

明日安寧

安寧緩和醫療最適化分析
—以台大醫院為例



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OUR MOTIVATION

想成為更好的一個人

家中長輩最近昏倒住院

很想改進點什麼，
讓他們能即使在病痛中也擁有尊嚴。

真的想插管度過人生最後一程嗎？

Outline

Introduction of Hospice Palliative care

Research Source

Problem Definition & Goals

Analytical Method & Flow

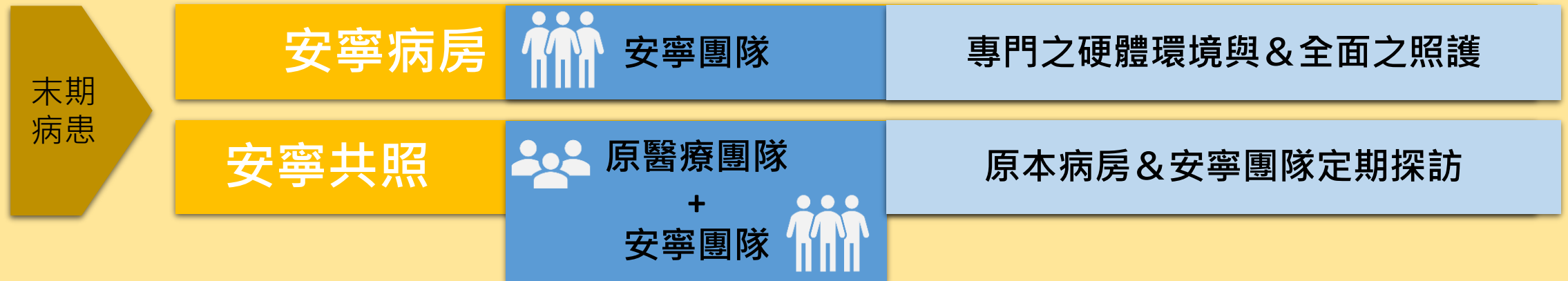
Phased Achievement & Difficulties

Future Goal

Introduction of Hospice Palliative Care(HPC)

HPC: Mitigatory and Supportive Medical Care

- Relieve terminal illness patients from physical, mental and spiritual pain
- To improve their quality of life.



Unstructured, Bilingual Data

- VS notes
- Admission notes
- Social Worker notes
- Hospice Combined team notes

The 73 y/o man is a case of

1. Enterobacter aerogenes bacteremia with septic shock, complicated with respiratory failure and acute kidney injury, s/p ETT+MV(2014/11/24-)
2. Rhabdomyolysis, suspected pyomyositis related, left psoas muscle.
3. Acute on chronic kidney disease, AKIN stage III, rhabdomyolysis and sepsis related, s/p CVVH(2014/11/24-)
4. Prostate adenocarcinoma, cT3bN1M0, Gleason score 4+5, initial PSA 119.7, under androgen deprivation therapy (2014/11/3-)
5. Suspect diabetes mellitusHe was admitted to MICU from ER due to septic shock with MOF.

Suggst:

- 1.已向原團隊住院醫師討論由於目前無法與任何法定家屬取得聯繫,若病人病情不可逆且經兩位專科醫師判斷為末期病患,則本安寧團隊經照會後可同意此病人可不施行心肺復甦術及不施行相關維生醫療
- 2.已請社工持續協助向此病患在美國的女兒取得聯繫,但目前仍無所獲



Admission Note

2014/11/24 20:11

主訴(Chief Complaint)

