International Network of Health Promoting Hospitals & Health Services

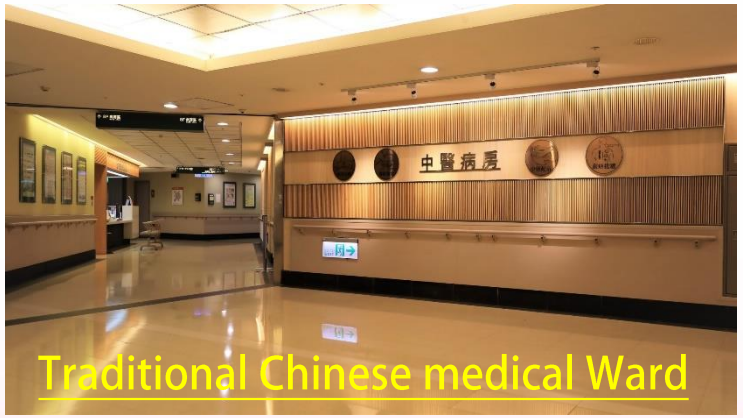
Application of Digital Signage of UTI Risk Warning System to Reduce the Incidence of Urinary Tract Infection

Ya-Hui Chou[1], Su-Mei Tseng[1], Shu-Ling Yeh[1],Suh-Ing Hsieh[2]

1.RN, MSN, Department of Nursing, Taoyuan Chang Gung Memorial Hospital, Taoyuan, Taiwan, R.O.C.

2.RN, PhD, Department of Nursing, Chang Gung University of Science and Technology & Taoyuan Chang Gung Memorial Hospital, Taoyuan, Taiwan.


Taoyuan Chang Gung Hospital



Traditional Chinese medical Ward

Chang Gung Medical Foundation

Outline

- Background
- Purpose
- Methods
- Results
- Conclusion

Background

- Urinary tract infection
  - is the 2nd health care-associated infections, while the usage rate of urine catheter among infected persons is up to 87.6%.
- Our ward
  - treats stroke and cancer patients who are vulnerable groups of urinary tract infection.
  - The occurrence of urinary tract infection (UTI)
    - in November 2019 exceeded the control limit, 25.7% of the patients transferred out of acute treatment due to UTI from 2017 to 2019, which caused staff workload.

Background

- “Early warning system”
  - has been emphasized in recent years.
  - Early scoring warning system and real-time monitoring reduce manual interpretation errors and take appropriate clinical treatment.

Purpose

- The transfer rate of TCM inpatients due to UTI dropped from 25.7% to below 21.7%.
- The UTI infection rate of TCM inpatients is within the 2σ (1.54 ‰) warning boundary.

Literature review

EAU Guideline: DM, old age, indwelling urinary catheterization, etc. are UTI risk factors

Secondary database: Age, urinary catheterization, catheterization time, women, DM, etc. are UTI Risk factors

Systematic review and meta-analysis: Evidence grade **Level1**

Age, female, extended urinary catheterization time, DM, urinary catheter, UTI yuki are UTI risk factors

