台大醫院 NTUH Hsin-Chu Branch

Mortality and morbidity

Patient care in hip fracture

VS 曾渥然

109.11.16

Patient profile

- **Name:** 許O輝
- **Age:** 88
- **Gender:** Male
- **Past medical history**：
  - ✓ Gastric cancer status post nearly total gastrectomy for more than 20 years
  - ✓ Right thoracic wall tumor status post tumor excision
  - ✓ Beta Thalassemia
- **Chief complaint**： Right hip painful disability after falling down on 2020/01/19

Present illness

01/19 Sent to ER, right femoral intertrochanteric fracture diagnosed

HB: 7.7 g/dL. → pRBC 2U transfusion

Present illness

01/19 Admitted for operation

OP method: ORIF with Synthes PFNA II

Operative Findings:

1. Right femoral intertrochanteric fracture, unstable type
2. Synthes PFNA II nail: 10 x 240 mm, 130 deg. Blade screw:80mm;
   Distal screw: 34 mm

Blood loss: 300 c.c

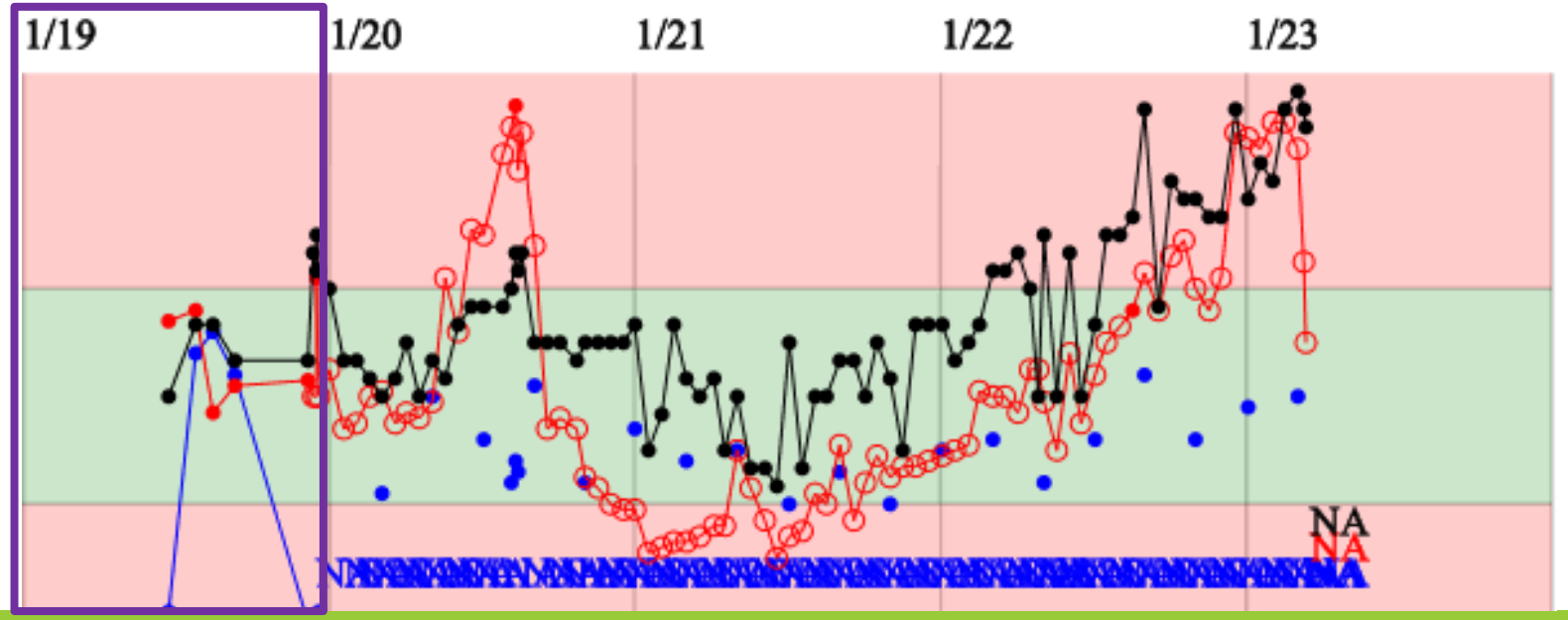
OP duration: 20:25- 21:47 (86 mins)

Present illness

01/19 Transferred to surgical intensive care unit(ICU) for post-operation care, due to unstable blood pressure noticed intra-operatively.

