

# **RE-ADMISSION IN SOIDAO HOSPITAL DURING OCTOBER 2013 – MARCH 2015**

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**Ext. Kamolchanok Tanchotikul**

**Ext. Nattaporn maneepiroj**

**Ext. Siriporn chawantanpipat**

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# Introduction

## **Hospital re-admission**

- Disruptive to patient and care-giver
- Costly to the health care system
- Increase risk of hospital acquired infection
- Contribute loss of functional ability, particularly in older patients

# Introduction

## **Hospital re-admission**

- Some re-admissions are unavoidable resulting from progression of disease
- Some are resulting from poor quality of care
- Improvement of quality of care in initial admission can directly reduce re-admission rate

# Objective

1. To study re-admission rate and causes in Soidao Hospital during Oct 2013 – Mar 2015
2. To identify strength and pitfall of the initial care
3. To develop quality of care of the initial hospitalization

# Method

## 1. Project planning

## 2. Inclusion criteria

- All inpatient of Soidao hospital during Oct 2013-Mar 2015 who re-hospitalization **within 28 days** after discharge from previous admission

- Patient is alive upon discharge in the previous admission

## 3. Data collection:

from Soidao hospital information center

## 4. Categorization and review medical record

## 5. Data summary

# Result

**N= 135 (308 admissions)**

Data loss 5  
(40 admissions)

**N= 130 (268 admissions)**

(168 re-admissions)

## **CVS disease**

n= 18 (56 admissions)

## **RS disease**

n= 26 (71 admissions)

## **GI disease**

n= 13 (29 admissions)

## **Skin & wound care**

n= 14 (25 admissions)

## **Cancer**

n= 7 (16 admissions)

## **GU disease**

n= 12 (22 admissions)

## **Neurologic disease**

n= 10 (18 admissions)

## **DM related disease**

n= 7 (14 admissions)

## **Electrolyte**

n = 1 (2 admissions)

## **hematology**

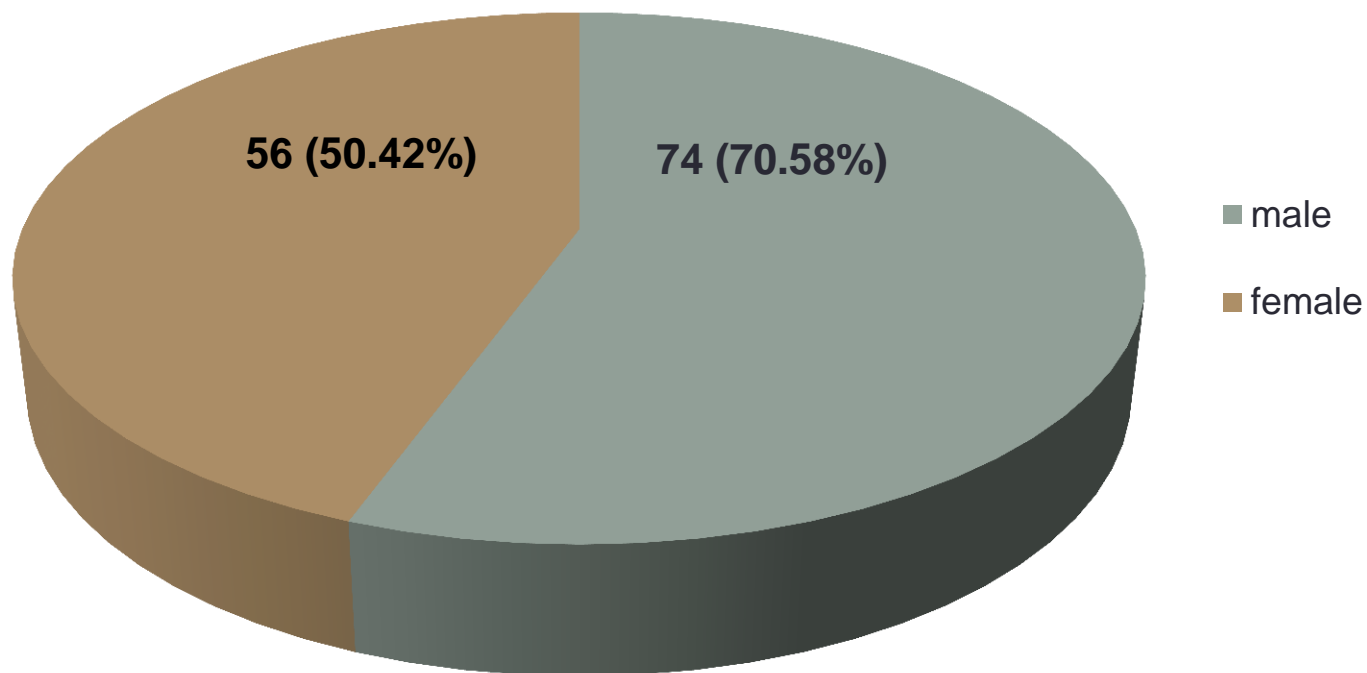
n= 5 (8 admissions)

## **Neonatal jaundice**

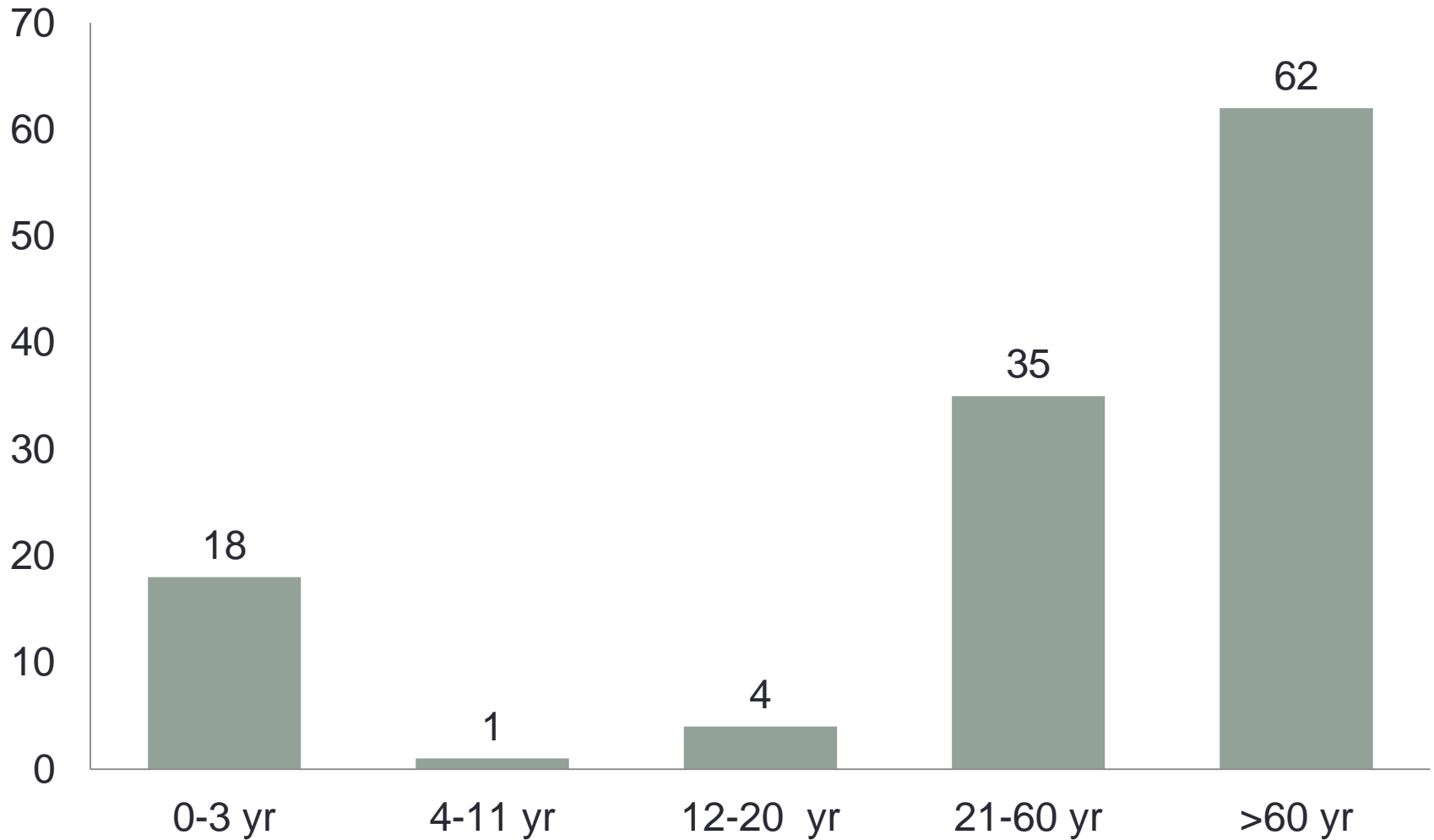
n= 16 (29 admissions)