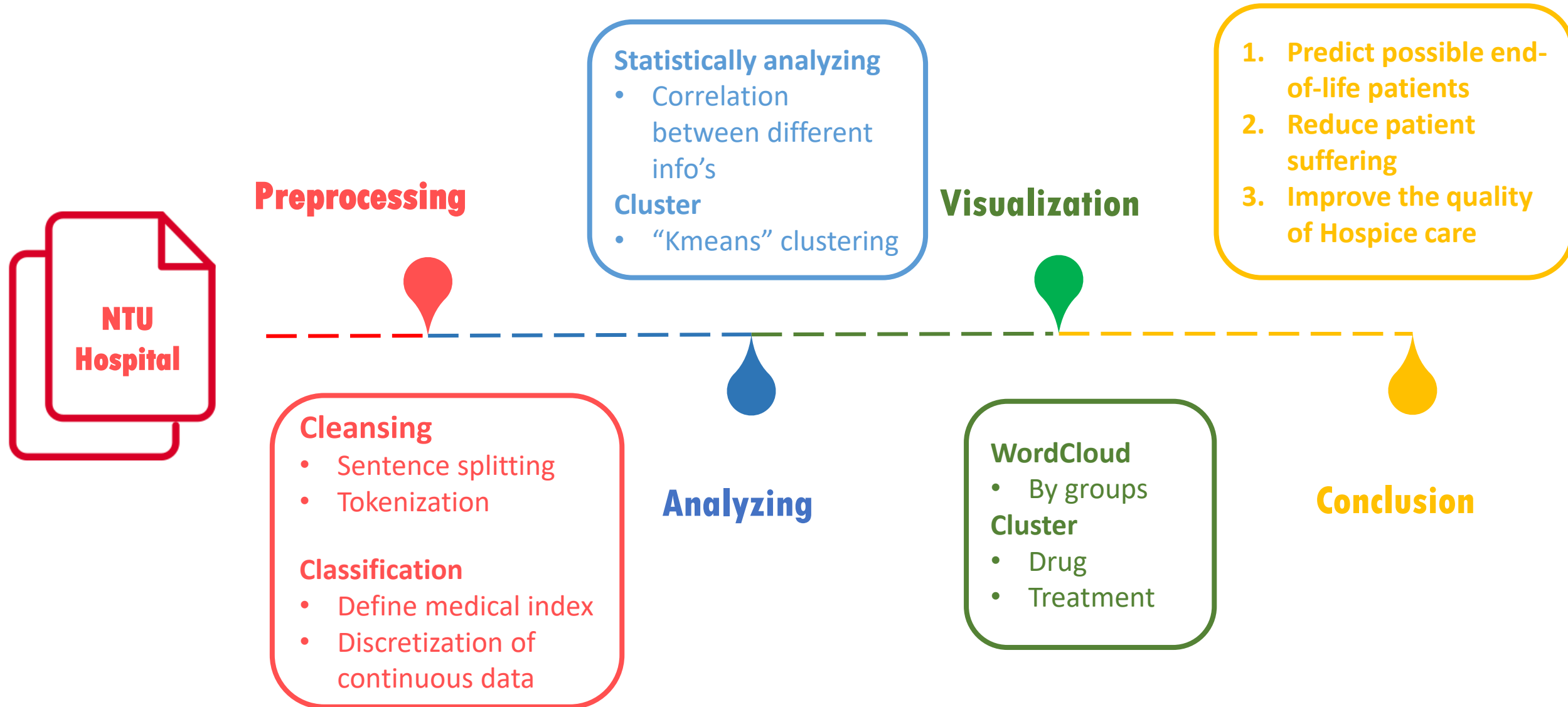
Informant: Social worker of our hospital, previous records and the patient's friend
General weakness and low back pain since 11/19

病史(Brief History)

