiple types of resources may be needed to investigate or treat, such as lab tests and imaging.</p>	<p>Based on the information provided, I would assign an ESI level of 3 for this patient, with the following justification:</p> <ul style="list-style-type: none"> - The patient has a stable presentation with no acute distress. Vital signs are within normal limits except for a slightly elevated heart rate, which can be expected given his complaint of shortness of breath with exertion. - Although the patient has a history of arrhythmia and hypertension, his condition does not appear to be an emergent medical issue based on the information given. - An ESI level 3 indicates a patient whose condition is potentially urgent but not high risk, and who needs medical care within 1-2 hours. This level of acuity seems appropriate for this patient based on the details provided. - Higher ESI levels (1-2) would indicate a more emergent or life-threatening situation requiring immediate attention, which does not seem to apply here based on the clinical presentation. - Lower ESI levels (4-5) indicate non-urgent issues, which would also

				not match this patient's reported symptoms and medical history.
				In summary, ESI level 3 seems the most suitable triage score for this patient based on a stable condition but some clinical concerns due to medical history and current symptoms. Please let me know if you need any clarification.
28	2	The 45-year-old female patient with an open fracture in her left leg is an ESI 2. She is in high risk of deterioration, as she has an open fracture which is a time-critical problem. She also has a pain score of 9/10, which is a high level of pain. Her vital signs are stable, but she is likely to require surgery to repair the fracture.	ESI 2 - The patient has a high risk of deterioration due to the open fracture in her left leg, which is a time-critical problem requiring prompt intervention to prevent complications.	Based on the presented case, I would assign an ESI score of 2, with the following justification: <ul style="list-style-type: none">- The patient has an unstable condition with an open fracture, indicating emergent need for pain control and treatment. This fulfills the criteria for ESI level 2.- Vital signs are within normal limits and the patient is alert and oriented, ruling out a level 1 emergency.- There are no indications that this can be triaged as level 3 or lower, where a longer wait would be acceptable. The open fracture needs prompt evaluation and management.- In summary, this patient needs emergent care and medical attention but is not in immediate life-threatening condition, consistent with ESI level 2.
29	3	Based on the information provided, the ESI score for the 3-year-old male patient is ESI 3. He is stable and does not require immediate intervention, but he does need further investigation and treatment, including sutures to close the laceration. He is also at risk of vomiting again, which could lead to dehydration or aspiration.	ESI 3 - The patient is stable and alert, but may require multiple types of resources to investigate or treat, such as suturing the laceration and imaging to rule out any head injury, especially considering the vomiting episodes.	For this patient, I would assign an ESI score of 4, with the following justification: <ul style="list-style-type: none">The patient is stable with no signs of deteriorating condition or life-threatening symptoms.Only one resource (sutures) is anticipated to treat the superficial head laceration.Although the patient vomited a few times, there are no other concerning signs like altered mental status or neurological deficits. The vomiting is likely due to the head trauma and anxiety.An X-ray is unlikely to be needed based on the described injury (superficial laceration).The patient's alertness and lack of loss of consciousness indicate the head trauma is minor.In summary, this is a stable patient with a minor injury requiring only sutures. ESI 4 is most appropriate.

