

## 急診疾病特定檢傷分類

陳輝財 醫師  
新光醫院急診醫學科

## 檢傷：分級

- \* 國際上較通用的方式為四級的分類
- \* 和一開始針對大量傷患的分級相似
- \* 有些國家使用五級或三級的分法
- \* 重點精神在於快速決定病患的嚴重程度  
級治療優先順序

## 衛生署

- \* 檢傷一級：病況危急，應儘速處理。
- \* 檢傷二級：無立即生命危險，應在二十分鐘內處理。
- \* 檢傷三級：應在六十分鐘內處理。
- \* 檢傷四級：可延後處理或門診治療。

## 問題

- \* 一名機車車禍傷患，由EMT至於長背板上推入，主訴右膝嚴重疼痛...
- \* 檢傷血壓86/50mmHg、心跳：80BPM
- \* 請問檢傷幾級？
- \* 若檢查發現，病患有內出血現象，懷疑脾臟破裂...
- \* 若檢查發現，病患無任何內出血現象，病史詢問該病患從小一打針就暈倒...



## 問題

- \* 一位中年男子因胸痛、冒冷汗求診，因其症狀疑似心肌梗塞...
- \* 請問這個病患應該檢傷幾級？



## 問題

- \* 兩個診斷為心肌梗塞的病患，其中一名病患到院時生命徵象穩定，另一名則到院時已呈心因性休克狀態...
- \* 請問兩名病患的嚴重度相同嗎？

## 特定疾病檢傷 (disease-specific triage)

## 目的

- \* 強調檢傷是個動態的過程
- \* 做出疾病診斷及治療後，以通行之疾病嚴重指標作re-triage，試圖充分反映疾病的嚴重度。
- \* 針對治療後病患病情的變化改變檢傷級數，直接反映病情嚴重度及治療成效。

## 指標性疾病

- \* 慢性阻塞性肺疾病
- \* 氣喘
- \* 肺炎
- \* 胰臟炎
- \* 心衰竭
- \* 中風

## 慢性阻塞性肺疾病

- \* GOLD (Global Initiative for Chronic Obstructive Lung Disease) stages
- \* NHLBI (National Heart, Lung, and Blood Institute) - WHO, 2001

## GOLD stages

Stage	Characteristics
4: At Risk	Normal spirometry Chronic symptoms (cough, sputum production)
3: Mild COPD	FEV1/FVC < 70%, FEV1 $\geq$ 80% predicted With or without chronic symptoms (cough, sputum production)
2: Moderate COPD	FEV1/FVC < 70%, 30% $\leq$ FEV1 < 80% predicted (IIA: 50% $\leq$ FEV1 < 80% predicted) (IIB: 30% $\leq$ FEV1 < 50% predicted) With or without chronic symptoms (cough, sputum production, dyspnea)
1: Severe COPD	FEV1/FVC < 70%, FEV1 < 30% predicted, or the presence of respiratory failure,* or clinical signs of right heart failure

\* Respiratory failure: PaO<sub>2</sub> < 8.0 kPa (60 mm Hg) with or without PaCO<sub>2</sub> > 6.7 kPa (50 mm Hg) while breathing air at sea level.

## FEV1 and FVC

- \* FEV1 (Forced Expiratory Volume in 1 second, 一秒內用力呼氣量)
  - 男性: FEV1 (公升) 正常 = 0.03419身高(公分) - 0.03032年齡 - 1.11927
  - 女性: FEV1 (公升) 正常 = 0.03466身高(公分) - 0.01903年齡 - 2.12547
- \* FVC (Forced Vital Capacity, 用力肺活量)

## 氣喘Asthma

- \* The National Asthma Education and Prevention Program (NAEPP) , 1997

## 氣喘Asthma

- 一級: Severe Persistent Asthma
- \* Symptoms: Continual symptoms after inhalation treatment for 3 times, Severe dyspnea without activity, Impending respiratory failure
- \* Lung Function: FEV1 or PEFR <60% predicted, PEFR variability >30%

## 氣喘Asthma

- 二級: Moderate Persistent Asthma
- \* Symptoms: Limited physical activity, Dyspnea after mild activity, Frequent exacerbations, Daily symptoms, Daily use of inhaled short-acting beta2-agonist, Exacerbations 2 or more times a week; may last days
- \* Lung Function: FEV1 or PEFR >60%-<80% predicted, PEFR variability >30%

## 氣喘Asthma

- 三級: Mild Persistent Asthma
- \* Symptoms: Dyspnea on exertion, Symptoms >2 times a week but <1 time a day, Exacerbations affect activity, Nighttime >2 times a month
- \* Lung Function: FEV1 or PEFR >80% predicted, PEFR variability 20-30%