This 73-year-old man was admitted to our MICU due to septic shock. He had a history of 1. Prostate adenocarcinoma, cT3bN1M0, Gleason score 4+5, initial PSA 119.7, under androgen deprivation therapy (2014/11/3-) He lived himself and didn't had family members. He was independent in his ADLs before this admission, and he had a work (推拿, 至今還有在工作). He was diagnosed of prostate cancer in 2014/10 with an initial presentation of hematuria and urinary retention. Androgen deprivation therapy was given since 2014/11/3. About one week before this admission (11/17), he had an traffic accident. He was sent to 萬芳 H, and no obvious fracture was noted. However, low back pain and general malaise emerged. Due to severe severe low back pain and low limb weakness on 11/19, he was sent to our emergency department on 11/20 for help. On arrival, fever to 38.2°C was noted. CXR showed no obvious infiltration. Blood tests showed marked leukocytosis (16960), increased CK (30176) and Cre (3.4) with relative low CK-MB (582). Empirical cefmetazole was given for possible infection, and hydration was given for rhabdomyolysis. Urologist was consulted on the same day (10/20), and restaging CT scan was suggested. Followed CK gradually decreased but Cre increased on 11/21 (4.2), and nephrologist was

Problem Definition & Goals

- Problem:
 - 整體安寧流程及資源配置並無結構化的模式
 - 安寧共照無系統性追蹤與檢視
- Goal1: 分析不同存活天數病患的病歷，找出並歸納其特徵
- Goal2: 幫助安寧療護團隊根據病患特徵預測其存活天數，並做出相對應決策



Analytical methods

-Preprocessing

檔案整理



定義數值標準



依字詞分類醫學標籤



Jieba切詞

依病人編號做整合歸檔



1-
all.tx



2-
all.tx



3-
all.tx



4-
all.tx



5-
all.tx



6-
all.tx

存活天數依10天分組

c1 = 活了0-10天者

c11 = 活了11-20天者...



live0110.
txt



live1120.
txt



live30.
txt

Analytical methods

-Preprocessing

檔案整理



定義數值標準



依字詞分類醫學標籤



Jieba切詞

建立不同類群keyword 字典



treatments.
csv



symptoms.c
sv



drug.csv



disease.c
sv



disease-
expand.csv



dfall.csv

```
[304] "atrophy"
[307] "hiv"
[310] "scoliosis"
[313] "shock"
[316] "abdominal"
[319] "venous"
[322] "bone"
[325] "infection"
[328] "pulmonary"
[331] "appearance"
[334] "defect"
[337] "failure"
[340] "long"

"diabetes mellitus"
"ascites"
"sepsis"
"ten"
"aortic"
"muscle"
"type"
"central"
"form"
"skull"
"protein"
"respiratory"
"foot"
```

Analytical methods

-Preprocessing

檔案整理



定義數值標準



依字詞分類醫學標籤



Jieba切詞

依照所建立之字典進行切詞

Ex. 病人1

```
[[1]]$`abbreviation(expand)`  
[1] "antibiotic"      "prognosis"      "Admission"      "History"        "history"  
[6] "admission"      "fracture"       "Blood"          "dopamine"       "biopsy"  
[11] "antigen"        "unknown"        "Dopamine"       "Assessment"     "negative"  
[16] "headache"       "Cardiovascular" "abnormal"       "Conjunctiva"    "Normal"  
[21] "bilateral"      "Negative"        "BLOOD"          "antibody"       "Without"  
[26] "without"        "lymphadenopathy" "normal"         "catheter"       "dislocation"  
[31] "lateral"        "Diagnosis"      "antibiotics"    "Discharge"      "assessment"  
[36] "disease"        "amount"         "specimen"       "Antibiotic"     "blood"  
[41] "symptoms"      "conjunctiva"    "Bilateral"     "Extremities"  
  
[[1]]$drugs  
[1] "dopamine"        "piperacillin"   "Dopamine"       "Diphenhydramine" "Bethanechol"  
[6] "Glucose"         "cefepime"       "metronidazole"  "vancomycin"     "Furosemide"  
[11] "ampicillin"     "Vancomycin"  
  
[[1]]$disease  
[1] "ascites" "Ascites"  
  
[[1]]$`disease(expand)`  
[1] "shock"          "with"           "focus"         "muscle"
```