30	2	<p>ESI score: 3</p> <p>The patient is a 24-year-old female with severe abdominal pain and a positive pregnancy test. She has a history of delayed menstruation. Her vital signs are stable. The patient needs further investigation to determine the cause of her pain and to confirm her pregnancy. This may require lab tests, imaging, and/or a consultation with a specialist. The patient is not an immediate life-saving emergency, but she does need to be seen soon.</p>	<p>ESI 2 - The patient has severe abdominal pain and a delayed menstruation with a positive pregnancy test, which may indicate an ectopic pregnancy or other time-critical pregnancy-related complications. Prompt evaluation and intervention are necessary.</p>	<p>Based on the information provided, I would assign an ESI score of 3 for this patient, indicating an urgent condition.</p> <p>Justification:</p> <ul style="list-style-type: none"> - She presents with severe abdominal pain, indicating a condition that needs medical attention. - The pregnancy test indicates she may be pregnant, which can complicate the diagnosis and management. - Her vital signs are stable, indicating she is not in immediate life-threatening danger (excluding ESI 1 or 2). - Given the pain and possible pregnancy complication, she needs urgent assessment and treatment, but is not critical (excluding ESI 4 or 5). - Therefore, an ESI triage score of 3 seems most appropriate for this patient presentation.
31	2	<p>The patient is a 22-year-old male with a pain score of 8/10 in his ankle after falling while running. There is no open wound or deformity. Based on the ESI rules, this patient would be triaged as ESI 3. He needs multiple types of resources to investigate and treat his injury, such as an X-ray to rule out a fracture and pain medication. His condition is stable, but he needs to be seen by a doctor soon.</p>	<p>ESI 4 - The patient is stable, with no open wounds or deformity. Only one type of resource, such as an X-ray, is anticipated to assess for potential fractures or injuries to the ankle.</p>	<p>For this patient, I would assign an ESI score of 4.</p> <p>Justification: The patient is stable with no life-threatening condition. He will likely require imaging such as an X-ray to assess for any fractures but does not anticipate needing multiple resources. An ESI score of 4 is appropriate for patients who are stable but require one resource to investigate or treat their condition.</p>
32	4	<p>Based on the information provided, the patient meets the criteria for ESI 3. He has a stable condition with multiple types of resources needed to investigate or treat his condition, such as lab tests and X-ray imaging. He is experiencing pain and throbbing, which is likely due to the abscess. He does not have a fever, which is a good sign.</p> <p>The ESI 3 triage level indicates that the patient should be seen promptly, but does not require immediate intervention. The patient should be placed in a low-acuity waiting area and should be seen by a physician within 30 minutes.</p>	<p>ESI 4 - The patient is stable, with no fever or systemic symptoms. Only one type of resource, such as incision and drainage, is anticipated to treat the abscess in the nail bed.</p>	<p>ESI 4</p> <p>Justification: The patient is stable with only one anticipated resource - incision and drainage of the abscess. No signs of systemic infection or sepsis are mentioned.</p>

33	5	<p>The patient is a 40-year-old female with complaints of frequent and painful urination. She has no known medical conditions and does not describe abdominal pain. Her vital signs are within normal limits. Based on the ESI rules, I would assess this patient as a ESI 3.</p> <p>ESI 3 means that the patient is stable, but requires multiple types of resources to investigate or treat. In this case, the patient needs to be evaluated by a physician to determine the cause of her urinary symptoms. She may also need to undergo laboratory tests and imaging studies.</p> <p>The patient is not in immediate danger, but she should be seen by a physician as soon as possible.</p>	<p>ESI 4 - The patient is stable and presents with symptoms consistent with a urinary tract infection (UTI). Only one type of resource, such as a urinalysis, is anticipated to diagnose and guide treatment.</p>	<p>Based on the case description, I would assign an ESI score of 3 for this patient, with the following justification:</p> <ul style="list-style-type: none"> - The patient's vital signs are normal and stable, indicating no immediate life threat. - The symptoms of frequent and painful urination in a healthy young female suggest a likely lower urinary tract infection, which is an urgent but not emergent condition. - There is no mention of abnormal abdominal or flank pain that would suggest possible kidney infection or stone requiring immediate attention. - An ESI level 3 is appropriate for this likely urgent but non-emergent clinical situation that requires diagnosis and treatment but is not immediately life-threatening. The patient can wait but should be seen within 1-2 hours.
34	5	<p>The patient is a 15-year-old male with edema in the nose after being hit with a ball while playing football. He is oriented and cooperative, with vital signs within normal limits. There is no deformity, active nosebleed, or history of syncope. Based on this information, I would assign the patient an ESI score of 3. He needs to be evaluated by a physician, but he is not in immediate danger. The resources needed to investigate or treat him include an X-ray to assess for a fracture and a prescription for pain medication.</p> <p>ESI 3 is defined as stable, with multiple types of resources needed to investigate or treat. The patient meets this criteria because he needs to be evaluated by a physician and he needs an X-ray to assess for a fracture. He does not need sutures or any other type of immediate intervention, so he is not ESI 2 or 1. He is also not ESI 4 or 5 because he does not need any oral or topical medications or prescriptions.</p>	<p>ESI 4 - The patient is stable, oriented, and cooperative with no deformity or active nosebleeds. Only one type of resource, such as an X-ray, is anticipated to assess for potential nasal fractures or injuries.</p>	<p>Based on the information provided, I would triage this patient as ESI 4.</p> <p>Justification:</p> <ul style="list-style-type: none"> The patient is stable with no signs of immediate life threat or deterioration. Only one resource (X-ray) is anticipated to investigate for possible nasal fracture. Vital signs are stable and within normal limits. No active complaints other than nasal edema. Patient is oriented and cooperative.