## 氣喘Asthma

- 四級: Mild Intermittent Asthma
- \* Symptoms: Asymptomatic but occasional exacerbations, Symptoms <2 times a week, Exacerbations brief (from a few hours to a few days); intensity may vary, Nighttime <2 times a month
- \* Lung Function: FEV1 or PEFR >80% predicted, PEFR variability <20%

## 肺炎

- \* APACHE scoring systems
- \* British Thoracic Society (BTS) rule
  - Only two categories — severely ill and not so severely ill
- \* American Thoracic Society (ATS) rule
  - Depends on variables only available in hospital
- \* CURB-65 score, *Thorax* 2002
- \* Pneumonia Severity Index, *NEJM* 1997

## CURB-65 severity score

One point given for each feature present	
Initial	Description
<b>C</b>	Mental Confusion. Disorientation in person, place or time. (AMT score of 8 or less.)
<b>U</b>	Blood Urea > 7 mmol/L
<b>R</b>	Respiratory Rate >= 30/min
<b>B</b>	Low Blood Pressure. Diastolic blood pressure (DBP) <= 60 mmHg or systolic blood pressure (SBP) < 90 mmHg.
<b>65</b>	Age >= 65 years

## CURB-65 severity score

3 management groups when urea is available	
CURB-65 score	Description
<b>0 or 1</b>	Mortality low (1.5%). Likely suitable for home treatment.
<b>2</b>	Mortality intermediate (9.2%). Consider hospital supervised treatment. Options may include short stay in patient or hospital supervised outpatient.
<b>3 or 4 or 5</b>	Mortality high (22%). Manage in hospital as severe pneumonia. Assess for ICU (intensive care unit) admission especially if <b>CURB-65</b> score = 4 or 5.

## PSI

Step 1. In the patient or low risk score is based on the history and physical examination and not a nursing home.  
 \* Age 50 years or younger and  
 \* None of the coexisting conditions or physical examination findings listed in step 2  
 Yes: Go to step 2. No: Outpatient treatment is recommended.

Step 2. Calculate risk score for classes I to V.

Patient characteristics	Points assigned	Patient's points
<b>Demographic factors</b>		
Male	Age	
Female	Age - 10	
Nursing home resident	+10	
<b>Coexisting conditions</b>		
Hepatic disease	+30	
Liver disease	+20	
Congestive heart failure	+10	
Cerebrovascular disease	+10	
Renal disease	+10	
<b>Initial physical examination findings</b>		
Altered mental status	+20	
Respiratory rate >30 breaths per minute	+20	
Systolic blood pressure <90 mm Hg	+20	
Temperature <35 °C (95 °F) or >40 °C (104 °F)	+15	
Pulse >125 beats per minute	+10	
<b>Initial laboratory findings (score zero if not tested)</b>		
pH <7.35	+30	
Blood urea nitrogen >30 mg per dL (10.5 mmol per L)	+20	
Sodium <130 mEq per L (130 mmol per L)	+20	
Glucose >250 mg per dL (13.9 mmol per L)	+10	
Hemoglobin <10 percent (10.5)	+10	
Arterial PO <sub>2</sub> <60 mm Hg (8.0 kPa) on 2L or more of O <sub>2</sub>	+10	
Pneumothorax	+10	
Total score (sum of patient's points)		

Total score	Risk class	Recommended site of treatment	Mortality range observed in validation cohorts (%)
None (see step 1)	I	Outpatient	0.1
<10	II	Outpatient	0.6
11 to 12	III	Outpatient	0.8 to 2.8
13 to 18	IV	Hospital	8.2 to 13.3
>18	V	Hospital	27.0 to 29.2

## 肺炎

肺炎 - pneumonia severity index

Demographic factors

- \* Age: Age (in years)
- \* Males: Age (in years) -10
- \* Females: Age (in years) -10
- \* Nursing home resident: +10

## 肺炎

肺炎 - pneumonia severity index

Comorbid illnesses

- \* Neoplastic disease: +30
- \* Liver disease: +20
- \* Congestive heart failure: +10
- \* Cerebrovascular disease: +10
- \* Renal disease: +10

## 肺炎

肺炎 - pneumonia severity index

Physical examination findings

- \* Altered mental status: +20
- \* Respiratory rate 30/minute or more: +20
- \* Systolic blood pressure <90 mmHg: +20
- \* Temperature <35 °C or 40 °C or more: +15
- \* Pulse 125/minute or more: +10

## 肺炎

肺炎 - pneumonia severity index

Laboratory findings

- \* pH <7.35: +30
- \* BUN >10.7 mmol/L: +20
- \* Sodium <130 mEq/L: +20
- \* Glucose >13.9 mmol/L: +10
- \* Hematocrit <30 percent: +10
- \* PO2 <60 mmHg (2): +10
- \* Pleural effusion: +10

## 肺炎

- \* 一級: >130 total points  
– Mortality Range: 27.0–29.2
- \* 二級: 91-130 total points  
– Mortality Range: 8.2–9.3
- \* 三級: 71-90 total points  
– Mortality Range: 0.9–2.8
- \* 四級: 70 or fewer points  
– Mortality Range: 0.1–0.6