Analytical methods

-Analysis

Cluster



Visualization



解釋關聯性

	P2	P3	P5	P7	P11	P12	P13	P16	P17	P23	P31	P37
ceftazidime	0	0	0	1	0	0	0	0	0	0	0	0
dopamine	1	0	0	0	0	0	1	0	0	0	0	0
levophed	0	0	0	1	0	0	1	0	0	0	0	0
fluconazole	0	1	0	0	0	0	0	1	1	0	0	0
meropenem	0	1	0	0	0	0	0	0	0	0	0	0
nexium	0	0	1	0	1	1	0	0	0	0	0	0
diovan	0	0	1	0	0	0	0	0	0	0	0	0
fosamax	0	0	1	0	0	0	0	0	0	0	0	0
norvasc	0	0	1	0	0	0	0	0	0	0	0	0
rocephin	0	0	1	1	0	0	0	0	0	0	0	0
tetracycline	0	0	1	0	0	0	0	0	0	0	0	0
plavix	0	0	0	0	0	0	1	0	0	0	0	0
furosemide	0	0	0	1	0	0	0	0	0	0	0	0
baraclude	0	0	0	0	0	0	0	0	0	0	0	1
catapres	0	0	0	0	1	0	0	0	0	0	0	0
lasix	0	0	0	0	1	0	0	0	0	0	0	0
mircera	0	0	0	0	1	0	0	0	0	0	0	0
seroquel	0	0	0	0	1	0	0	0	0	0	0	0
trandate	0	0	0	0	1	0	0	0	0	0	0	0
unasyn	0	0	0	0	1	0	0	0	0	0	0	0
ultracet	0	0	0	0	0	1	0	0	0	0	0	0
ddavp	0	0	0	0	0	0	1	0	0	0	0	0
heparin	0	0	0	0	0	0	1	0	0	0	0	0
entecavir	0	0	0	0	0	0	0	1	0	0	0	0
zithromax	0	0	0	0	0	0	0	0	1	0	0	0
tamiflu	0	0	0	0	0	0	0	0	0	1	0	0