35	4	<p>The patient is a 23-year-old female with a superficial laceration on her forearm. She is stable and does not require any immediate intervention. She will be placed at ESI level 4.</p> <p>The ESI severity index is a tool used to triage patients in the emergency department. It is a five-level scale, with level 1 being the most urgent and level 5 being the least urgent. ESI level 4 is defined as "stable, with only one type of resource anticipated (such as only an X-ray, or only sutures)." This patient meets this criteria, as she does not require any immediate intervention and only needs a simple suture to close the laceration.</p>	<p>ESI 4 - The patient is stable, with no active bleeding or pain in the extremity. Only one type of resource, such as sutures or wound care, is anticipated to treat the superficial laceration on her forearm.</p>	<p>ESI 4 - Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures) Justification: The patient has a superficial laceration that requires suturing, but is otherwise stable with normal range of motion and no active bleeding. Only suturing is anticipated as a resource for this patient, consistent with ESI level 4.</p>
36	4	<p>The 36-year-old male patient with eye itching after walking in windy weather is an ESI 3. He is stable and has multiple types of resources needed to investigate or treat, such as an eye exam and possibly an eye wash. The patient's pain score is 3/10, which is mild. The patient's history is unremarkable, and he does not have any known medical conditions. The patient's eye itching is likely caused by a foreign object in his eye, which can be treated with an eye exam and possibly an eye wash. The patient's condition is not life-threatening, but it is important to treat it promptly to prevent further irritation and damage to the eye.</p>	<p>ESI 5 - The patient is stable, with a minor complaint of eye itching and mild pain. No resources are anticipated except for potential oral or topical medications to alleviate the itching and discomfort.</p>	<p>ESI 4 Justification: The patient appears stable with only one anticipated resource needed - removal of the foreign particle from the eye. The pain score of 3/10 suggests mild discomfort but no signs of deterioration or time critical problem. The lack of known medical history also suggests low acuity. An ESI of 4 seems appropriate based on the information provided.</p>

37	3	<p>The patient is a 77-year-old female with a history of heart valve replacement and on anticoagulants who presents to the ED with a couple of bruises in her legs. She describes no bleeding. Her vital signs are stable. Based on the ESI rules, I would triage her as an ESI 3.</p> <p>ESI 3 patients are stable, with multiple types of resources needed to investigate or treat. In this case, the patient needs to be evaluated for her bruises, which could be a sign of a more serious condition. She also needs to be assessed for her risk of bleeding, as she is on anticoagulants. This evaluation will likely require lab tests and X-rays.</p> <p>The patient is not an ESI 2 patient, who are high risk of deterioration, or signs of a time-critical problem. She is also not an ESI 1 patient, who are immediate, life-saving intervention required without delay.</p> <p>I would recommend that the patient be seen by a doctor as soon as possible.</p>	<p>ESI 4 - The patient is stable and has no additional complaints or active bleeding. Only one type of resource, such as a blood test to assess coagulation status, is anticipated to evaluate the patient's anticoagulant therapy and bruising.</p>	<p>ESI 3</p> <p>Justification: Stable patient with a complex medical history and on anticoagulants. Multiple resources such as lab tests and imaging anticipated to investigate for possible complications from anticoagulation or other issues. Although no active complaints concerning for emergent issues, the medical complexity and anticoagulation status warrants a higher level of initial evaluation and monitoring.</p>
38	4	<p>ESI score: 3</p> <p>The patient is a 43-year-old male with a superficial knife cut on his index finger. The bleeding stopped with the dressing he applied at home. The cut seems to need some sutures, but there is no distal sensory or circulatory impairment. The tendons and nerves seem intact. His vital signs are normal.</p> <p>Based on the ESI rules, this patient would be classified as ESI 3. He is stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging). He does not need immediate, life-saving intervention, but he does need to be seen by a doctor to assess the extent of the injury and determine if sutures are necessary.</p>	<p>ESI 4 - The patient is stable, with bleeding stopped by home dressing, and no apparent damage to tendons or nerves. Only one type of resource, such as sutures, is anticipated to treat the superficial cut on his index finger.</p>	<p>ESI 4 - Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures) Justification: The patient's vital signs are stable. The injury seems superficial and may only require sutures to close, with no major complications noted on initial examination. Only one resource (sutures) seems to be anticipated at this point, consistent with ESI level 4.</p>