# Result

## Number of re-admission characterized by gender (N= 130)

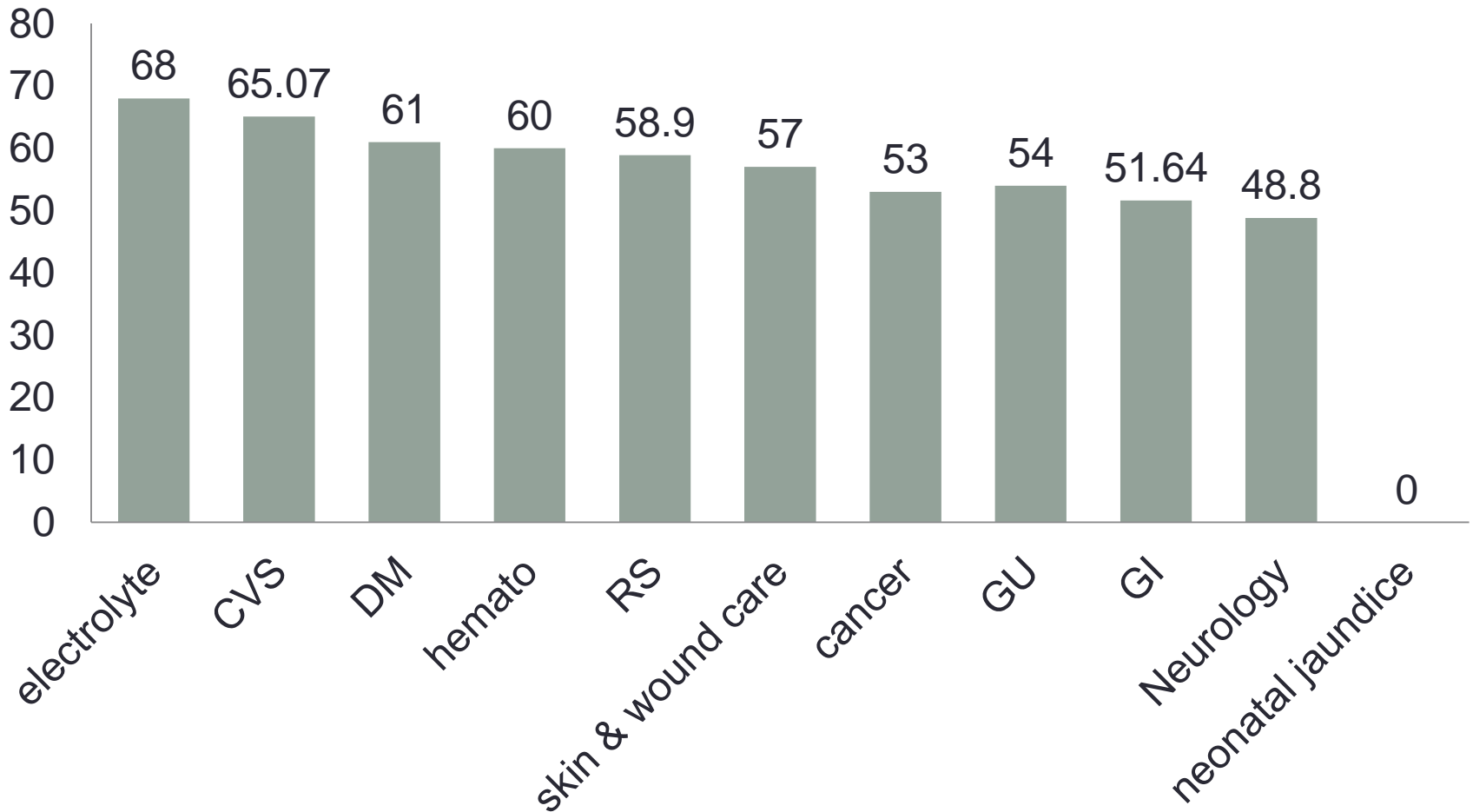


# Number of re-admission characterized by age (N= 130)

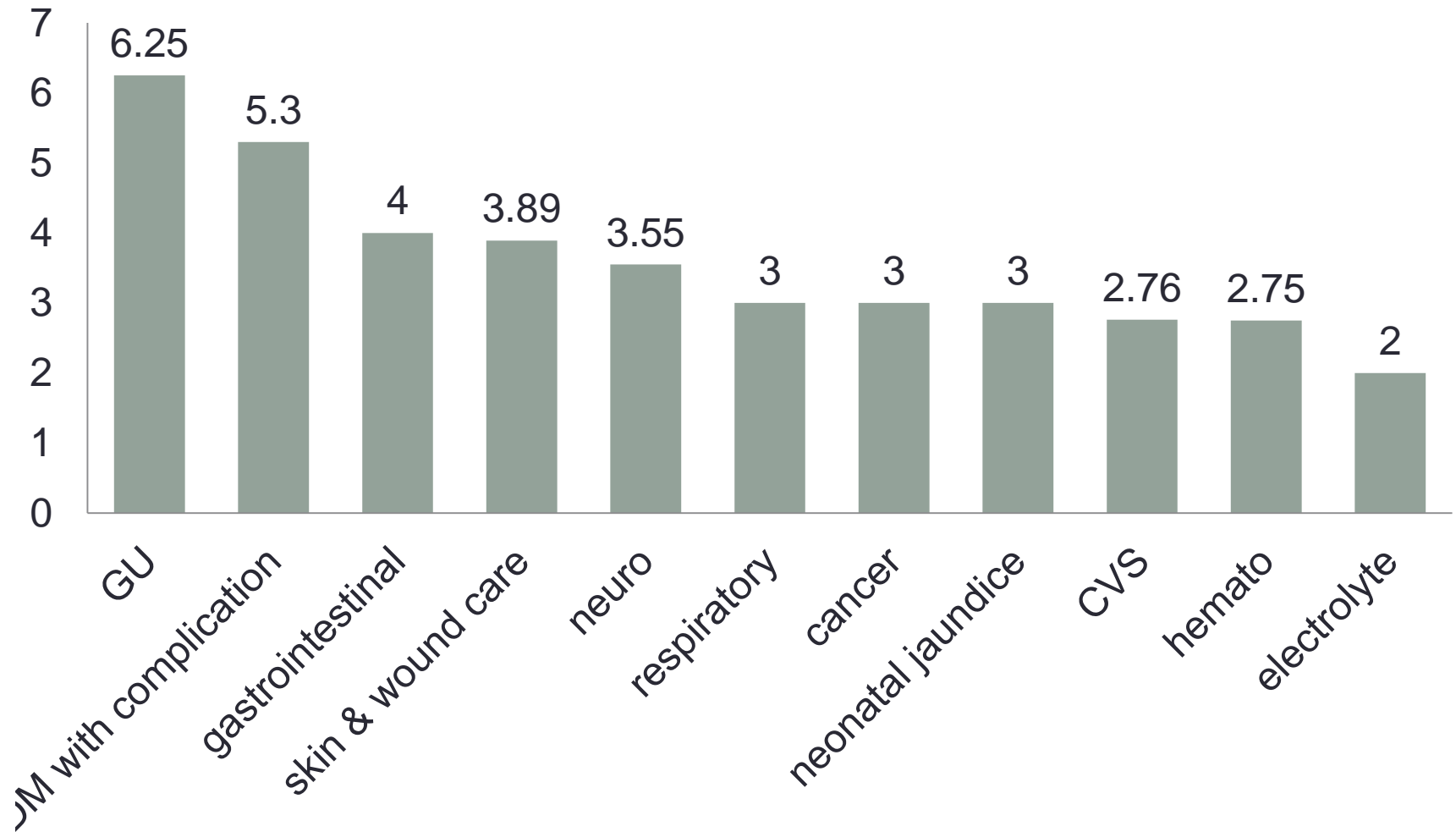




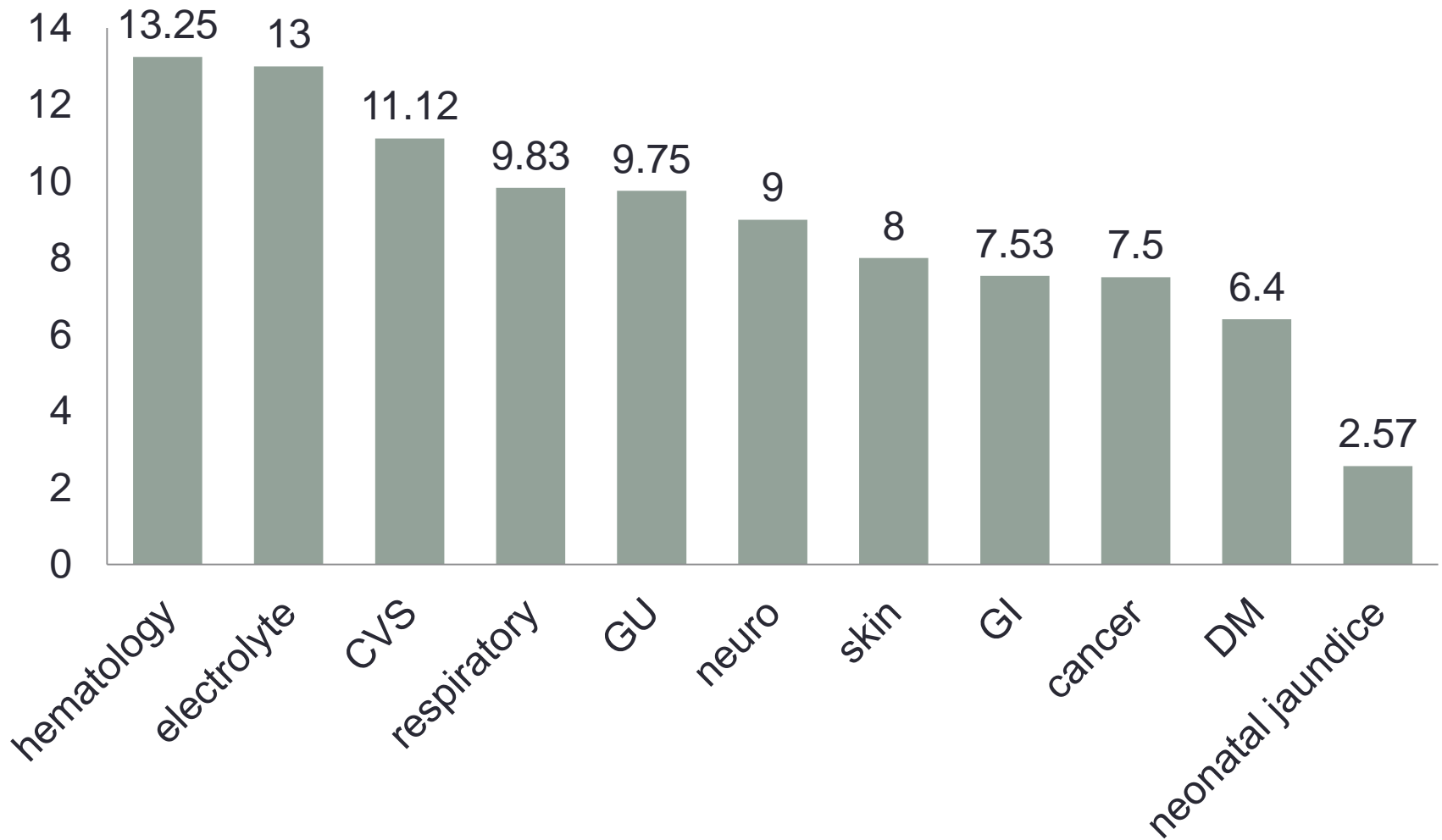
# Average age by disease (year)