Analytical methods

-Analysis

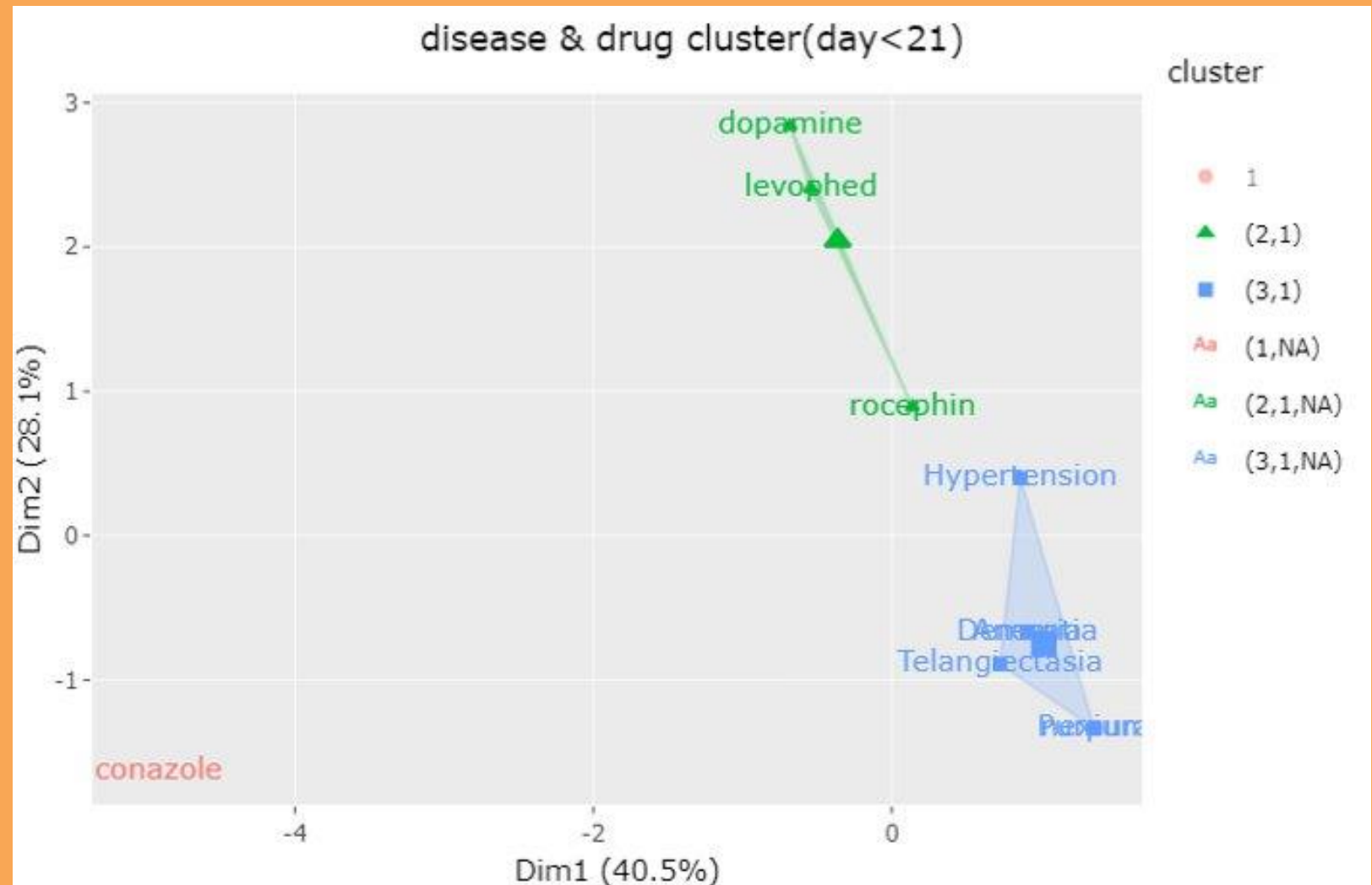
Cluster



Visualization



解釋關聯性



Word Cluster Interpretation

group	Day ≥ 21	Day $< 21 < 21$
相似處	Drug: Levophed/Dopamine(血管收縮、升高血壓)、各種抗生素 Disease: Dementia(失智)、Purpura(紫斑)、Telangiectasia(微血管擴張症)	
相異處	抗生素以抗細菌、抗寄生蟲為主 (metronidazole, augmentin, ceftazidime...)	抗生素以抗真菌為主 (fluconazole)
	B肝、橫紋肌溶解症	高血壓

Nexium & Purpura

是一種H⁺
通道抑制劑



治療胃幽門
桿菌引起的
胃潰瘍



H⁺減少使胃黏膜的
功能下降(殺菌、
Vit B12內在因子等)



Vit B12、鐵離子
減少，造成血小
板減少症



Case Report

Adverse Effects of Proton Pump Inhibitors on Platelet Count: A Case Report and Review of the Literature

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Received 10 December 2017; Accepted 22 March 2018; Published 30 April 2018

Academic Editor: Chia-Tung Shun

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Abstract

Proton pump inhibitors (PPIs) are the most effective and preferred class of drugs used to treat peptic ulcer disease, gastroesophageal reflux disease, and other diseases associated with increased production of gastric acid. PPIs in general have an excellent long-term safety profile and are well-tolerated. However, studies have shown some adverse reactions (e.g., osteoporosis, *Clostridium difficile*-associated diarrhea, Vitamin B12 and iron deficiency, and acute interstitial nephritis) on long-term PPI use. Thrombocytopenia attributed to use of PPIs has been described in a few case reports and a retrospective study. In this case report, we describe a case of PPI-induced thrombocytopenia. In our patient, thrombocytopenia immediately developed after the initiation of PPI on two separate occasions and resolved after its discontinuation. The strong association found in our case implies the potential role of PPI in causing this rare but serious adverse reaction. Based on this case report and the observation from other studies, a PPI-induced adverse event should be considered as a possible etiology for new-onset idiopathic thrombocytopenia.