Literature review

- **Risk factors for urinary tract infection**

01 **Prolonged duration of catheterization**

02 **Gender:**

03 **Diabetes**

04 **Catheterization**

05 **Longer hospital stays**

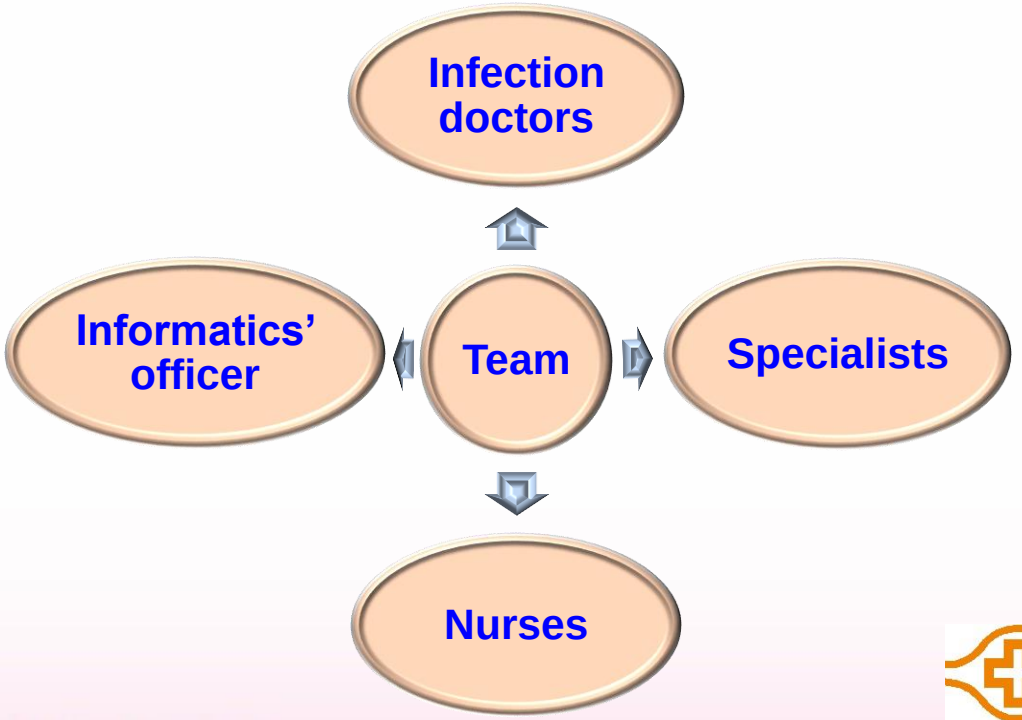
TABLE 2 Meta-analysis of the pooled risk factors for CAUTI

Risk factors	Studies involved	I^2	p	Model	Results of meta-analysis		
					Combined OR	95% CI	p
				Random	6.99	4.45–9.53	<0.00001
				Fixed	2.01	1.64–2.47	<0.00001
[illegible]sed age	c, h, i, j	91%	$p < 0.0000$	Random	4.23	−3.03 to 11.51	0.25
				Random	1.98	1.31–2.99	0.001
[illegible]ory of antibiotic usage	f, i	78%	$p < 0.001$	Random	0.95	0.36–2.53	0.92
[illegible]				Fixed	2.85	1.89–4.30	<0.00001
				Fixed	4.53	2.64–6.42	<0.00001
Longer ICU stays	b, d, j	95%	<0.0000	Random	12.61	3.98–21.24	0.004

[illegible] et al. (2016); e: Kim et al. (2017); f: Lee et al. (2013); g: Lee

Methods-1

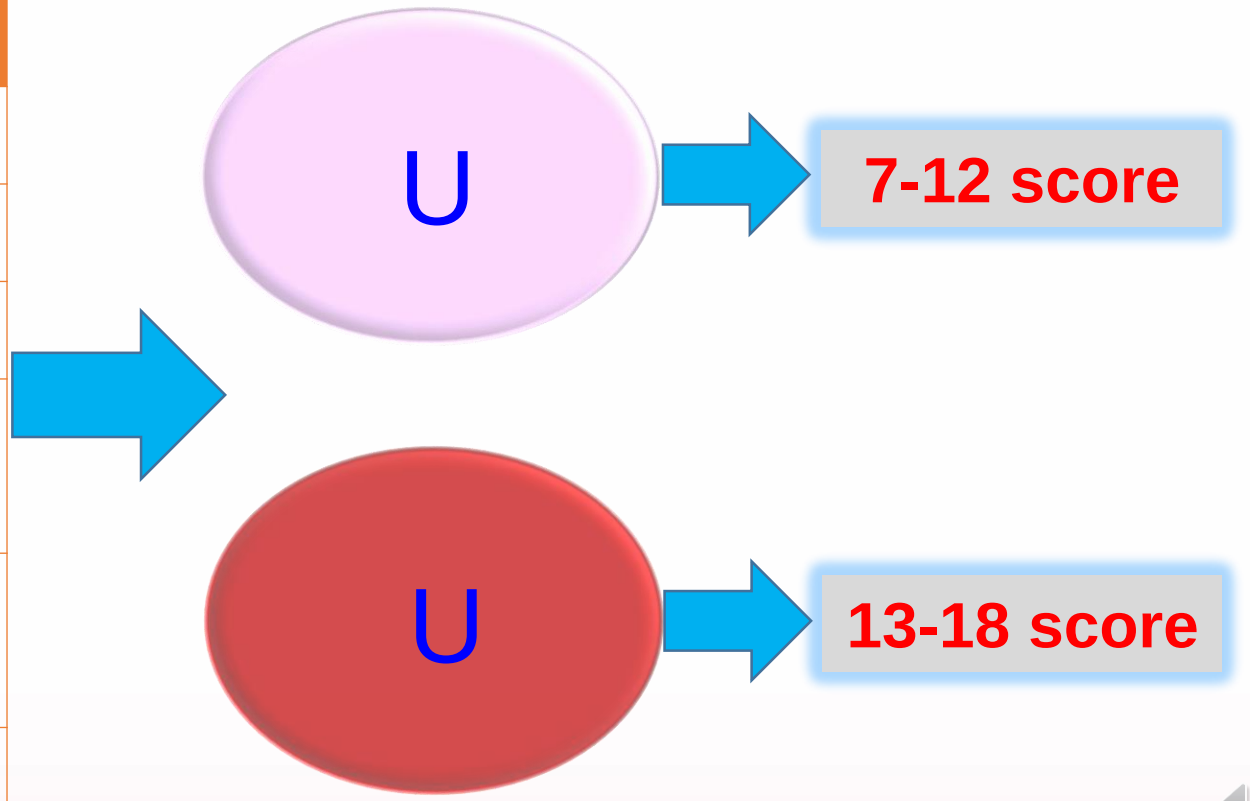
- **A project was formed using cross-departmental cooperation (infection physicians, informatics' officers, and nurses) from March to September of 2020.**