39	3	<p>ESI score: 3</p> <p>Justification: This patient has a splinter in her foot that is protruding from the skin. This is a minor injury that can be treated with oral or topical medications. The patient is stable and does not require any immediate intervention.</p> <p>The patient is not in any immediate danger and can wait to be seen by a doctor. The splinter can be removed by a nurse or a doctor. The patient will likely need to take a tetanus shot.</p>	<p>ESI 4 - The patient is stable, with a splinter located on the sole of her foot. Only one type of resource, such as a minor procedure to remove the splinter, is anticipated to treat the issue.</p>	<p>ESI 4 - Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures) Justification: The patient seems stable with a localized injury that will likely only require suturing to remove the splinter. No major intervention seems immediately needed.</p>
40	4	<p>The patient is a 20 year old male who has lost taste and smell for 2 days. He suspects that he has COVID-19. He has no medical history and his respiratory sounds are normal. He seems healthy. His vital signs are BP: 130/85 mmHg, HR: 73, SpO2: 98%.</p> <p>Based on the ESI rules, I would classify this patient as ESI 3. He is stable, but he needs multiple types of resources to investigate and treat. He needs to be tested for COVID-19 and he needs to be monitored for any signs of ухудшения condition.</p> <p>I would recommend that he be placed in the waiting room and that he be seen by a doctor as soon as possible.</p>	<p>ESI 4 - The patient is stable and presents with minor symptoms related to potential COVID-19 exposure. Only one type of resource, such as a COVID-19 test, is anticipated to investigate the issue.</p>	<p>Based on the presented information, I would triage this patient as ESI level 3, for the following reasons:</p> <ul style="list-style-type: none"> - The patient is a young male with no significant medical history, appearing clinically stable with normal vital signs. This suggests no immediate life-threatening condition. - The patient suspects COVID-19 infection based on his symptoms of loss of taste and smell, however he does not report any severe or worsening respiratory symptoms like shortness of breath, cough or chest tightness. Oxygen saturation is normal. This indicates the infection, if present, is likely mild to moderate. - While COVID-19 is a serious issue, based on the available information this patient does not appear to have a condition that requires immediate lifesaving intervention or treatment. ESI level 3 is appropriate for patients with "potentially urgent" conditions that require medically necessary treatment but are not immediate life-threatening emergencies. - Additional assessment including temperature check, COVID-19 swab test and chest x-ray may be needed to further evaluate for infection and clinical stability. The triage category can be reassessed if there are any significant findings. <p>In summary, based on the presenting symptoms and clinical status, ESI level 3 appears to be most suitable for this patient with suspected mild COVID-19 infection and no immediate life-threats. Let me know if you need any clarification.</p>