Hb: 6.3 g/dL → 9.5g/dL

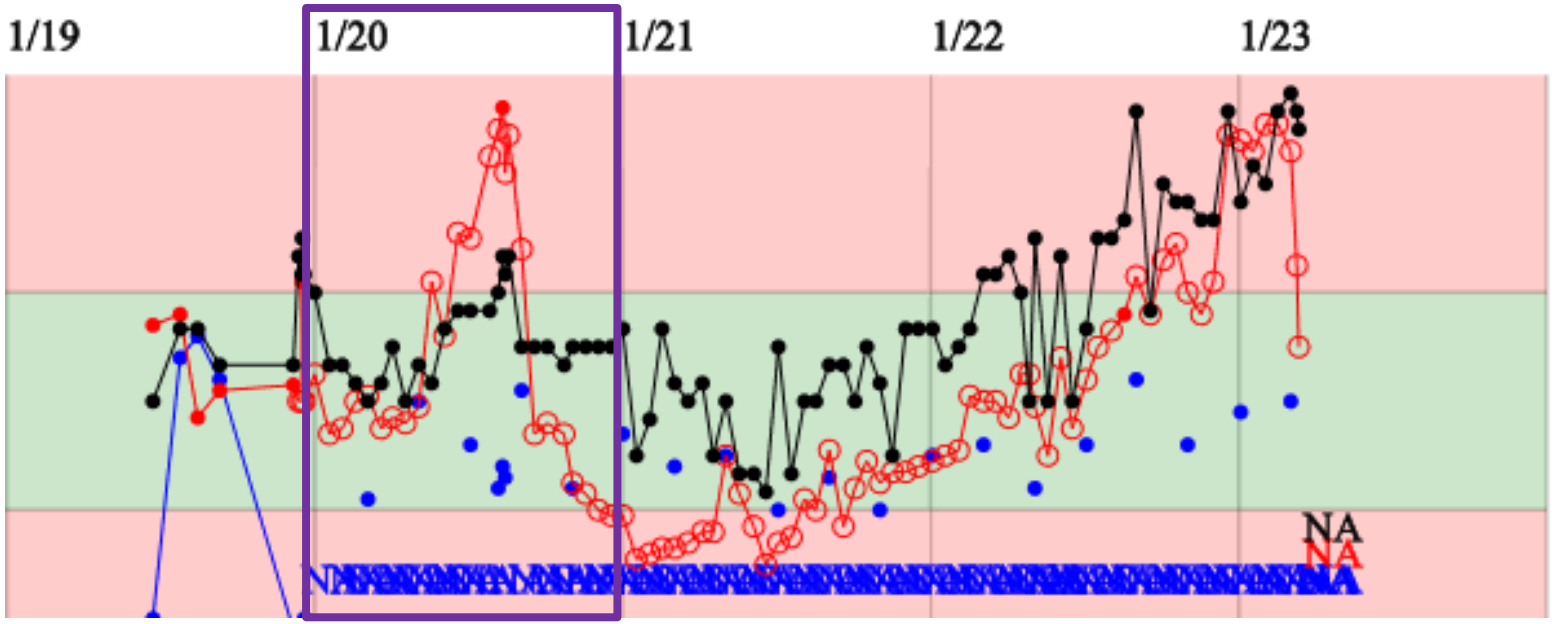
Levophed 5 mL/hr to keep SBP > 90mmHg



Present illness

01/20 Sudden onset AfRVR without chest pain/tightness

Troponin-T: 59.28ng/L



Present illness

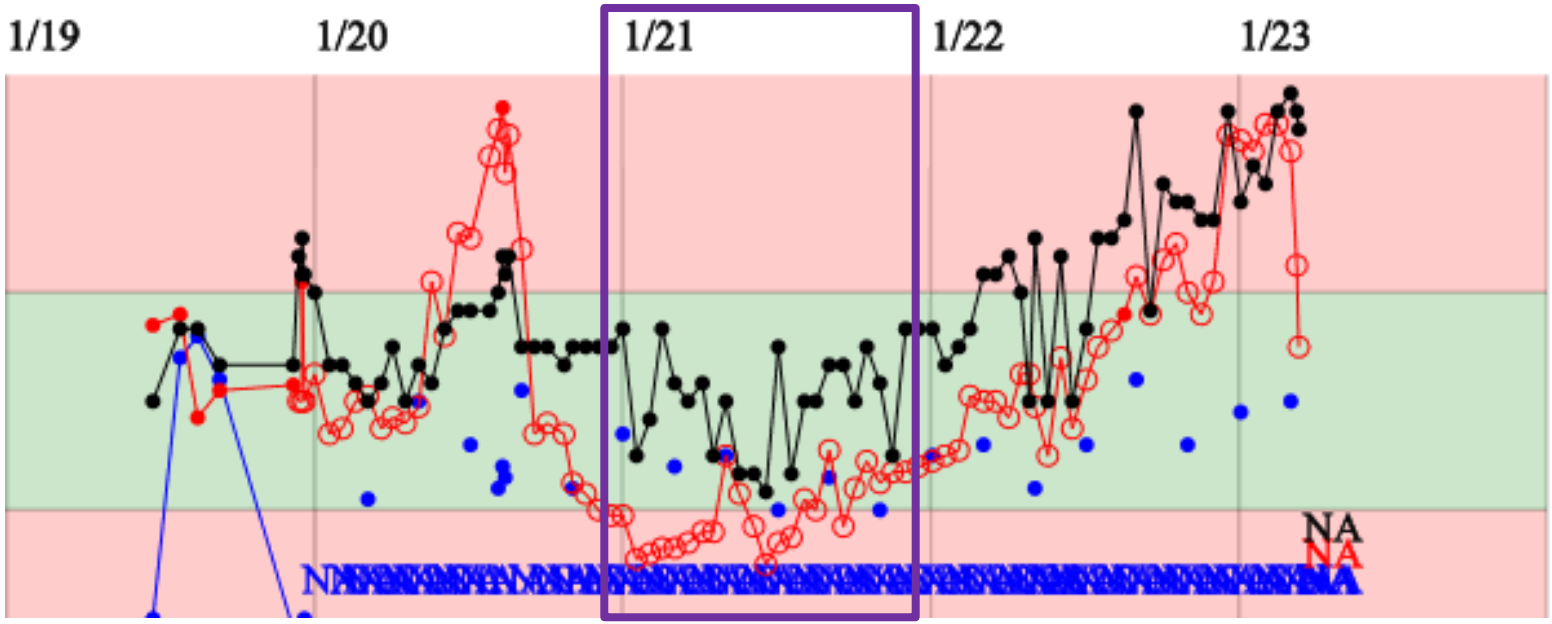
01/20 Consult CV man:

#. Paroxysmal atrial fibrillation
#. Hypotension, hypovolemia related, r/o sepsis related
#. Cachexia

1. Give amiodarone infusion then change to amiodarone 100mg po bid.
2. NOAC for stroke prevention for atrial fibrillation
3. Keep cefazolin first. Complete septic workup
4. NG feeding with daily calories about 800-100K/cal per day.
5. Follow up Na/K/Ca/M/P, be aware of refeeding syndrome for such a cachexia patient
6. Gentle hydration and feeding gradually to keep CVC level 8-12 mmHg.
7. Titrate levophed to keep MAP > 65 mmHg.