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Full-Text XML

Linked References

How to Cite this Article

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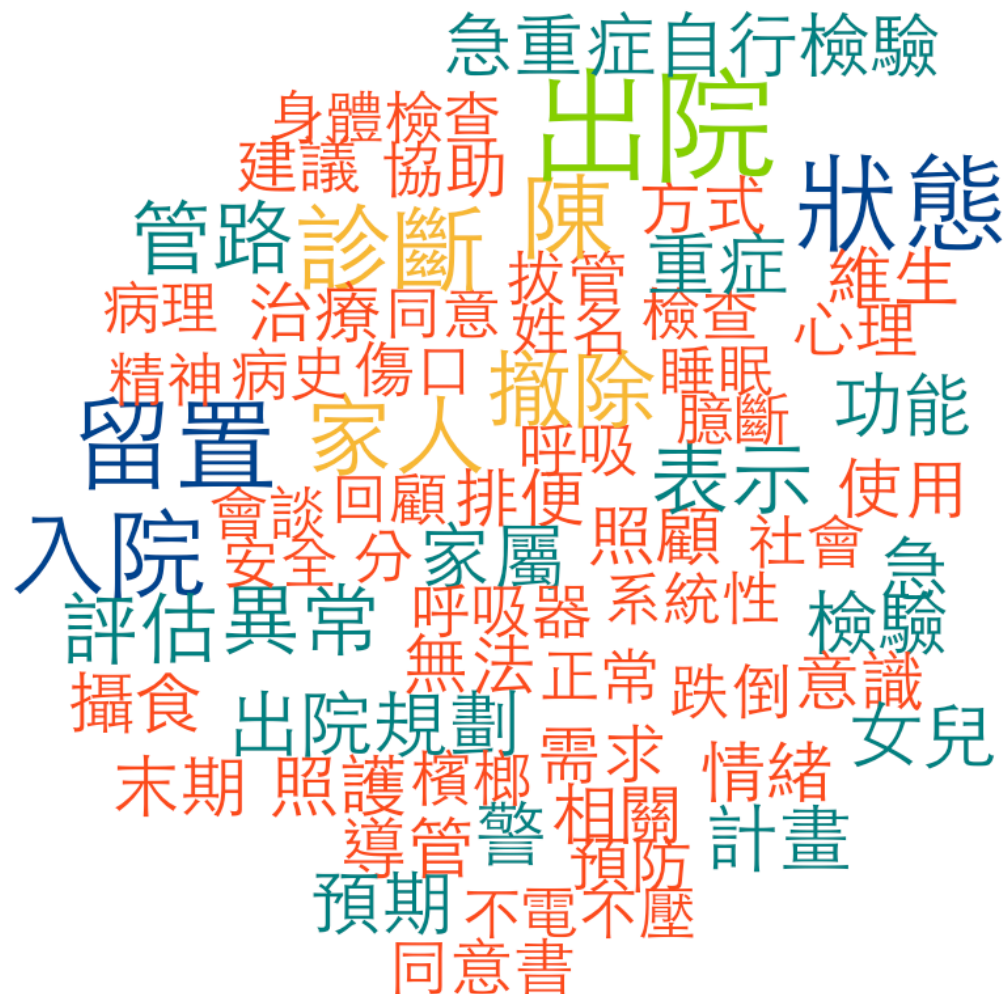
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Citations	0
ePub	6
PDF	414