41	5	<p>ESI Score: 2</p> <p>The patient is a 8-year-old male with a 3 cm² burn on his left forearm. The burn is a scald injury and there are no bullae. The patient has a pain score of 3/10. This is a stable patient with a single type of resource anticipated (such as only an X-ray). The patient does not require immediate, life-saving intervention without delay. The patient is not at high risk of deterioration, or signs of a time-critical problem.</p>	<p>ESI 4 - The patient is stable and presents with a minor burn injury. Only one type of resource, such as wound care, is anticipated to treat the issue.</p>	<p>ESI 3 - Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging)</p> <p>Justification:</p> <ul style="list-style-type: none"> - Although the burn is small, it is in a sensitive area of a child. - There is potential for risk of scarring and functional impairment without proper management. - The patient will likely require wound cleaning, dressing, analgesia, tetanus prophylaxis and follow up. - There may be a need for bacterial culture and sensitivity if signs of infection develop. - X-ray may be needed to assess deeper tissue damage. - Several resources and investigations are anticipated for this patient, warranting an ESI 3.
42	5	<p>ESI score: 3</p> <p>The patient is a 10-year-old male with itching and redness in both eyes. He has no fever, vital parameters are normal, and he does not describe pain. This suggests a non-urgent condition, such as conjunctivitis. Conjunctivitis is an inflammation of the conjunctiva, the thin layer of tissue that covers the white of the eye and the inside of the eyelid. It is a common condition that can be caused by a number of things, including allergies, viruses, and bacteria.</p> <p>The patient does not require immediate intervention, but he will need to be seen by a doctor to determine the cause of his conjunctivitis and receive treatment. He can likely be treated with over-the-counter eye drops or ointment. If the conjunctivitis is severe or does not respond to treatment, he may need to be prescribed antibiotics.</p> <p>The patient is stable and does not require any resources beyond over-the-counter eye drops or ointment. He can likely be discharged home with instructions to follow up with his doctor.</p>	<p>ESI 5 - The patient is stable and has no signs of a time-critical problem. No resources are anticipated except for oral or topical medications to alleviate the itching and redness in the eyes.</p>	<p>ESI 4 - Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures)</p> <p>Justification: The patient is stable with a non-life threatening complaint. Only one resource, an eye exam, is anticipated to investigate the redness and itching. No immediate or urgent intervention is required. Vital signs are stable. This meets the criteria for ESI level 4.</p>
43	5	<p>The patient is a 40-year-old female with a 3-day history of a sore throat. She has no swallowing difficulties or hoarseness. Examination of the throat is normal. Her vital signs are within normal limits.</p> <p>Based on the ESI rules, I would assign this patient an ESI score of 2. She is not in immediate danger, but she is at risk of deterioration. She needs to be seen by a doctor to determine the</p>	<p>ESI 5 - The patient is stable and has no signs of a time-critical problem. No resources are anticipated except for oral medications or prescriptions to address the sore throat.</p>	<p>ESI 4.</p> <p>Stable patient with only one type of anticipated resource (throat culture). No signs of airway compromise or hemodynamic instability. Unlikely to deteriorate significantly without intervention but requires basic investigation.</p>

		<p>cause of her sore throat and to rule out any serious conditions.</p> <p>The resources that she needs include a doctor's evaluation and possibly some lab tests. She does not need any immediate interventions, such as X-rays or sutures.</p> <p>I would recommend that she be seen by a doctor as soon as possible. If her condition worsens, she may need to be triaged to a higher ESI score.</p>		
44	5	<p>The patient is a 20-year-old female with a history of nickel allergy. She is complaining of itching and redness on the area which contacts with a metal bracelet. There is no systemic reaction. Based on the ESI rules, this patient should be triaged as ESI 3. She is stable, with multiple types of resources needed to investigate or treat. She will need to be seen by a doctor to rule out any other causes of her symptoms, such as an infection. She may also need to be treated with antihistamines or steroids to relieve the itching and redness.</p> <p>Here is my justification:</p> <p>The patient is stable, as she is not experiencing any life-threatening symptoms. She has multiple types of resources needed to investigate or treat her symptoms, as she will need to be seen by a doctor and may also need to be treated with antihistamines or steroids. She does not have any signs of a time-critical problem, as her symptoms are not worsening and she is not experiencing any new symptoms. I hope this is helpful!</p>	<p>ESI 5 - The patient is stable, with no signs of a time-critical problem or systemic reaction. No resources are anticipated except for oral or topical medications or prescriptions to address the localized allergic reaction.</p>	<p>ESI 3 - Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging)</p> <p>Justification: While the patient is stable with no life-threatening symptoms, she requires investigations such as allergy testing and possibly removal / treatment of a dermatitis reaction which would need nursing time, medications and possibly a dermatology consult. This warrants an ESI 3 designation, as opposed to ESI 4 where only one intervention like an X-ray would be needed, or ESI 5 where only prescriptions would suffice.</p>
45	5	<p>ESI score: 3</p> <p>The patient is a 50-year-old female with caries on her left molar teeth. She is experiencing pain in the area that starts while eating. There is no facial swelling or fever. The pain score is 4/10.</p> <p>The patient is stable and does not require immediate intervention. However, she does need to see a dentist to have her teeth treated. This may require X-rays and other diagnostic tests.</p> <p>The patient should be triaged to ESI level 3. This means that she should be seen by a dentist as soon as possible, but she is not in immediate danger.</p>	<p>ESI 5 - The patient is stable, with no signs of a time-critical problem. The issue appears to be dental in nature, and no resources are anticipated in the emergency department except for oral medications or prescriptions for pain management. The patient should be advised to follow up with a dentist for further evaluation and treatment.</p>	<p>For this patient, I would assign an ESI score of 4.</p> <p>Rationale: This patient is stable with only one anticipated resource needed, which is possibly an x-ray of the tooth or dental block to manage the pain. There are no signs of life-threatening conditions or risks of deterioration that would warrant a higher ESI score. The pain is moderate and managed with over-the-counter medications. No fever is present. Overall this patient qualifies for ESI 4 - Stable, with only one type of resource anticipated.</p>