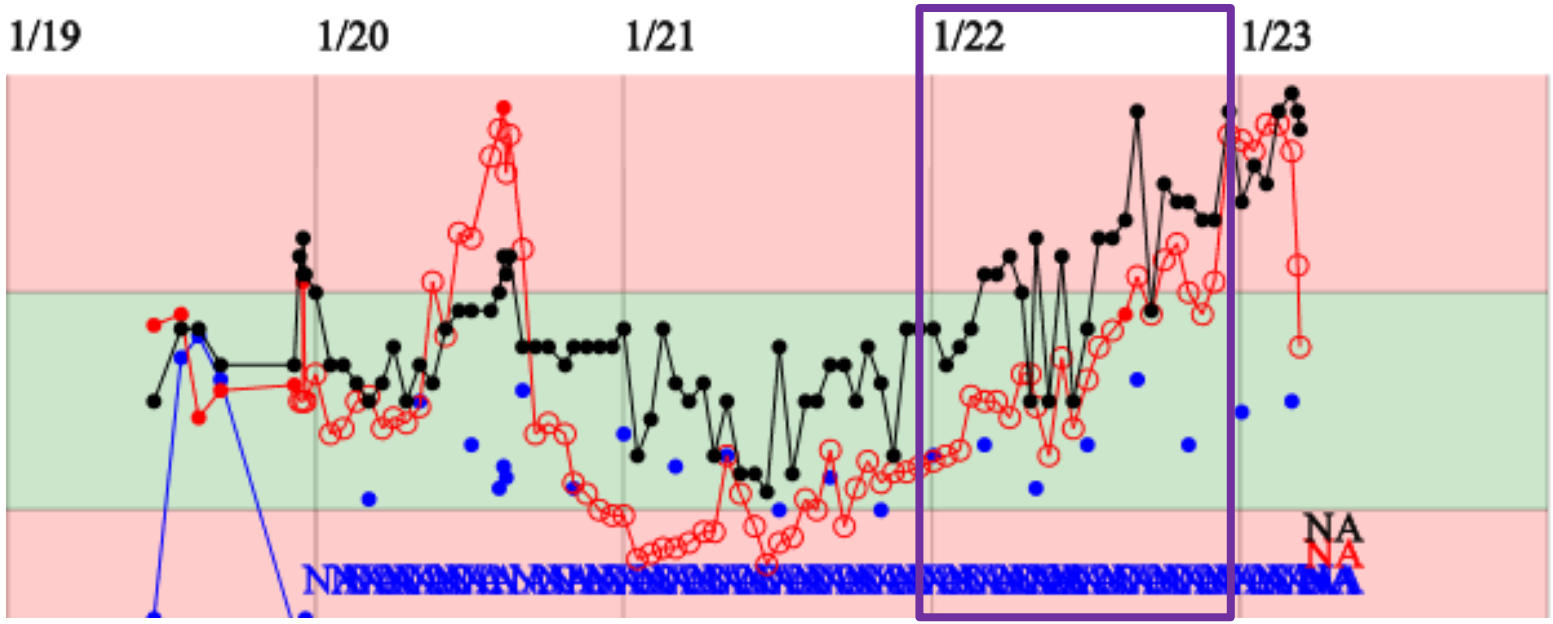
Present illness

01/21 Off levophed pump



Present illness

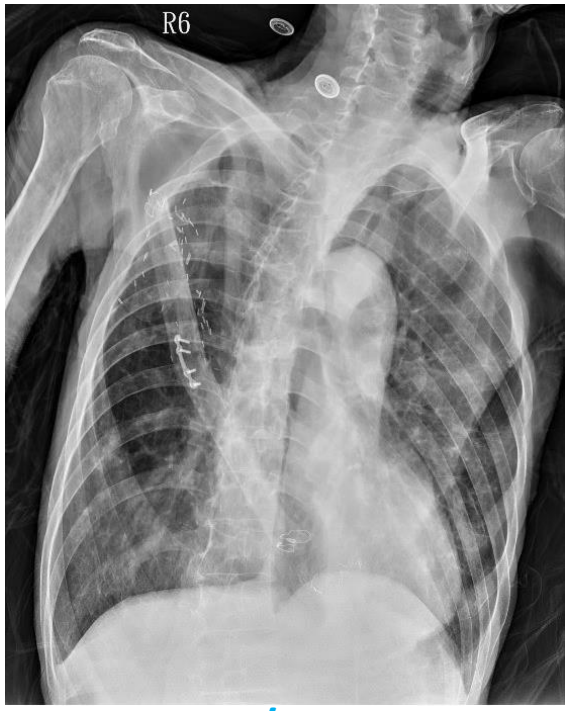
01/22 Fever and shortness of breath with increasing O2 demand (90% under non-rebreathing)
Lab: WBC 8.37 (Seg: 92.5%); CRP: 23.2 mg/dL; Procalcitonin 8.04 ng/mL;
Lactic acid: 7.2mmol/L