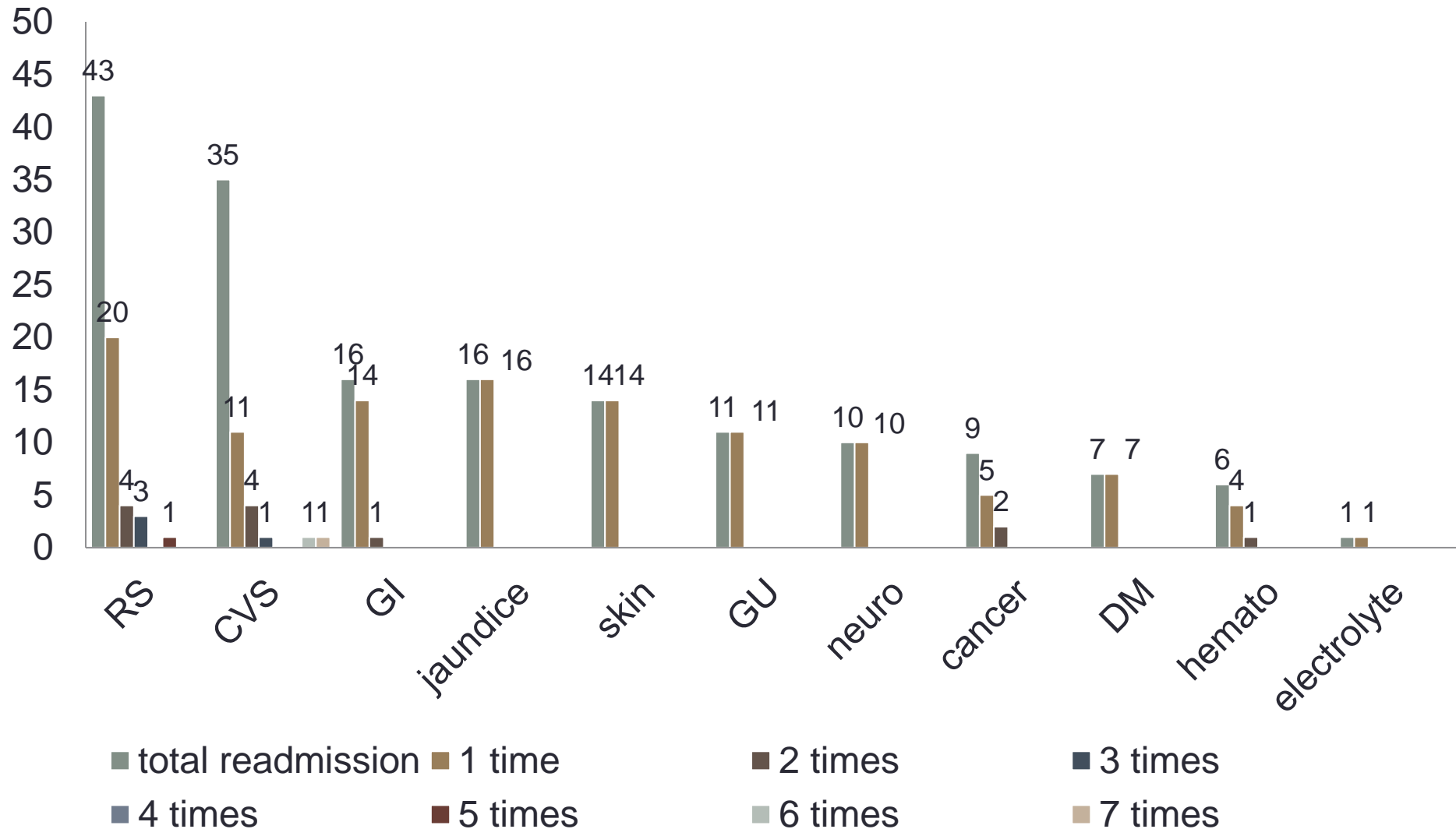
# Average duration of hospital stay in overall admission by disease (day)



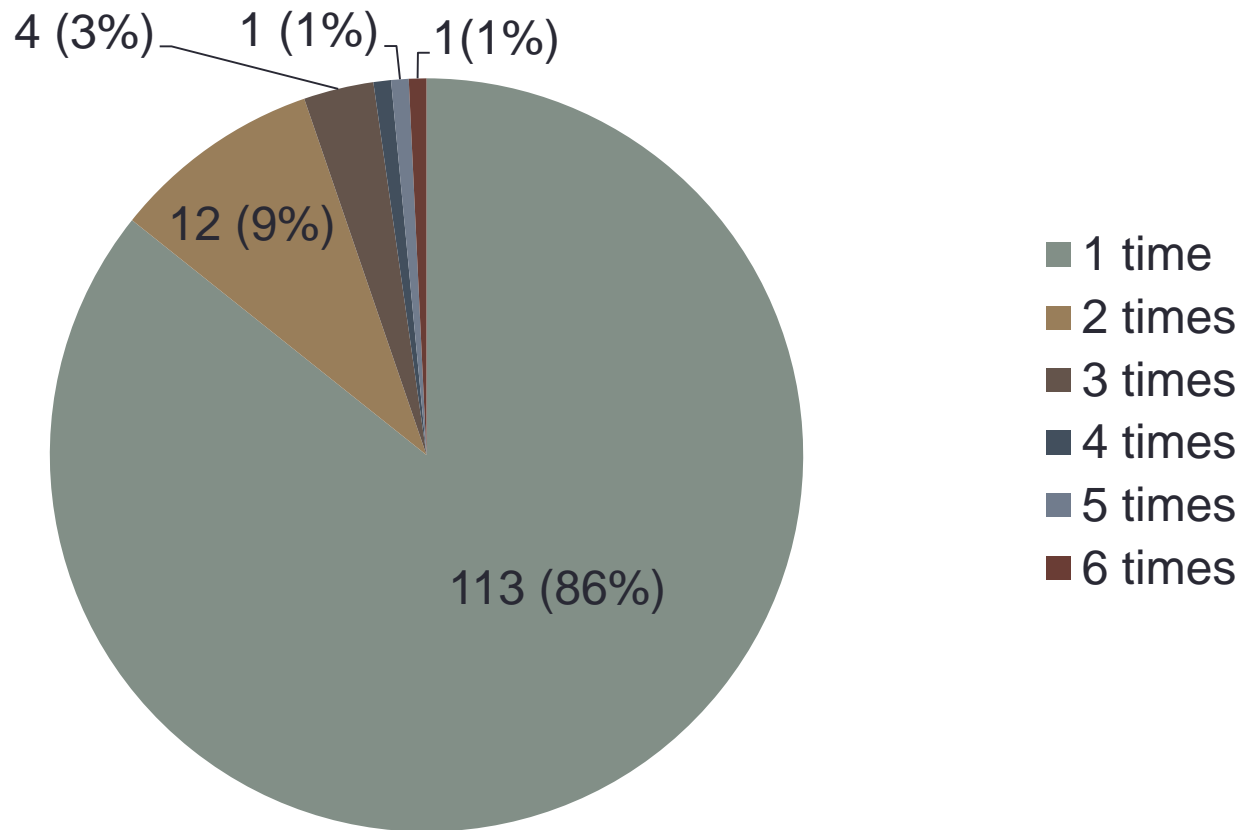
# Average interval of readmission by disease (day)



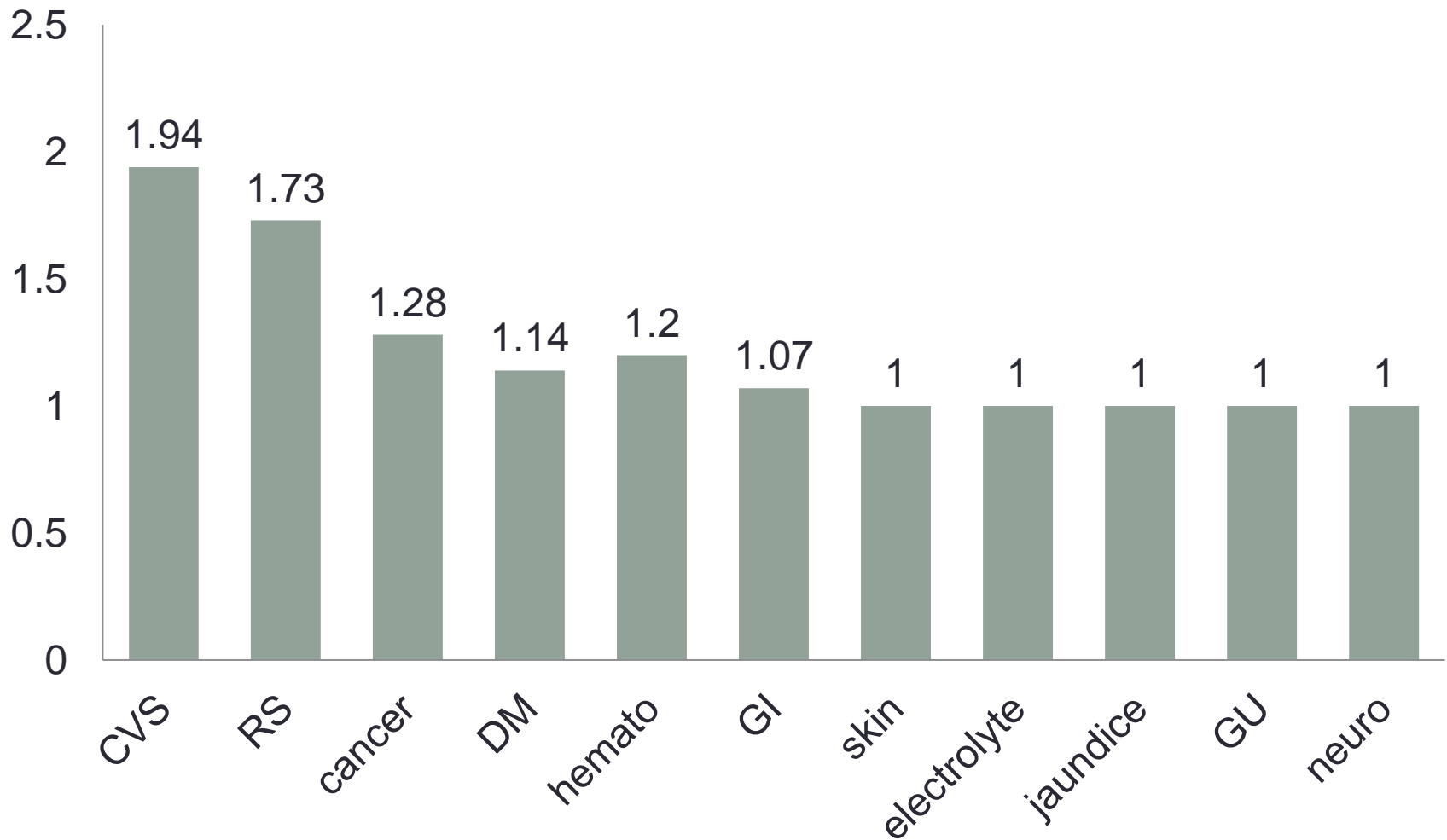
# Number of readmission by disease (n = 168)