46	5	<p>Based on the information provided, I would triage this patient as ESI 3. The patient is a 2-year-old female with a runny nose and vomiting. She is active and alert, and her mother states that her appetite is normal and she seems hydrated. These symptoms are common in children with viral infections, which are typically not life-threatening. However, it is important to rule out more serious causes of these symptoms, such as dehydration or an ear infection. The patient will need to be evaluated by a physician to determine the cause of her symptoms and receive treatment.</p> <p>The Emergency Severity Index (ESI) is a tool used to triage patients in the emergency department. The ESI score is based on the acuity of the patient's condition and the resources that will be needed to treat them. ESI scores range from 1 (most urgent) to 5 (least urgent).</p> <p>ESI 1: Immediate, life-saving intervention required without delay</p> <p>ESI 2: High risk of deterioration, or signs of a time-critical problem</p> <p>ESI 3: Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging)</p> <p>ESI 4: Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures)</p> <p>ESI 5: Stable, with no resources anticipated except oral or topical medications, or prescriptions</p>	<p>ESI 4 - The patient is stable and alert with no signs of a time-critical problem. Only one type of resource is anticipated (such as lab tests) to assess the cause of the symptoms and determine the appropriate treatment plan. The patient's normal appetite and hydration status suggest a lower level of urgency.</p>	<p>ESI 4</p> <p>Justification: The patient seems stable with only one anticipated resource needed, likely an IV for mild dehydration. No immediate life-threatening concerns are noted based on the information provided. An ESI 3 would indicate multiple resources anticipated, which does not seem to match this presentation. ESI 5 does not seem appropriate as the patient will likely need IV hydration, not just oral medications.</p>
47	5	<p>The patient is a 27-year-old female with a history of pain in both legs after heavy exercise. The pain is worse with movement and palpation. Her vital signs are stable, with a blood pressure of 120/90 mmHg and a heart rate of 80 beats per minute. She is not in any distress.</p> <p>Based on the ESI rules, I would triage this patient as an ESI 3. She is stable, but she requires multiple types of resources to investigate or treat, such as lab tests and X-ray imaging. She may also need physical therapy or other treatments.</p> <p>I would assess her further to determine the cause of her pain and to develop a treatment plan. I would also monitor her vital signs and her response to treatment.</p>	<p>ESI 4 - The patient is stable with no signs of a time-critical problem. Only one type of resource is anticipated (such as a physical examination or a consultation with a specialist) to assess the cause of the symptoms and provide appropriate treatment recommendations. The onset of pain after heavy exercise suggests a lower level of urgency.</p>	<p>ESI score: 4 Justification: Stable vital signs. Single resource (likely X-ray) needed to investigate leg pain. No immediate life-threatening features.</p>

48	5	<p>Based on the given information, the 10-year-old male patient with swelling in the nail bed of the right hand thumb would be triaged as an ESI 3. The patient is stable and does not require immediate intervention, but he does require multiple types of resources (such as lab tests and X-ray imaging) to investigate or treat. The swelling in the nail bed could be a sign of a more serious underlying condition, such as a bacterial infection or a fungal infection. It is important to rule out these possibilities with further testing.</p> <p>ESI 3 is defined as "Stable, with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging)." This means that the patient is not in immediate danger, but they do require medical attention. The patient is likely to be seen by a doctor within a few hours, but they may not be seen immediately.</p> <p>The 10-year-old male patient with swelling in the nail bed of the right hand thumb does not meet the criteria for an ESI 1, which is "Immediate, life-saving intervention required without delay." This means that the patient does not need immediate medical attention. The patient is also not in immediate danger of death or serious injury, so they do not meet the criteria for an ESI 2, which is "High risk of deterioration, or signs of a time-critical problem."</p>	<p>ESI 4 - The patient is stable and has no signs of a time-critical problem. Only one type of resource is anticipated (such as a physical examination or a consultation with a specialist) to assess the cause of the swelling and provide appropriate treatment recommendations. There is no fever or pus-filled blister, indicating a lower level of urgency.</p>	<p>ESI 4 Justification: The patient is stable with only one anticipated resource needed - an X-ray to assess for possible fracture or foreign body. There are no signs of infection or sepsis. This would be triaged as ESI level 4.</p>
49	5	<p>The patient is an 18-year-old female who presented to the ED due to stepping on a rusty nail. She has no additional complaints and no fever. The wound is not visible, but she is experiencing pain. Based on the ESI rules, I would assign her an ESI score of 4. She is stable and does not require immediate intervention. However, she will need to be seen by a physician to assess the wound and determine if any further treatment is necessary.</p> <p>Here is my justification:</p> <p>The patient is stable, with no signs of deterioration. She does not require immediate intervention. She will need to be seen by a physician to assess the wound and determine if any further treatment is necessary.</p>	<p>ESI 3 - The patient is stable and has no signs of a time-critical problem. However, multiple types of resources may be needed to investigate and treat the potential injury. This could include a tetanus shot, a physical examination to locate any possible wound, and imaging (such as an X-ray) if needed to check for any foreign body or deeper damage.</p>	<p>ESI 4 - Stable, with only one type of resource anticipated (such as only an X-ray, or only sutures) Justification: The patient has stepped on a rusty nail which may require an X-ray to exclude fracture or embedded foreign body. There are no other symptoms suggesting urgent intervention at this point, but will require some investigation.</p>