Methods-2

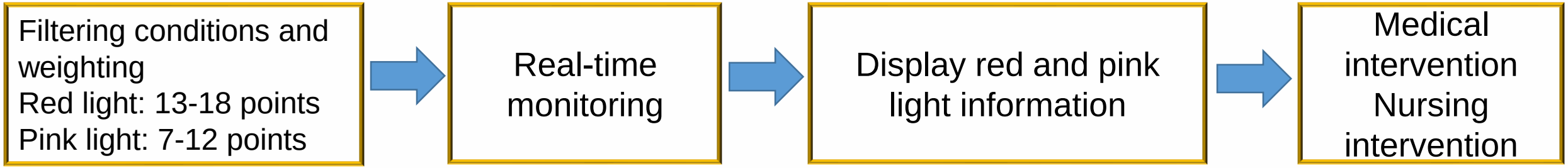
- Constructing UTI Risk Information Warning Care Model
  - Converting risk factor weighted scores to visualization tool mode

Variable	score
Diabetes	2
Gender	2
Catheterization	3
Longer hospital stays >14 Days	4
Prolonged duration of catheterization >7days	7
Total	18



Methods-3

- **Constructing UTI Risk Information Warning Care Model**




桃園長庚八樓F區護理站 2020年11月25日 星期三 15:54:26 病房主任： 楊建中 病房護理長： 周雅惠 登入者：周雅惠
病人動態 - UTI
01C
13A
16B
High risk U
佔床率
病房介紹
病房特色
使用者登出
照護需求
床位動態
設備動態
病人動態
手術清單
檢查清單
治療清單
醫師動態
值班人員
護理師
C D 肢態癱 全身癱 自如 步履不 DNR 跌 氧氣 保密 空床 fever FEVER cough UTI UTI
8 33 14 9 7 11 4 41 1 10 9 0 0 6 0 3 1
Medical care actively intervenes to prevent UTI care.

Methods-4

- Measures to prevent UTIs
  - Risk factor control strategy

Item	Execution strategy
Diabetes	Control blood glucose
Gender: female	Implement perineal cleansing
Catheterization	Remove tubing as soon as possible
Longer hospital stays	Attention and control the patient's underlying disease
Prolonged duration of catheterization >7days	Avoid continuous indwelling catheterization attempts to remove

Li et al. (2019)

Methods-5

- Educational training
  - Date: 2020/11/1~5
  - Training object: all medical staff
  - Speaker: the head nurse

Nursing staff education and training

Advocate in the healthcare seminar

Strengthen discussions with doctors to remove Foley

Results

- The incidence of urinary tract infection
  - The rate UTI (1.5‰) decreased by 0.6 ‰ from the same period last year (0.9‰)
- Warning risk cases between November 2020 and April 2021
  - 10 cases at moderate risk
  - 21 cases at high risk.
- 7 cases were successfully removed urine catheters.
- Medical personnel's nursing care knowledge on indwelling urine catheter reached 100%.
- This project was expanded to the parallel development of the 5 hospitals of the system.

Conclusions

- Medical staff pays more and more attention to the early warning system.
- Strengthening medical staff’s concept of risk warning system, establishing warning system, and understanding the risk factor monitoring project can early detect risk cases and adopt appropriate clinical treatment.

Thank you for your attention