# Number of patients who undergone readmission (n = 132)



# Number of average readmission by disease (times)



# CARDIOVASCULAR DISEASE

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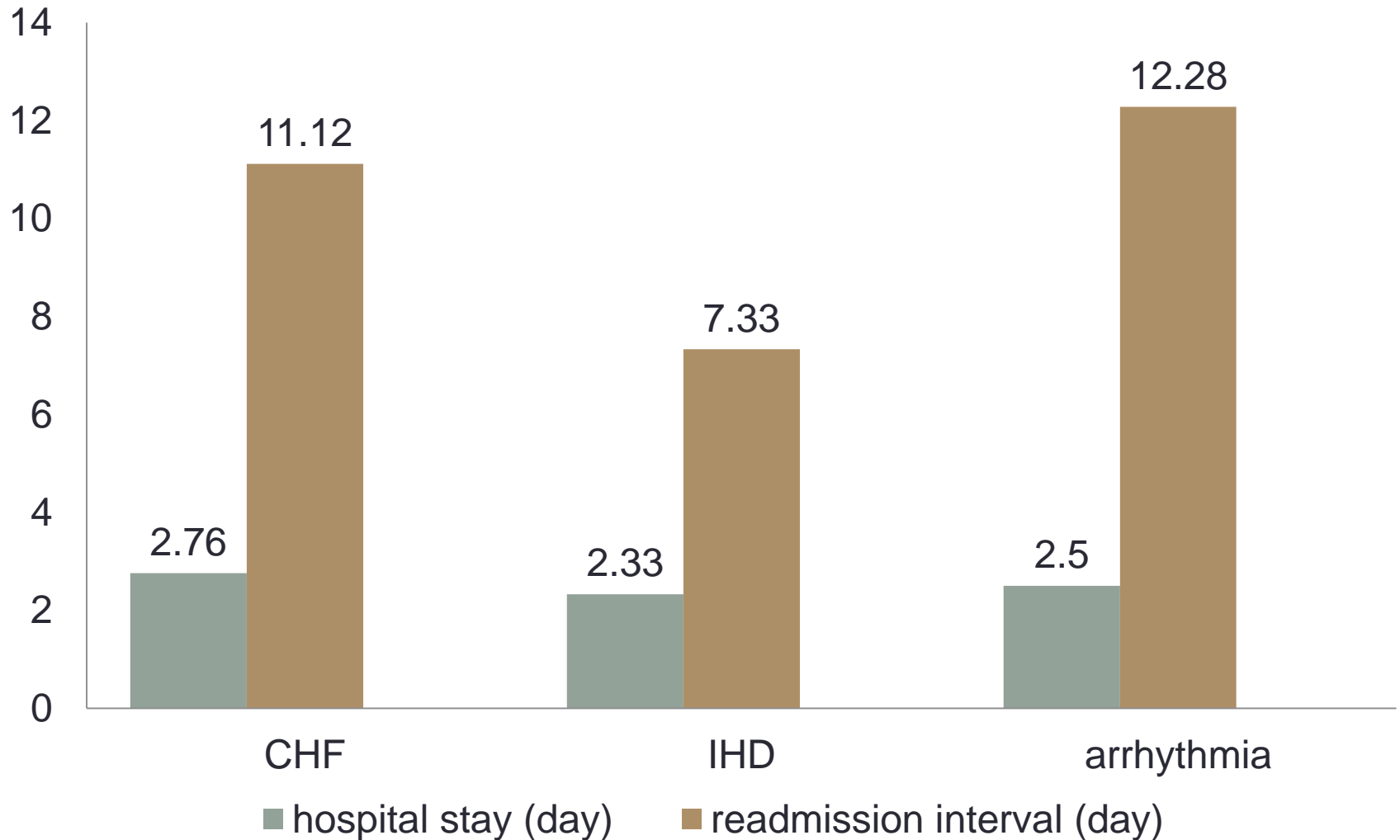
# CVS

Disease	Number of patients	Admission (times)	Re-admission (times)	Average readmission (times)	Average age (max,min)
CHF	10 (55.55%)	36 (64.28%)	25	2.5	63 (91,54)
Arrhythmia	5 (27.78%)	14 (25%)	7	1.4	69.23 (78,45)
• Brady	1	4			
• SVT	3	8			
• AF	1	2			
IHD	3 (16.67%)	6 (10.71)	6	1	63 (69,55)
Total CVS admission	18	56	38	1.94	65.07



# CVS

Duration of hospital stay and readmission interval for each CVS disease (days)



# Congestive heart failure

- **Discharge condition for all admission (n =36)**
  - Improve 30 times
    - With remaining fine crepitation 17 times
    - With clear breath sound 13 times
  - Worsen/refer 6 times
    - NSTEMI 3 times
    - Respiratory failure 2 times
    - Cardiogenic shock 1 time

# Congestive heart failure

- **Comorbidity (N =10 patients)**

- Hypertension 7
- Diabetic mellitus 6
- CKD stage 5 6 (undergoing RRT : 0)
- HT+ DM + CKD 4
- Old IHD 2
- Valvular heart disease 2
- Dilated cardiomyopathy 1
- Arrhythmia (AF) 1

# Congestive heart failure

- **Cause of CHF admission (N = 36)**
  - NSTEMI 3
  - Infection 1
  - Anemia 2
  - **Unknown precipitating factor 27**
  - Planned readmission (refer back) 3

# Congestive heart failure

- **Cause of CHF readmission (N = 25)**

- Planned readmission (refer back) 3
- New NSTEMI 2
- **Unknown precipitating factor 20**
  - HT/DM/CKD stage5/moderate LV dysfunction 3
  - HT/DM/CKD stage5/severe LV dysfunction 5
  - HT/DM/ DVD /severe LV dysfunction 6
  - HT/ moderate LV dysfunction 1
  - HT/DM/CKD stage5/ HCC 1
  - HT/DM/CKD stage5/ old IHD 1
  - MR s/p prosthetic valve replacement/ AF 1
  - History of IHD 1

Treatment intervention	Number of admission (n = 30*)
Risk factor control (alcohol/smoking cessation)	30 (100%)
Standard investigation	30 (100%)
Ultrasound bedside At least 1 time / person (n = 10)	IVC evaluation : 7 (70%) Echo bedside : 4 (40%)
Preload reduction (lasix)	30 (100%) Ave. negative I/O = 1933.87 ml
Increased contractility (digoxin)	7 (23.33%)
Afterload reduction (CCB/ vasodilator)	26 (86.67%)
RAAS inhibition (ACEI/ARB)	10 (33.33%)
<b>Sympathetic inhibition and cardiac remodeling prevention (beta-blocker)</b>	<b>6 (20.00%)</b>
improved oxygenation (Hct)	Average Hct = 30.23 (40.2, 20.5)
Patient education	At least 1 (3.33%) (not mentioned in other medical records)

\* Total admission – refer = 36 -6

# Congestive heart failure

## Strength

- Smoking and alcohol cessation
- Standard treatment

## Pitfall

- **Beta-blockers optimization**
- Echocardiogram evaluation
- Improper I/O record
  - Ex. Urine 300 ml + 3 times

# Arrhythmia

- Discharge status (n = 14 times)
  - Improve 14 (100%)
- Underlying disease (n = 5 persons)
  - Hypertension 4
- Readmission cause (n = 7 times)
  - Disease progression (unknown cause) 6
  - Ongoing precipitation 1
    - regular caffeine drinking



# Ischemic heart disease

- Discharge status (n = 6 times)
  - Improve 4
  - Refer 2 due to NSTEMI, Unstable angina with T Wave inversion
- Underlying disease (n = 3 persons)
  - Hypertension + DM 1
- Readmission cause (n = 3 times)
  - Disease progression (unknown cause) 1
  - Planned readmission (refer back) 2

# RESPIRATORY DISEASE

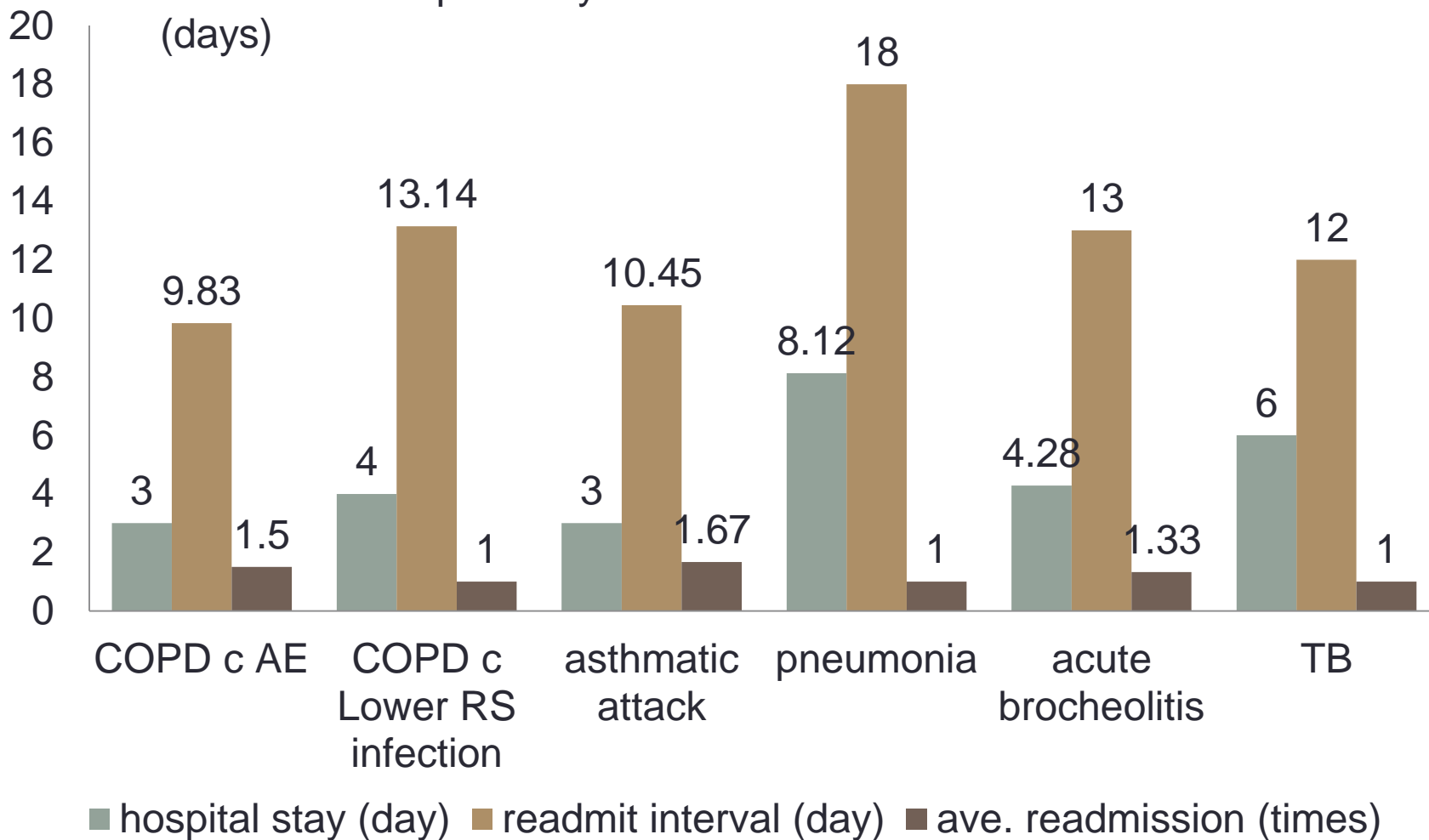
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# Respiratory disease