Analytical methods -Analysis

Wordcloud

JiebaR中文醫療字典

自由紀錄→格式化：
社工、安寧團隊紀錄重要指標



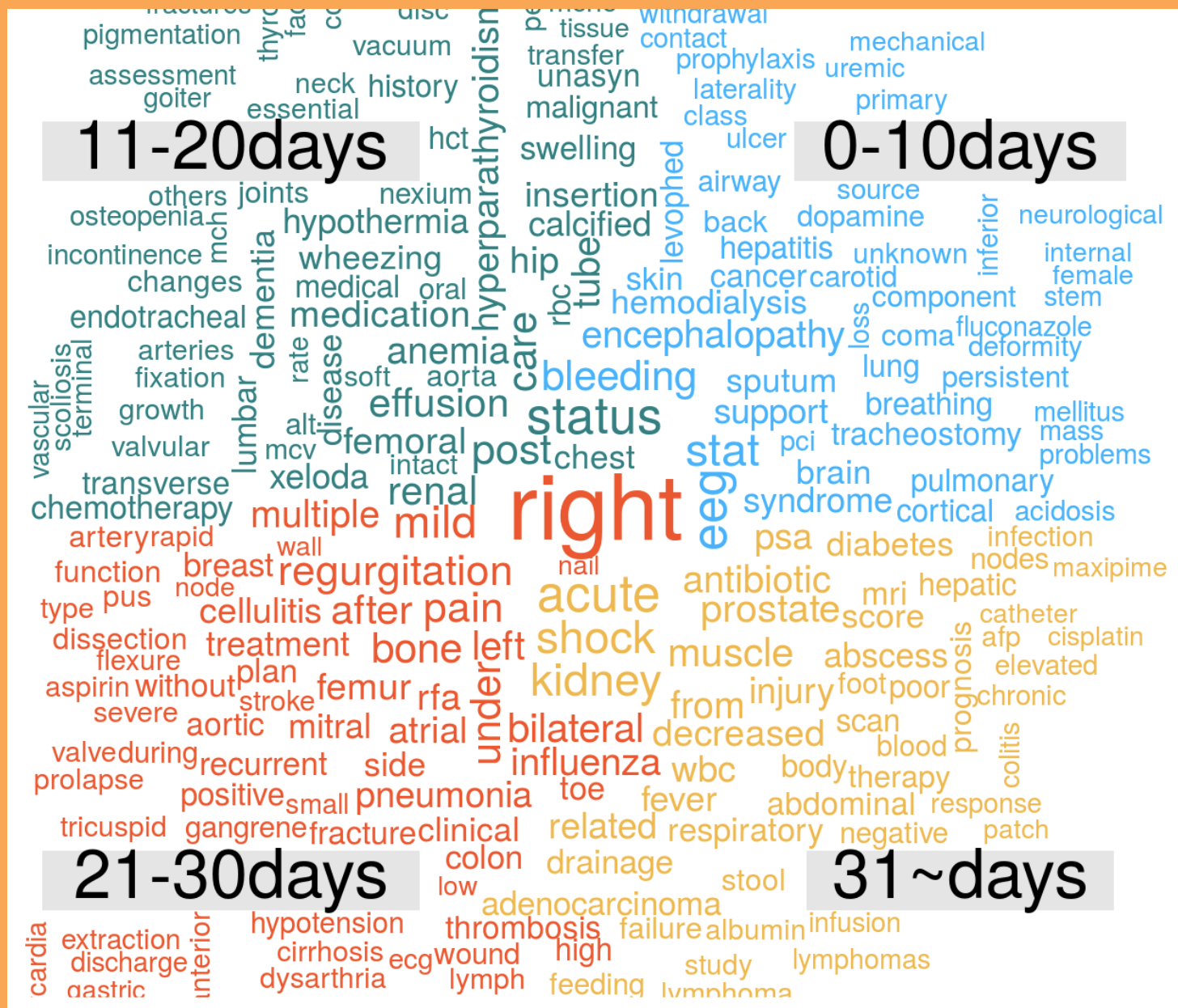
Analytical methods -Analysis

Wordcloud

英文切詞結果

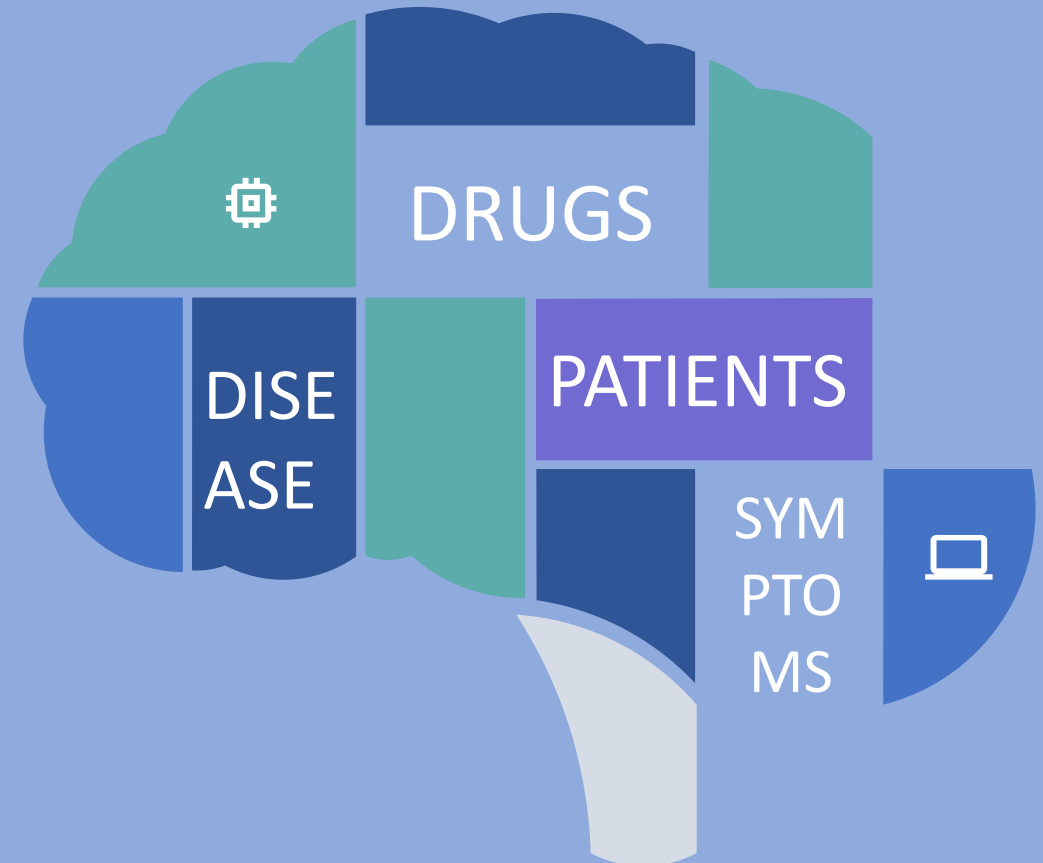
比較文字雲

不同存活長度之病患特徵呼 應kmeans cluster



Phased Achievements

1. 非結構式資料找出
- 2.
3. 針對不同存活天數去分析並歸納相對應特徵，因應不同狀況去預估病人存活天數時實施不同流程。



Difficulties



樣本數不足



加入同類疾病但未進入安寧之患者資料，
能夠更有效辨識出可能進入安寧之指標。



缺乏關鍵資訊
、回測指標



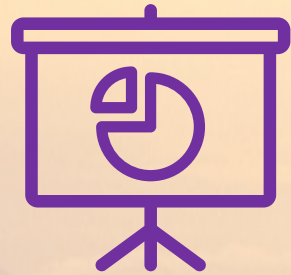
提及安寧方案之時間點、是否進入安寧治療、家屬陪伴狀況、病人家屬滿意度調查...



專業知識加強



不同領域專業人員加入



降低病患受苦時間及提升品質

- 長期追蹤病患資訊
- 了解外界、家屬對流程的評語
- 給予個別化安寧治療流程



協助醫師分析及治療病患

- 協助「制式流程」篩選
- 節省勞力及時間成本
- 降低處方失誤
- 預測未來安寧風險