Present illness

01/22 CXR: increasing infiltration and opacity over LLL

→ Pneumonia with impending respiratory failure and septic shock

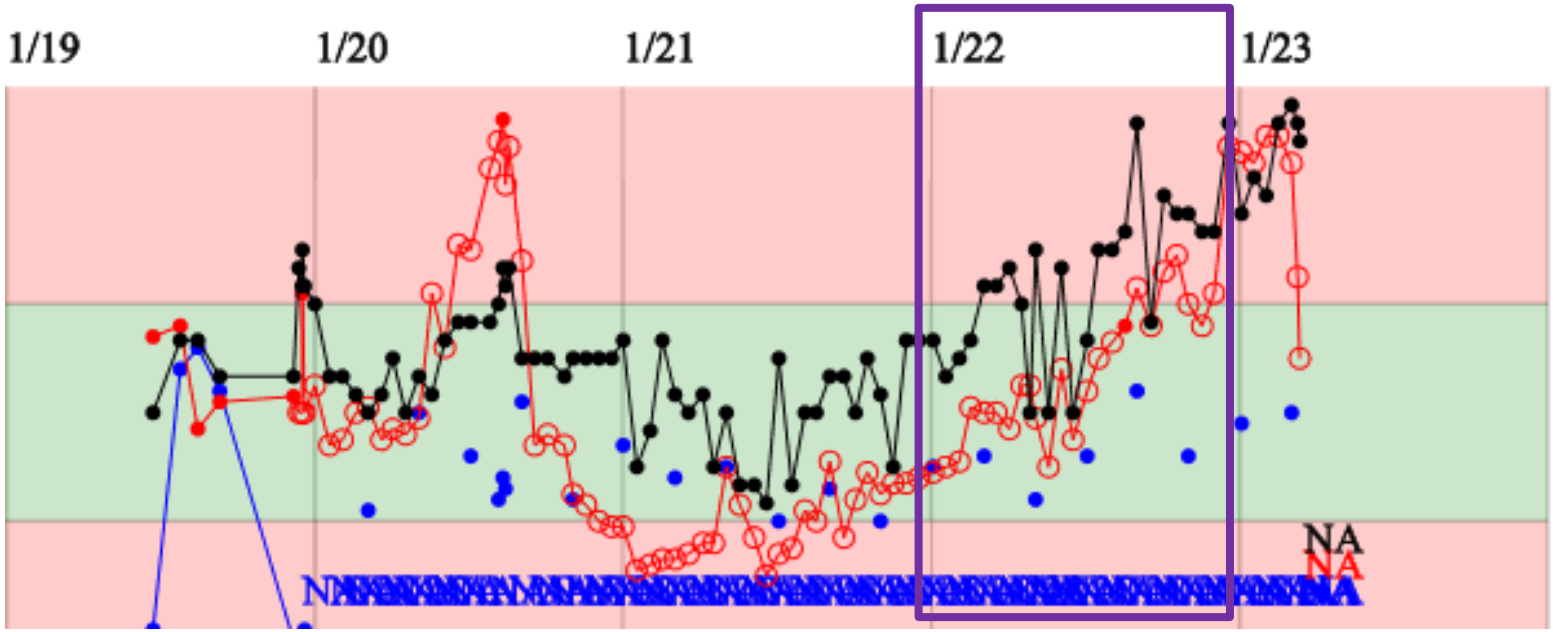


1/19

1/22

Present illness

01/22. 1. Chest care and prn suction
2. Upgrade antibiotic to Tazocin 3000mg Q6H
3. Placement of NG tube