## 胰臟炎 Pancreatitis

- \* Ranson's criteria
- \* APACHE II scoring systems
- \* Balthazar Computed Tomography Severity Index

## \* APACHE II

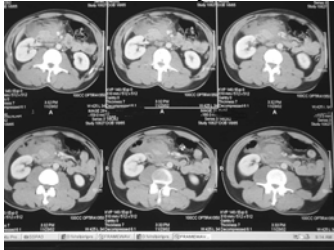
Variable	+4	+3	+2	+1	0	-1	-2	-3	-4
Temperatura	341	39-40.9	-	38.5-38.9	36-38.4	34-35.9	32-33.9	30-31.9	≤29.9
Tensión arterial media	2160	130-159	110-129	-	70-109	-	50-69	-	≤49
Frecuencia cardíaca	2180	140-179	110-139	-	70-109	-	55-69	40-54	≤39
Frecuencia respiratoria	350	35-49	-	25-34	12-24	10-11	6-9	-	≤5
'A-a'PO <sub>2</sub> (Pa)	2500	350-499	200-349	-	<200	>70	61-70	55-60	≤55
pH arterial	27.7	7.6-7.69	-	7.5-7.59	7.33-7.49	-	7.25-7.32	7.15-7.24	<7.15
'Si' Fio <sub>2</sub> <50%	252	41-51.9	-	32-40.9	23-31.9	-	18-21.9	15-17.9	≤15
Nº sérico	2180	160-179	135-159	130-154	130-149	-	120-129	111-119	≤110
K <sup>+</sup> sérico	27	6-6.9	-	5.5-5.9	3.5-5.4	3-3.4	2.5-2.9	-	≤2.5
Creatinina sérica	23.5	2-3.4	1.5-1.9	-	0.6-1.4	-	<0.6	-	-
Hematecrito	240	-	50-59.9	46-49.9	30-45.9	-	20-29.9	-	≤20
Recuento leucocitario	240	-	20-39.9	15-19.9	3-14.9	-	1-2.9	-	≤1
'Escala de Glasgow para el coma (EGC)	-	-	-	-	-	-	-	-	-
Puntaje fisiológico	-	-	-	-	-	-	-	-	-

\*Si Fio<sub>2</sub> ≤50%  
 \*Si Fio<sub>2</sub> <50%  
 \*Usar sólo si no se dispone de gases en sangre arterial  
 \*Puntaje = 15 - EGC actual

## CT Severity Index

Element	Finding	Points
grade of acute pancreatitis	normal pancreas	0
	pancreatic enlargement	1
degree of pancreatic necrosis	inflammation involving pancreas and peripancreatic fat	2
	single fluid collection or phlegmon	3
	two or more fluid collections or phlegmons	4
degree of pancreatic necrosis	no necrosis	0
	necrosis of 1/3 of pancreas	2
	necrosis of 1/ of the pancreas	4
	necrosis of more than 1/2 of the pancreas	6

## CT Severity Index



Classification	severity index	mortality	complications
4	0-1	0%	0%
3	2-3	3%	8%
2	4-6	6%	35%
1	7-10	17%	92%

## 胰臟炎 Pancreatitis

利用Ranson's criteria:

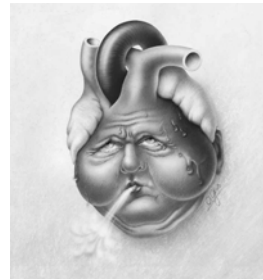
Admission:	Age > 55	0 - 2 =	2% mortality
	WBC > 16,000		
	Glucose > 200	3 - 4 =	15% mortality
	LDH > 350		
	SGOT > 250	5 - 6 =	40% mortality
At 48 hours:	Hct fall > 10%	> 7 =	100% mortality
	BUN rise > 8		
	Serum Ca < 8		
	Arterial PCO <sub>2</sub> < 60		
	Base Deficit > 4		
	Fluid Sequestration > 6 L		

## 胰臟炎 Pancreatitis

Ranson's criteria :

- \* 一級： > 6 Predicted mortality of 100%
- \* 二級： 5-6 Predicted mortality of 40%
- \* 三級： 3-4 Predicted mortality of 15%
- \* 四級： < 3 Predicted mortality about 1%

## 心衰竭



## 心衰竭

### NYHC Classification

1	Class IV	patients who should be at complete rest, confined to bed or chair; any physical activity brings on discomfort and symptoms occur at rest.
2	Class III	patients with marked limitation of activity; they are comfortable only at rest.
3	Class II	patients with slight, mild limitation of activity; they are comfortable with rest or with mild exertion
4	Class I	patients with no limitation of activities; they suffer no symptoms from ordinary activities

## 問題