50	5	<p>ESI Score: 3</p> <p>The patient is a 70-year-old male with pain on the left big toe while walking. He states that his complaints have been going on for about a few weeks. On palpation, a hard dark lesion is present located under the left big toe.</p> <p>This is a stable patient with multiple types of resources needed to investigate or treat. The patient needs to have an X-ray to rule out a fracture or other structural damage to the toe. He may also need to have a culture to rule out infection. Once the diagnosis is made, the patient can be treated with oral or topical medications.</p> <p>The patient is not at immediate risk of deterioration or death, but he does need to be seen by a physician as soon as possible.</p>	<p>ESI 4 - Stable, with only one type of resource anticipated. The patient is stable and likely requires an X-ray to investigate the cause of the hard dark lesion under the left big toe.</p>	<p>ESI 4 Rationale: Based on the information provided, this patient appears stable but will likely require an X-ray to investigate the lesion under the left big toe. An ESI 4 score is appropriate as the patient is stable but will need a single resource (X-ray imaging) to evaluate the condition.</p>
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ESI: Emergency Severity Index, GPT-4: Generative Pre-trained Transformer 4, GCS: Glasgow Coma Scale, BP: Blood Pressure, HR: Heart Rate, RR: Respiratory Rate, GI: Gastrointestinal, COPD: Chronic obstructive pulmonary disease, DM: Diabetes Mellitus, ECG: Electrocardiogram, ICU: Intensive Care Unit, CPR: Cardiopulmonary Resuscitation, CT: Computed Tomography, IV: Intravenous, DVT: Deep Vein Thrombosis

Supplement 3: Reference diagnosis list and the preliminary diagnoses provided by the applications

NO	DIAGNOSIS	BARD REASONING	GPT-4 REASONING	CLAUDE REASONING
1	drug-induced coma	drug overdose or a medical condition such as a stroke or a brain aneurysm	drug overdose	drug overdose
2	severe bradycardia	severe hypotension and bradycardia	cardiogenic shock? (severe hypotension and bradycardia)	impaired consciousness, hypotension and bradycardia
3	hemorrhagic shock due to GI bleeding	bleeding ulcer or a heart attack	life-threatening hemorrhage	hypovolemic shock due to GI bleeding
4	gunshot wound to the abdomen	gunshot wound to the abdomen	gunshot wound to the abdomen	gunshot wound to the abdomen
5	respiratory failure	respiratory failure	respiratory distress and potential hypoxia	respiratory distress and hypoxemia
6	cardiogenic shock due to Myocardial Infarction	heart attack	acute coronary event or other life-threatening cardiac issue	shock due to acute coronary syndrome
7	respiratory failure	high risk of deterioration, as evidenced by their shortness of breath, rapid respiratory rate, and low oxygen saturation	potential acute decompensation of heart failure or another life-threatening respiratory or cardiac issue	CHF or pulmonary edema, respiratory distress
8	coma, apnea and respiratory failure	coma (drug overdose or a head injury)	coma, respiratory depression (overdose)	prescription drug overdose
9	intubated, post-cardiac arrest care	cardiac arrest	cardiac arrest	post-cardiac arrest
10	hypotension requiring emergency resuscitation	abdominal aortic aneurysm	potential shock or significant blood loss	shock (internal bleeding?)
11	allergic reaction	allergic reaction	risk of potential anaphylactic reaction	allergic reaction, high risk of anaphylaxis