Disease	Number of patients	Admission (times)	Re-admission (times)	Average readmission (times)	Average age (max,min)
COPD with AE	9	27	18	1.5	75.3 (88, 53)
COPD with lower RS infection	6	15	8	1	78.8 (85, 73)
Acute asthmatic attack	4	14	10	1.67	52 (62, 44)
Pneumonia	4	8	4	1	40.5 (45, 9)
Airway infection	2	6	4	1.33	33 (65, 1)
TB	1	2	1	1	64
total	26	72	45		

# Respiratory disease

Duration of hospital stay and readmission interval for each RS disease (days)



# COPD with AE

- Discharge condition for all admission (n = 27)
  - Improve 24 times (without wheezing)
  - Refer 3 times due to Respiratory failure

# COPD with AE

- Cause of COPD with AE readmission (N = 18)
  - Planned readmission (refer back) 3
  - **Disease progression** 15
    - Precipitating from GI symptoms 3
    - Wrong bronchodilator administration 1
    - Loss follow-up 1
    - Preexisting structural lung disease (old TB) 2
    - Unknown cause 8

# COPD with AE

## Strength

- Smoking-alcoholic cessation
- Standard treatment
  - Bronchodilators NB
  - Controller
  - Systemic corticosteroids
  - Symptomatic medication
  - +/- Roxithromycin
  - Appropriate oxygen support

## Pitfall

- Chest physical therapy at least 1 time of each pt. readmission : 3/9 (33.33%)
- Further infection prevention
  - Mask
  - Influenza vaccine

# COPD with lower RS infection

- Discharge condition for all admission (n = 15)
  - Improve 12 times (without wheezing)
  - Refer 3 times due to Respiratory failure



# COPD with lower RS infection

- Cause of readmission (N = 8)
  - Planned readmission (refer back) 3
  - **Disease progression** 5
    - Inadequate controller use 2
    - Structural lung disease (old TB, lung mass) 2
    - Complicated pneumonia 1

# COPD with lower RS infection

## Strength

- Smoking-alcoholic cessation
- Standard treatment
  - ATB (ceftriaxone + Roxithromycin)
  - Bronchodilators NB
  - Controller
  - Systemic corticosteroids
  - Symptomatic medication
  - Appropriate oxygen support

## Pitfall

- Chest physical therapy at least 1 time of each pt. readmission : 3/6 (50 %)
- Further infection prevention
  - Mask
  - Influenza vaccine

# Acute asthmatic attack

- Discharge condition for all admission (n = 14)
  - Improve 14 times (without wheezing)
- Cause of readmission (N = 10)
  - **Disease progression (unknown precipitation) 10**

# Acute asthmatic attack

## Strength

- Smoking-alcoholic cessation
- Standard treatment
  - Bronchodilators NB
  - Controller
  - Systemic corticosteroids
  - Symptomatic medication
  - Appropriate oxygen support

## Pitfall

- Unknown precipitation

# RS infection

- Discharge condition for all admission (n = 15)
  - Improve 13 times
  - Refer 2 times due to Respiratory failure
    - VAP
    - Infected bronchiectasis

# RS infection

- Cause of readmission (N = 9)
  - **Planned readmission (refer back)** 2
  - **Secondary complication** 3
    - Quadriplegia with pneumonia 1
    - Cerebral palsy with pneumonia 1
    - EPH with tracheostomy with pneumonia 1
  - **Other problems** 1
    - TB pleura with RIMSTAR rash 1
  - **Disease progression** 3
    - Acute bronchiolitis with family smoking 3

# RS infection

## Strength

- Smoking-alcoholic cessation
- Standard treatment
  - ATB
  - Bronchodilators NB
  - Symptomatic medication
  - Appropriate oxygen support

## Pitfall

- Long-term comprehensive care of secondary complication

# SKIN INFECTION & WOUND CARE

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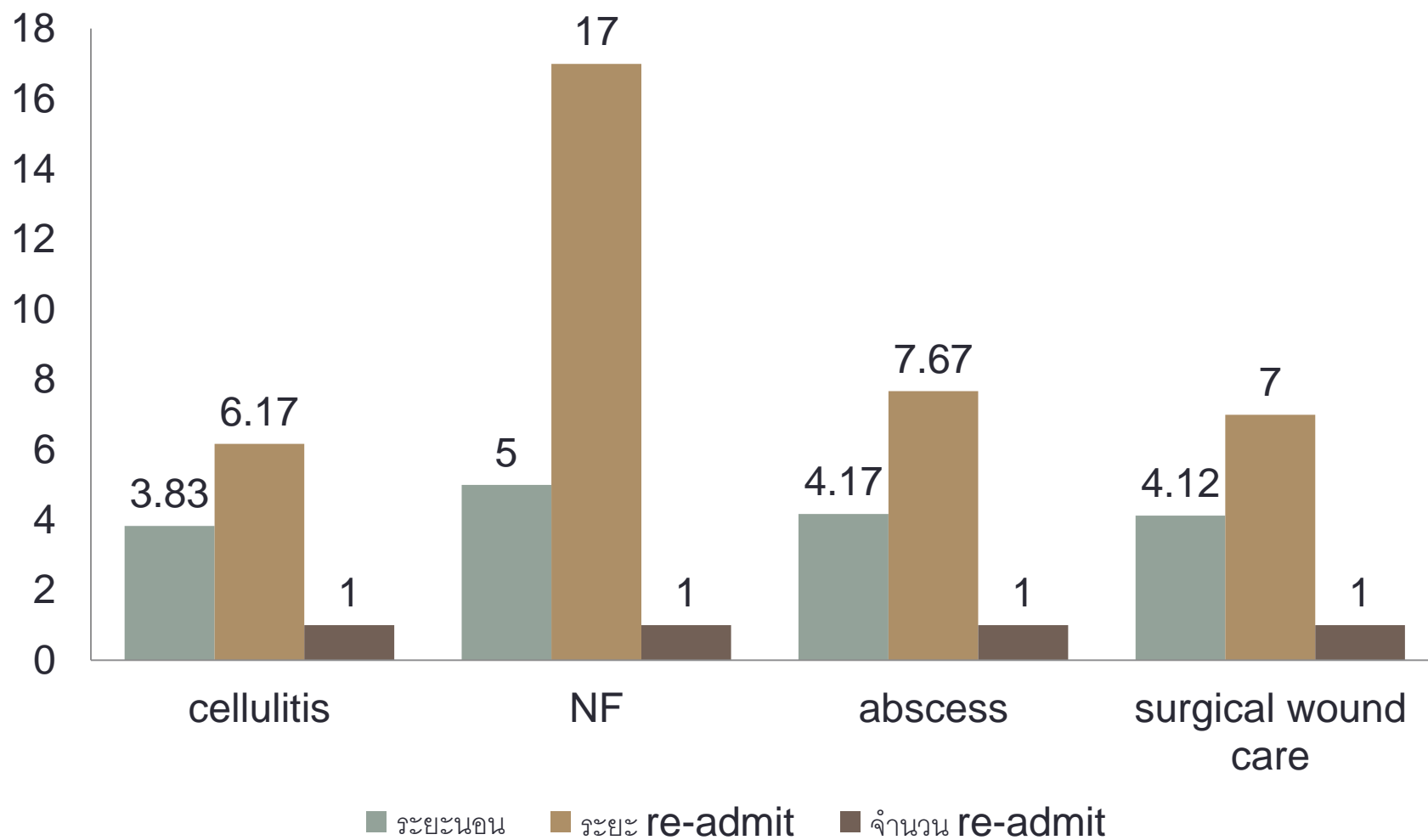


# Skin infection & wound care

- 14 patients, 25 admissions, 14 readmissions
- cellulitis 6 cases
- Abscess 3 cases
- Necrotizing fasciitis 1 case
- Attention to surgical wound 4 cases
  - MRM
  - Retention suture with colostomy
  - Midline suture after subtotal colectomy
  - Multiple fracture with ORIF

# Skin infection & wound care

Duration of hospital stay and readmission interval for each skin disease (days)



# Skin infection & wound care

- Discharge condition for all admission (n = 25)
  - Improve 20 times
  - Refer 6 times
    - For adequate debridement & ATB 4
    - For proper surgical wound care 2
      - MRM wound with increased drainage
      - Retention suture with colostomy

# Skin infection & wound care

- Cause of readmission (N = 14)
  - **Planned readmission** **9**
    - Admit after tertiary care follow-up 8
    - Admit for secondary suture 1
  - **Other problems** **4**
    - Cellulitis → unknown generalized edema 1
    - Cellulitis → ATB allergy 1
    - Readmission data loss 2
  - **Disease progression** **1**
    - Worsening cellulitis after oral ATB 1

# Skin infection & wound care

## Strength

- Smoking-alcoholic cessation
- Standard treatment
  - ATB IV
  - Wound dressing
  - Refer for adequate ATB & debridement