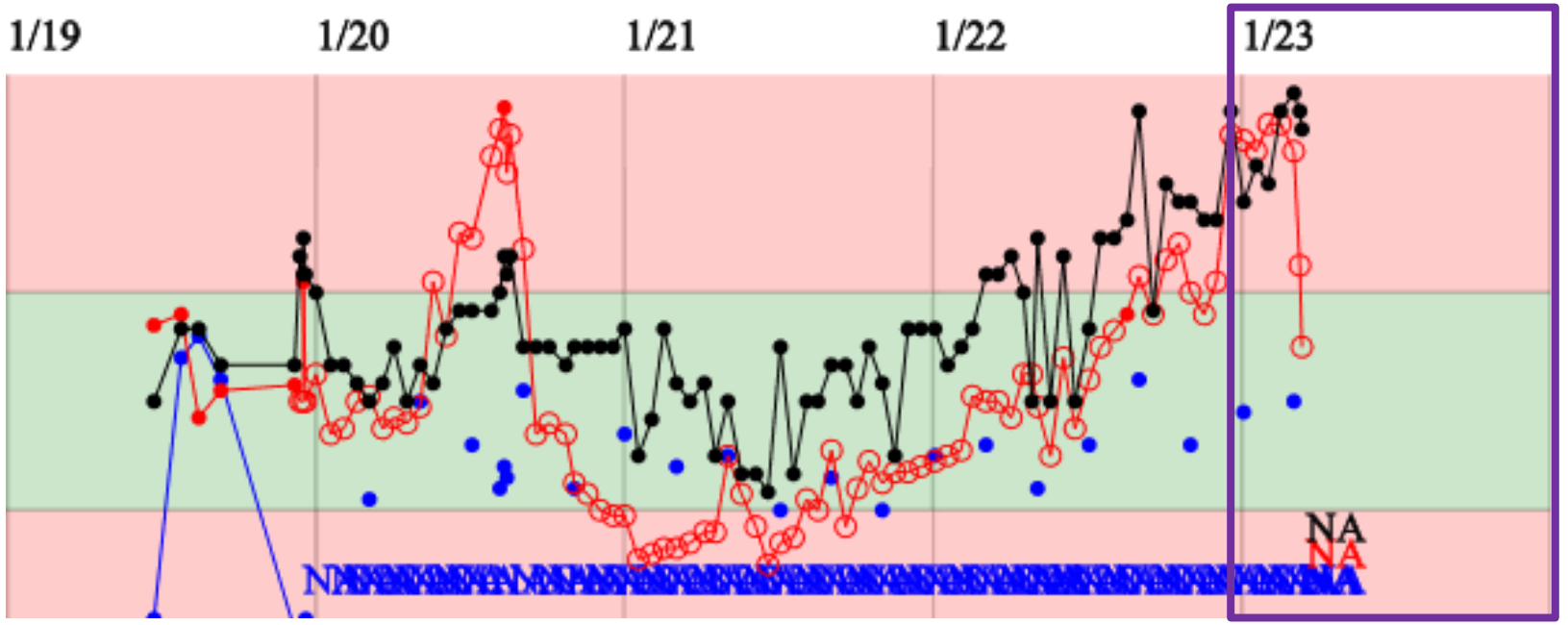


Present illness

01/23. Arterial gas:

PH: 6.705/CO2: 100.3/$HCO3^-$:12.3 → Decompensated respiratory acidosis

DNR 除藥 signed → Brought back home with inotropic agents



Present illness

科室:LQ No:200122070153 BLOOD Arterial line 採檢:2020/01/22 14:38 登入:2020/01/22 15:42 最後報告:2020/01/27 15:54 電子病歷

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
ID+DS Blood.#1	No growth after 5 days	*			

科室:LQ No:200122068611 BLOOD CVP 採檢:2020/01/22 14:38 登入:2020/01/22 15:42 最後報告:2020/01/27 15:54 電子病歷

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
ID+DS Blood.#1	No growth after 5 days	*			

科室:LB No:200122068618 RANDOM URINE Catheterized urine 採檢:2020/01/22 18:17 登入:2020/01/23 08:08 最後報告:2020/01/26 10:17 電子病歷

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
ID+DS Urine #1	No aerobic pathogen	/mL			

科室:LB No:200123077811 SPUTUM (SUCTION) 採檢:2020/01/23 02:25 登入:2020/01/23 08:08 最後報告:2020/01/24 09:38 電子病歷