12	severe tachycardia	potential cardiac arrhythmia	potentially serious cardiac issue	heart rhythm issues, shock
13	myocardial infarction	heart attack	acute coronary event or other life-threatening cardiac issue	acute coronary syndrome
14	subarachnoid hemorrhage	-	ruptured aneurysm or bleeding in the brain	subarachnoid hemorrhage
15	occupational hazard for healthcare workers	stabbing with a needle	stabbing with a needle	needle stick injury
16	spontaneous abortion	premature labor	premature rupture of membranes (water breaking)	potential obstetric emergency
17	immunocompromised patient with fever	immunocompromised patient with fever ("He is on chemotherapy, which can weaken his immune system and make him more susceptible to infection.")	immunocompromised patient with fever ("chemotherapy for lung cancer increases the risk for infections and complications.")	immunocompromised patient with fever
18	suicidal patient	suicide attempt	suicide attempt	suicidal patient
19	confusion in an elderly patient.	confusion	confusion	confusion
20	severe pain possibly due to renal colic	kidney stones	kidney stones or other causes of her severe flank pain	severe pain due to urolithiasis
21	acute appendicitis	right lower quadrant pain	possible appendicitis or other causes of abdominal pain	appendicitis
22	fracture (needs reduction)	displaced fracture of the forearm	displaced fracture	displaced forearm fracture
23	community-acquired pneumonia	pneumonia	pneumonia	respiratory infection
24	acute cholecystitis	gallstones	gallstones	cholecystitis
25	food poisoning / acute gastroenteritis	Food poisoning	food poisoning or a gastrointestinal infection	food poisoning / viral gastroenteritis
26	DVT	DVT	DVT	DVT
27	pulmonary embolism	shortness of breath	-	shortness of breath
28	open fracture	open fracture in her left leg	open fracture in her left leg	open fracture
29	head trauma	laceration, further investigation	head trauma, laceration	head trauma
30	ectopic pregnancy	further investigation to determine the cause of her pain and to confirm her pregnancy	ectopic pregnancy or other time-critical pregnancy-related complications	possible pregnancy complication
31	sprained ankle	ankle injury	ankle injury	-
32	paronychia (drainage)	abscess	abscess in the nail bed (incision and drainage)	abscess (incision and drainage)
33	urinary tract infection	urinary symptoms	urinary tract infection	lower urinary tract infection
34	nasal fracture	fracture?	nasal fracture	nasal fracture
35	laceration (suturing needed)	superficial laceration on her forearm	superficial laceration on the forearm	laceration (suturing needed)
36	foreign body (eye)	foreign object (eye)	eye itching	foreign particle (eye)
37	coagulation status (lab test)	risk of bleeding (lab tests and X-rays)	coagulation status (lab test)	coagulation status (lab test)
38	laceration (suturing needed)	laceration (suturing needed)	laceration (suturing needed)	injury (suturing needed)
39	foreign body (foot)	splinter (foot)	splinter (foot)	splinter
40	COVID-19 (PCR test)	COVID-19	COVID-19 (PCR test)	COVID-19
41	2nd degree burn	scald injury - no bullae	minor burn injury	small burn
42	conjunctivitis	conjunctivitis	conjunctivitis	redness and itching (eye exam)
43	sore throat	sore throat	sore throat	-

44	contact dermatitis	allergy or infection	localized allergic reaction	dermatitis
45	tooth decay	caries	dental issue	tooth pain
46	viral infection	viral infection	-	mild dehydration
47	Sore muscles	-	-	leg pain
48	paronychia	swelling in the nail bed (bacterial or fungal infection)	swelling in the nail bed	possible fracture or foreign body
49	tetanus prophylaxis	wound	wound (tetanus prophylaxis)	stepping on a rusty nail (fracture or embedded foreign body)
50	callus	lesion	lesion	lesion

CHF: Congestive heart failure, DVT: Deep Vein Thrombosis, GI: Gastrointestinal., PCR: Polymerase chain reaction. See Supplement 2 for full prompts.