## Pitfall

- Drug allergy
- Inadequate wound care & ATB due to primary setting

# GASTROINTESTINAL DISEASE

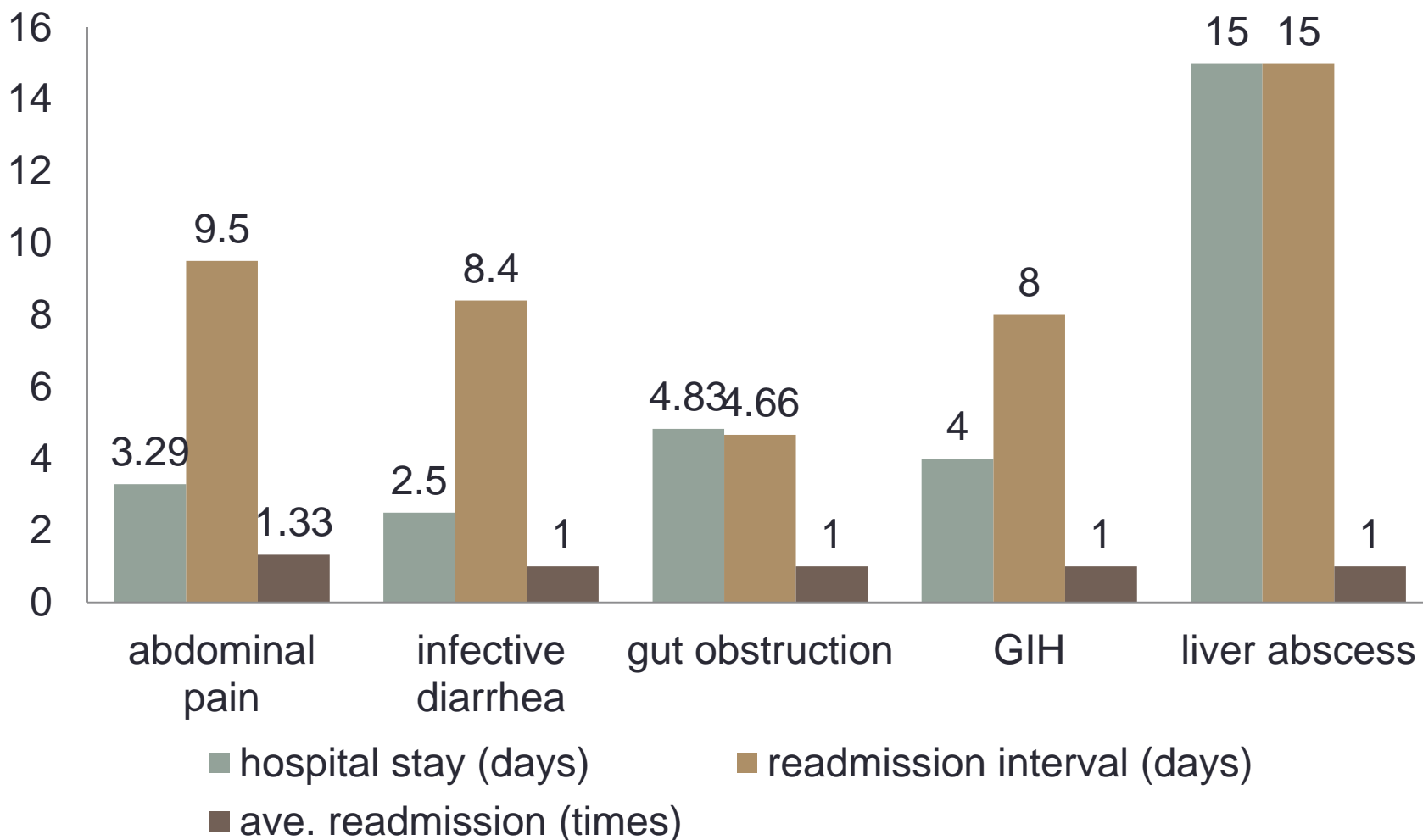
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# Gastrointestinal disease

- 13 patients, 23 admissions, 14 readmissions
- Diverticulum 1 cases
- Acute gastroenteritis 5 cases
- Gut obstruction 3 cases
- Dyspepsia 2 cases
- HCV cirrhosis 1 case
- Liver abscess 1 case
- UGIH 1 case

# Gastrointestinal disease

Duration of hospital stay and readmission interval for each GI disease (days)





# Gastrointestinal disease

- Discharge condition for all admission (n = 23)
  - Improve 20 times
  - Refer 3 times
    - For cholecystectomy 1
    - Liver abscess 1
    - For EGD in UGIH 1

# Gastrointestinal disease

- Cause of readmission (N = 14)
  - **Planned readmission** **2**
    - Liver abscess continue ATB 1
    - Supportive UGIH after EGD refusal 1
  - **Secondary complication** **3**
    - Post surgery partial gut obstruction 3
  - **Disease progression** **8**
    - Recurrent acute gastroenteritis 5
    - Diverticulitis 1
    - Unknown cause of abdominal pain after supportive 2
      - Dyspepsia with diarrhea → Acute cholecystitis
      - Chronic dyspepsia → Complete small bowel obstruction
  - **Other problem** **1**
    - HCV cirrhosis with hepatic encephalopathy → symptomatic hyponatremia

# Gastrointestinal disease

## Strength

- Smoking-alcoholic cessation (except 1 case; smoking)
- Standard treatment
  - Observe abdominal sign
  - Symptomatic & supportive drug
  - NG decompression

## Pitfall

- Unpreventable secondary complication
- Delayed diagnosis

# DIABETIC MELLITUS

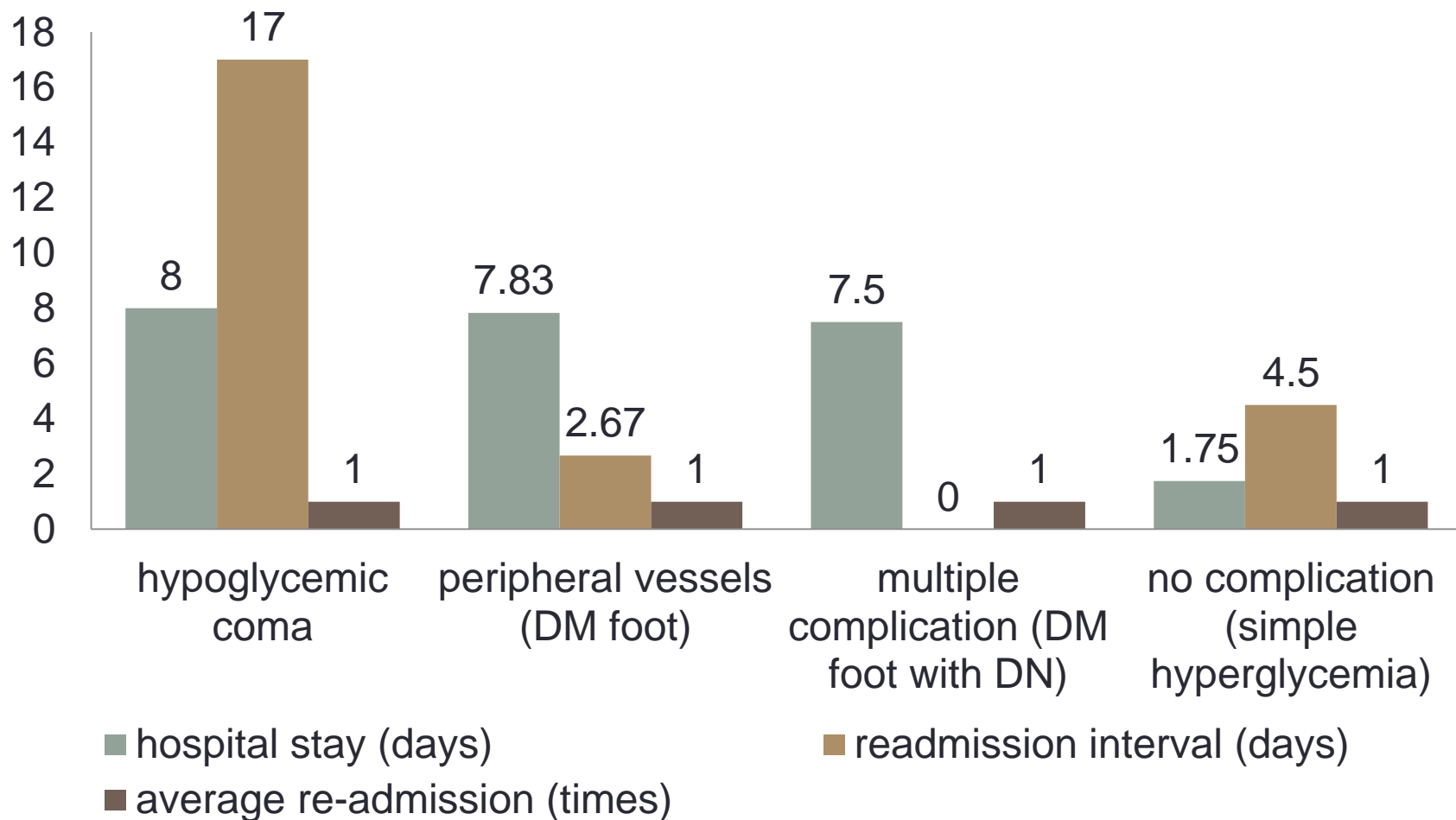
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# DM

- 7 patients, 16 admissions, 8 readmissions
- Hypoglycemia coma 2 cases
- Simple hyperglycemia 2 cases
- DM foot 3 cases
  - DM with multiple complication (DM foot with DN stage 5) 1 case
    - Hypoglycemic coma
    - Simple hyperglycemia
    - DM foot

# DM

Duration of hospital stay and readmission interval for each DM disease (days)



# DM

- Discharge condition for all admission (n = 14)
  - Improve 11 times
  - Refer 3 times
    - DM foot debridement 3

# DM

- Cause of readmission (N = 8)
  - **Planned readmission (refer back)** 3
  - **Disease progression** 5
    - Hypoglycemia from wrong mixtard injection 1
    - Fluctuate blood sugar nature with CKD stage 5 2
    - Simple hyperglycemia from Loss follow up 1
    - Simple hyperglycemia :inadequate BS control 1  
(presenting with hemiballism with concurrent hyperglycemia)



# DM

## Strength

- Smoking-alcoholic cessation
- Standard treatment

## Pitfall

- Patient lifestyle modification
- Inappropriate medication for patient with fluctuate nature

CANCER

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# Cancer

- 7 patients, 16 admissions, 9 readmissions
- CA lung stage 4
- CA tongue stage 4
- CA cervix locally advanced
- CA gum stage 4
- CA lung stage 4 with CA nasopharynx
- CA stomach stage 4
- CA esophagous

# Cancer

- Discharge condition for all admission (n = 14)
  - Improve 13 times
  - death 1 times
    - CA esophagous with good palliative care

1

# Cancer

- Cause of readmission (N = 9)
  - **Disease progression** **9**
    - Anemia due to malignancy for PRC transfusion 2
    - Anemia due to tumor bleeding for PRC transfusion 2
    - Edematous condition (pleural effusion, ascites) 2
    - GI symptoms 3
      - CA stomach with marked emesis 2
      - CA esophagous with anorexia 1