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
ID+DS Sputum Culture #1	Mixed flora	*			是否白血球低下:否
Gram's(G1)#1	Many PMNs (>25 /LPF)	*			是否白血球低下:否
Gram's(G1)#2	Many epithelial cells (>25 /LPF)	*			是否白血球低下:否
Gram's(G1)#3	檢體品質不良建議重新送檢	*			是否白血球低下:否

科室:LB No:200120097747 RANDOM URINE Catheterized urine 採檢:2020/01/20 00:44 登入:2020/01/20 08:10 最後報告:2020/01/22 09:33 電子病歷

檢驗項目	檢驗值	單位	參考值	說明	特別醫囑
ID+DS Urine #1	No aerobic pathogen	/mL			

Case Summary

- ✓ 88-year-old male with right intertrochanteric fracture, status post ORIF
- ✓ Respiratory failure complicated with septic shock developed 2-3 days post-operatively, most probable due to LLL pneumoniae

Discussion

1. Mortality in hip fracture --- Risk assessment

2. Nasogastric tube --- Dose it prevent aspiration ?

Discussion 1-1

Original Research Article

HIP International

HIP International
2020, Vol. 30(2) 204–209

DOI: 10.1177/1120700019835160
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SAGE

Causes of in-hospital mortality after hip fractures in the elderly

Hannah Groff[1], Michael M Kheir[1], Jaiben George[2], Ibrahim Azboy[1], Carlos A Higuera[2] and Javad Parvizi[1]

Discussion 1-1

Methods: This was a multi-institutional retrospective study identifying 2464 consecutive patients >65 years of age who were treated for a hip fracture from 2000 to 2016 at 2 institutions. Revision surgeries were excluded. An electronic query followed by manual chart review was performed to collect patient demographics, Charlson comorbidity index (CCI), type of anaesthesia, and cause of death.

Discussion 1-1

Table 3. Causes of death as recorded on death certifiacte or determined at autopsy.

Cause of death	Presumed cause of death (%)
Respiratory Failure	26 (1.1)
Cardiac Failure	13 (0.5)
Multiorgan Failure	6 (0.2)
Septic Shock	6 (0.2)
Pulmonary Embolism	5 (0.2)
End Stage Renal Disease	5 (0.2)
Others	14 (0.6)
Total	75/2464 (3.0%)

Discussion 1-1

Table 1. Analysis of risk factors on the rate of in-hospital mortality following acute hip fracture requiring surgery.

	Surviving patients, mean (range)	Patients who died, mean (range)	*p* value*
Age in years	80.7 (65–104)	85.3 (67–101)	0.001
BMI (kg/m2)	24.6 (15.2–49.6)	24.9 (15.1–43.1)	0.781
CCI	3.2 (0–17)	4.5 (4–16)	0.001

*p-value <0.05 were considered significant.
BMI, Body Mass Index; CCI, Charlson Comorbidity Index.

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BMI, Body Mass Index; CCI, Charlson Comorbidity Index.

Discussion 1-1

Table 1. Charlson Comorbidity Index Scoring System

Score	Condition
1	Myocardial infarction (history, not ECG changes only)
	Congestive heart failure
	Peripheral vascular disease (includes aortic aneurysm ≥6 cm)
	Cerebrovascular disease: CVA with mild or no residua or TIA
	Dementia
	Chronic pulmonary disease
	Connective tissue disease
	Peptic ulcer disease
	Mild liver disease (without portal hypertension, includes chronic hepatitis)
	Diabetes without end-organ damage (excludes diet-controlled alone)
2	Hemiplegia
	Moderate or severe renal disease
	Diabetes with end-organ damage (retinopathy, neuropathy, nephropathy, or brittle diabetes)
	Tumor without metastases (exclude if >5 y from diagnosis)
	Leukemia (acute or chronic)
	Lymphoma
3	Moderate or severe liver disease
6	Metastatic solid tumor
	AIDS (not just HIV positive)

NOTE. For each decade > 40 years of age, a score of 1 is added to the above score.

Abbreviations: ECG, electrocardiogram; CVA, cerebrovascular accident; TIA, transient ischemic attack; AIDS, acquired immunodeficiency syndrome; HIV, human immunodeficiency virus.