# Cancer

## Strength

- Smoking-alcoholic cessation
- Supportive care

## Pitfall

- Long term care
- Good palliative care

# NEUROLOGICAL DISEASE

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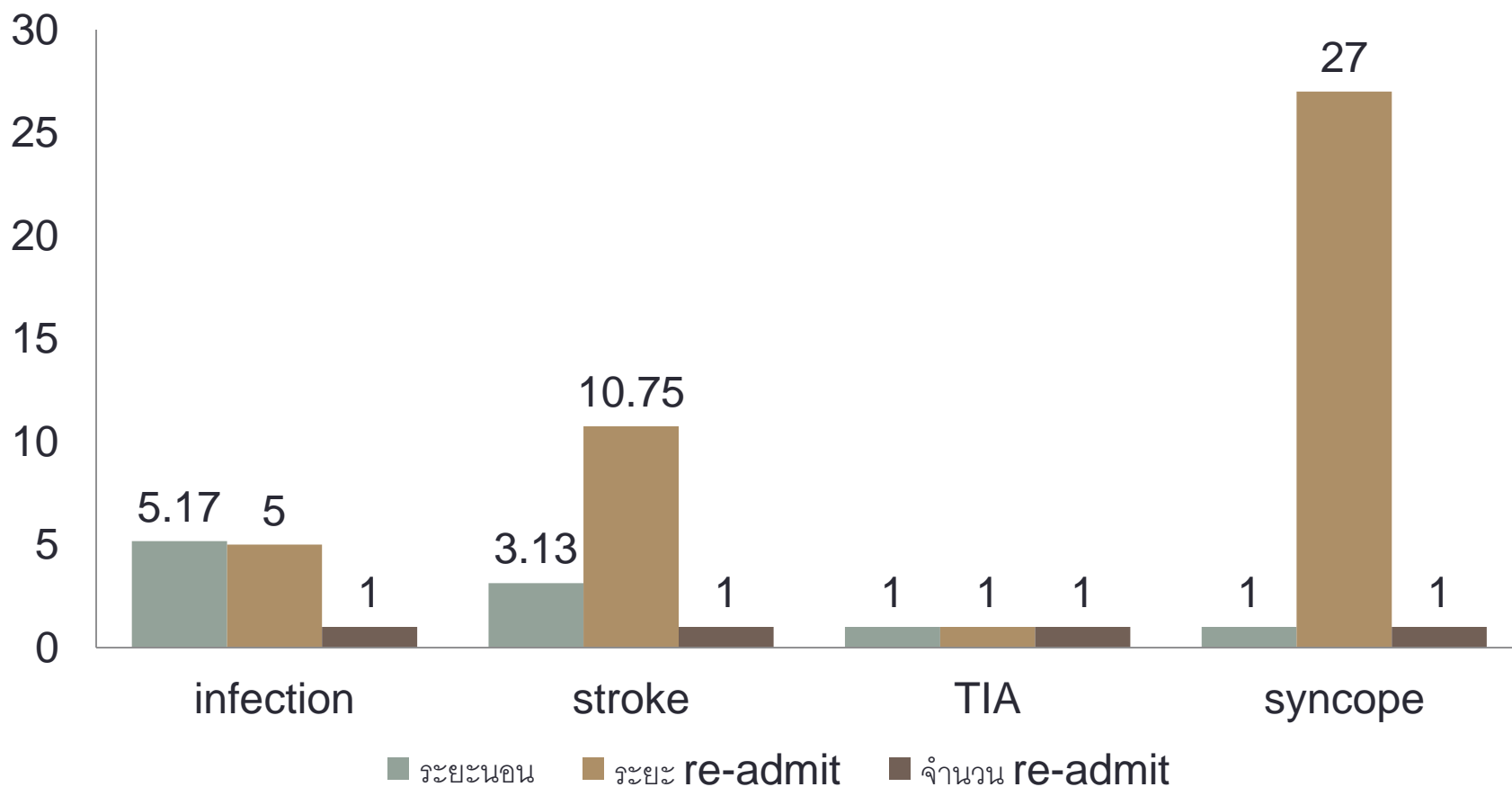
# Neurological disease

- 10 patients, 18 admission, 10 readmission
  - Bacterial meningitis 1 case
  - TB meningitis 1 case
  - HIV with cryptomeningitis 1 case
  - Epilepsy 1 case
  - Ischemic stroke 3 cases
  - Hemorrhagic stroke 1 case
  - TIA 1 case
  - Syncope 1 case



# Neurological disease

Duration of hospital stay and readmission interval for each neurological disease (days)



# Neurological disease

- Discharge condition for all admission (n = 18)
  - Improve 12 times
  - Refer 6 times
    - Ischemic stroke 3
    - Hemorrhagic stroke 1
    - HIV infection with cryptomeningitis 1
    - Bacterial meningitis with Subdural empyema 1

# Neurological disease

- Cause of readmission (N = 10)
  - **Planned readmission** **5**
    - Ischemic stroke plan IV hydration 3
    - Subdural empyema 1
    - HIV infection with cryptomenigitis 1
  - **Secondary complication** **1**
    - Pneumonia in stroke 1
  - **Disease progression** **1**
    - Epilepsy (precipitating by infection: PID) 1
  - **Other problem** **3**
    - TB meningitis ญาติฝากนอน รพ.เพื่อเตรียมบ้าน 1
    - 2<sup>nd</sup> admission data loss 2

# Neurological disease

## Strength

- Smoking-alcoholic cessation
- Standard treatment

## Pitfall

- Unpreventable secondary complication
- Delayed diagnosis from inadequate tools.

# GENITOURINARY DISEASE

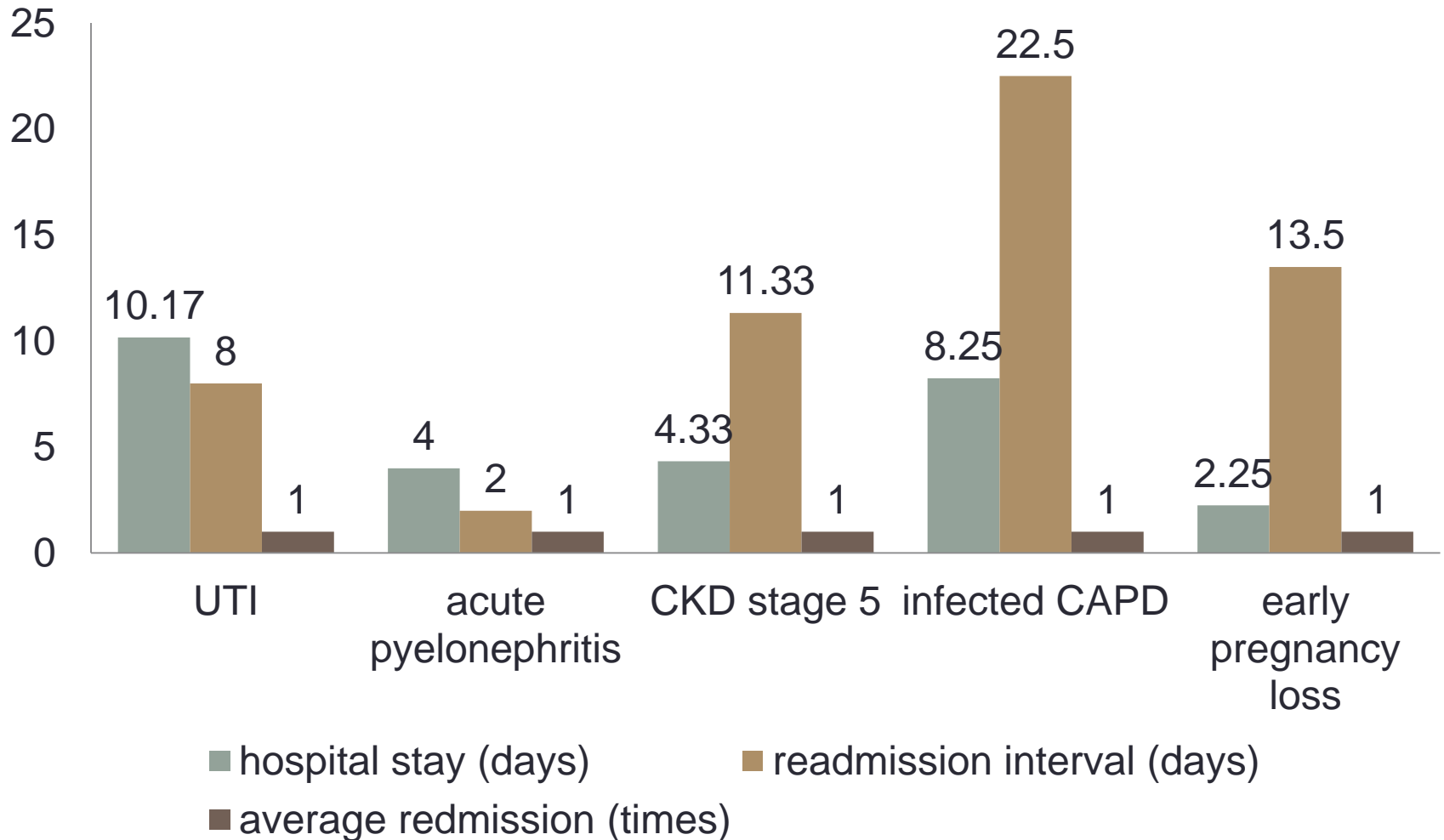
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# Genitourinary disease

- 12 patients, 24 admission, 12 readmission
- UTI 3 cases
- Acute pyelonephritis 2 cases
- CKD stage 5 3 cases
- Infected CAPD 2 cases
- Incomplete abortion 1 cases
- Blighted ovum 1 cases

# Genitourinary disease

Duration of hospital stay and readmission interval for each GU disease (days)



# Genitourinary disease

- Discharge condition for all admission (n = 12)
  - Improve 9 times
  - Refer 3 times
    - UTI with persistent fever 1
    - UTI with ESBL E.coli 1
    - CKD stage 5 with volumn overload 1



# Genitourinary disease

- Cause of readmission (N = 12)
  - **Planned readmission** **3**
    - Refer back to continue ATB **2**
    - Refer back after clinical volumn overload improved **1**
  - **Secondary complication** **1**
    - Quadriplegia with UTI **1**
  - **Disease progression** **5**
    - Recurrent acute pyelonephritis without obstruction **1**
    - Acute pyelonephritis suggest renal abscess **1**
    - CKD with ACD for PRC transfusion **1**
    - Infected CAPD **2**
  - **Iatrogenic** **2**
    - Retained intrauterine conceptus
      - Incomplete abortion, Blighted ovum **2**
  - **Other problem** **1**
    - CKD คนไข้ไม่ยอมกลับบ้าน

# Genitourinary disease

## Strength

- Smoking-alcoholic cessation
- Standard treatment

## Pitfall

- Unpreventable secondary complication
- Inadequate ATB
- Iatrogenic treatment

# HEMATOLOGIC DISEASE

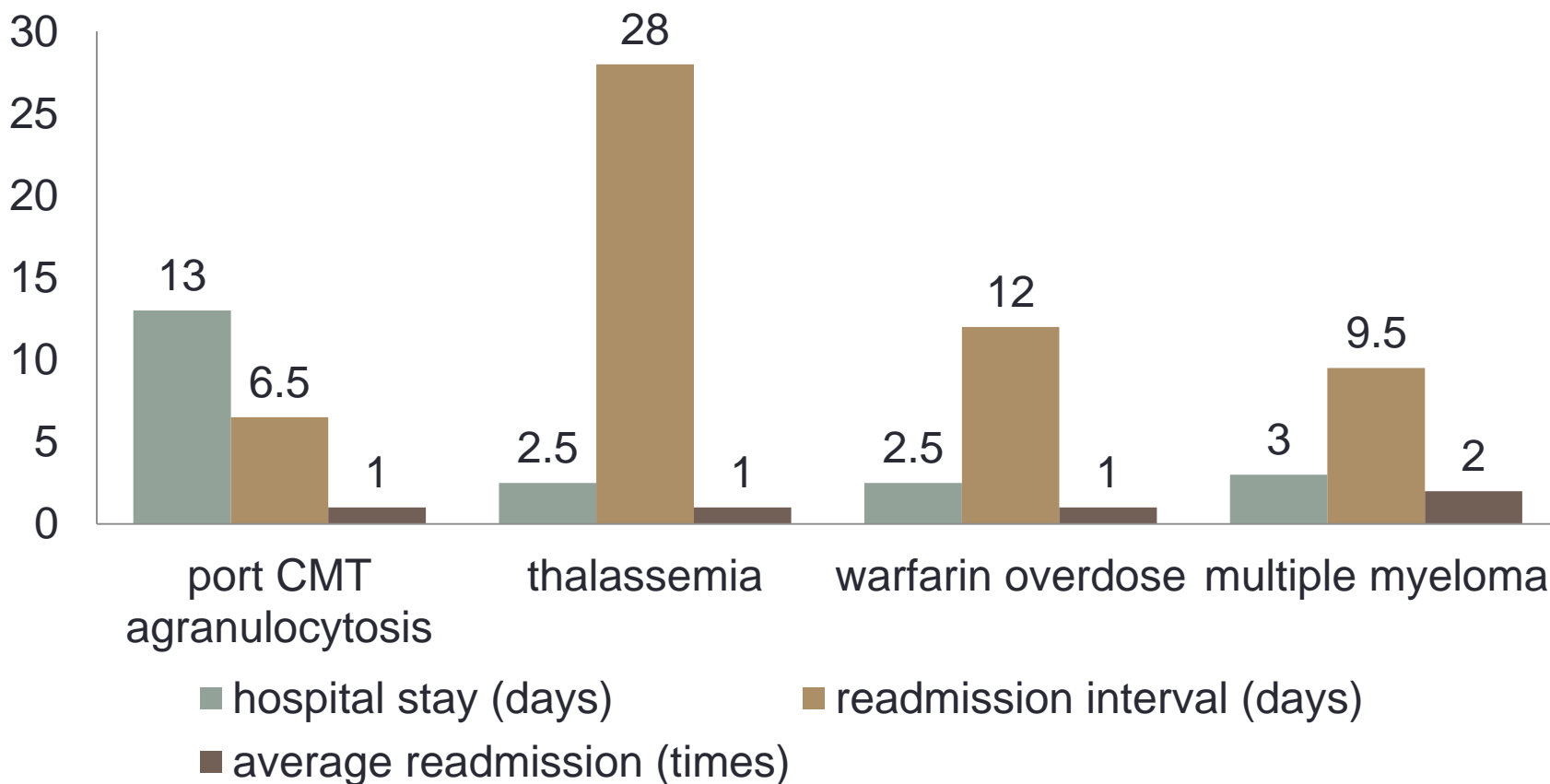
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# Hematologic disease

- 5 patients, 8 admission, 5 readmission
- Post-chemotherapy agranulocytosis      2      cases
- B-thalassemia      1      case
- Multiple myeloma      1      case
- Warfarin overdose      1      case

# Hematologic disease

Duration of hospital stay and readmission interval for each hematologic disease (days)



# Hematologic disease

- Discharge condition for all admission (n = 8)
  - Improve 5 times
  - Refer 3 times
    - Post CMT agranulocytosis for proper ATB 2
    - MM 1

# Hematologic disease

- Cause of readmission (N = 5)
  - **Planned readmission** **3**
    - Post-CMT agranulocytosis refer back for ATB 2
    - MM admit for dexamethaxone 1
  - **Disease progression** **1**
    - Thalassemia → blood transfusion 1
  - **iatrogenic** **1**
    - Warfarin overdose 1

# Hematologic disease

## Strength

- Smoking-alcoholic cessation
- Standard treatment

## Pitfall

- Iatrogenic treatment



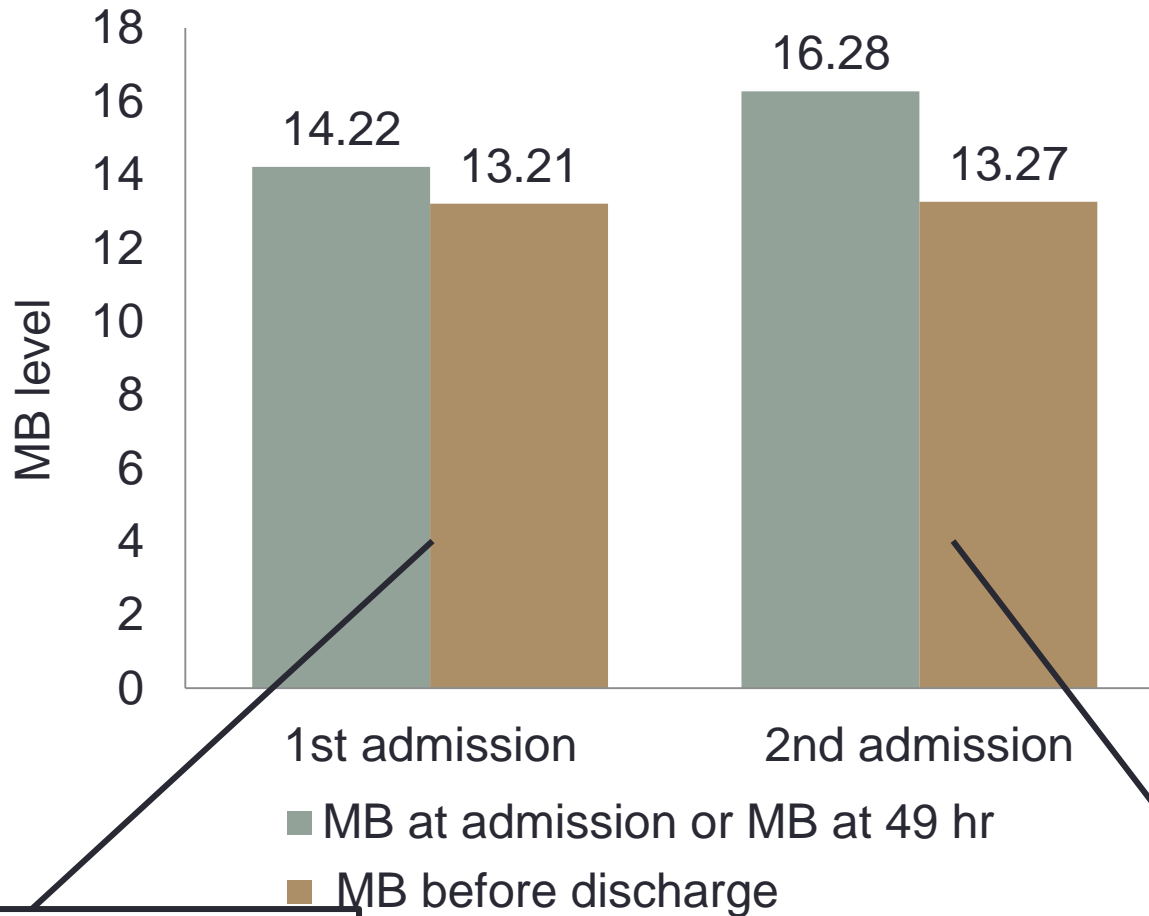
# NEONATAL JAUNDICE

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# Neonatal jaundice

- 16 patients, 29 admission, 16 readmission
- All term newborn (n= 16),
  - Average birth weight: 3273.84 g
  - Delivery method: NL (15) at day 0, C/S (1) at day7
  - Average age in 1<sup>st</sup> admission : 0.43 days
  - Average age in 2<sup>nd</sup> admission: 7.06 days
  - Average hospital stay: 3.06 days
  - Average readmission interval 3.31 days
  - All neonatal jaundice was re-admitted for 1 time.
    - Neonatal jaundice unspecified 11
    - G6PD deficiency 3
    - ABO incompatible 1
    - Hemolysis unspecified 1

## Average microbilirubin level of neonatal jaundice (N=16)



2 F/U MB  
10 On single phototherapy  
1 Refer (G6PD def.)  
3 1<sup>st</sup> data loss

16 On single phototherapy  
2 Refer (G6PD def.,  
polycythemia)

# Neonatal jaundice

- Discharge condition for all admission (n = 29)
  - Improve 26 times
  - Refer 3 times
    - polycythemia 1
    - G6PD deficiency 2

# Neonatal jaundice

- Cause of readmission (N = 16)
  - **Disease progression** **16**
    - Neonatal jaundice unspecified 11
    - G6PD deficiency 3
    - ABO incompatible 1
    - Hemolysis unspecified 1

# Neonatal jaundice

## Strength

- Standard treatment
  - phototherapy

## Pitfall

- Discharge evaluation

# Electrolyte

- 1 patient, 2 admissions, 1 readmission
- Case female 68 yr. with symptomatic hyponatremia
- Average hospital stay: 2 days
- Readmission interval: 13 days
- Planned readmission to work up hyponatremia

# Conclusion

- Overall readmission in Soidao hospital during Oct 2013-Mar 2015 was 268 admission, 168 readmission from 130 patients, mostly from cardiovascular and respiratory disease, Male, older than 60 year old predominated.
- Average hospital stay was 3.59 days.
- Average readmission interval was 8.90 days.
- Smoking-alcoholic cessation and standard treatment was the most advantage in this hospital
- The hindrance for quality of the initial care:
  - Lack of proper investigation and medication
  - Long term care for chronic disease, end stage disease
  - Uncooperative patients
- **Multi-disciplinary is needed**



THANK YOU

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