Discussion 1-1

Table 2. Analysis of risk factors on the rate of in-hospital mortality following acute hip fracture requiring surgery.

	Total number of patients	Number of patients who died (%)	*p* value*
Gender			
Male	761	29 (3.8)	0.165
Female	1703	46 (2.7)	
Anaesthesia			
General	685	37 (5.4)	0.497
Regional	564	24 (4.3)	
Fracture Type			0.627
Intracapsular	1364	40 (2.9)	
Extracapsular	957	32 (3.3)	
Pathologic Fracture			
Pathologic	143	3 (2.1)	0.799
Non-pathologic	2321	72 (3.1)	

Discussion 1-1

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Discussion 1-1

Conclusion

This multicentre study demonstrates that hip fracture patients are at relatively high risk of in-hospital mortality; respiratory failure was found to be the leading cause. The study highlights the importance of close monitoring of the respiratory status of patients with a hip fracture, and thus the need for preoperative medical optimisation from a respiratory standpoint as well as a lower threshold to have hospitalist co-management postoperatively. Strategies such as minimisation of opioid use, oxygen supplementation, early mobilisation, and aggressive pulmonary therapy may impact the incidence of early death for patients with hip fractures.

Discussion 1-2

Original Research Article

HIP | HIP International

HIP International
2020, Vol. 30(3) 354–362

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SAGE

Development and validation of the Brabant Hip Fracture Score for 30-day and 1-year mortality

Cornelis LP van de Ree[1], Taco Gosens[1,2], Alexander H van der Veen[3], Cees JM Oosterbos[4], Martijn W Heymans[5] and Mariska AC de Jongh[1,6]

Discussion 1-2

Variable	Value	Score	Total NHFS	Predicted 30-day mortality (%)
Age	66–85 years	3	0	0.9
	≥86 years	4		
Sex	Male	1	1	1.5
Admission Hb	≤10 g dl^{-1}	1	2	2.4
MMTS	≤6 out of 10	1	3	3.8
Living in an institution	Yes	1	4	6.2
Number of co-morbidities	≥2	1	5	9.8
Malignancy	Yes	1	6	15
			7	23
			8	33
			9	47
			10	57

Predicted 30-day mortality is calculated by substituting the total NHFS into the equation: $100/(1+\exp(4,718-(\mathrm{NHFS}/2)))$ 30-day mortality (%). MMTS, Mini-mental test score.

Nottingham Hip Fracture Score (NHF

Discussion 1-2

Material and methods: A cohort study was conducted in 2 hospitals on operatively treated patients of 65 years and older with a hip fracture. Manual backward multivariable logistic regression was used to select independent predictors of 30-day and 1-year mortality. Internal validation was performed using bootstrapping techniques. Model performance was assessed with: (1) discrimination via the area under the receiver operating characteristic curve (AUC); (2) explained variance via Nagelkerke's R^2; (3) calibration via Hosmer-Lemeshow (H&L) test and calibration plots.

Discussion 1-2

Table 2. Results of multivariable logistic regression analysis for 30-day mortality ($p = 0.157$).

Factor	Value	Coefficient before internal validation	Coefficient after internal validation	OR‡	95% CI‡
Age	Years	0.042	0.038	1.04	1.01–1.08
Gender	Female	−0.566	−0.510	0.57	0.35–0.93
Living in an institution	Yes	0.928	0.836	2.53	1.58–4.06
Hb	mmol/L	−0.497	−0.448	0.61	0.48–0.77
Respiratory disease	Yes	0.531	0.478	1.70	0.93–3.12
Diabetes	Yes	0.427	0.385	1.53	0.88–2.68
Malignancy	Yes	0.510	0.459	1.67	0.89–3.10
Constant		−2.047	−2.037		

Discussion 1-2

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Discussion 1-2

Brabant Hip Fracture Score for 30-day mortality (BHFS-30)

$$1*age - 13*gender + 22*living\ in\ an\ institution$$
$$- 12*Hb + 13*respiratory\ disease$$
$$+ 10*diabetes + 12*malignancy.$$

Discussion 1-2

Patient:

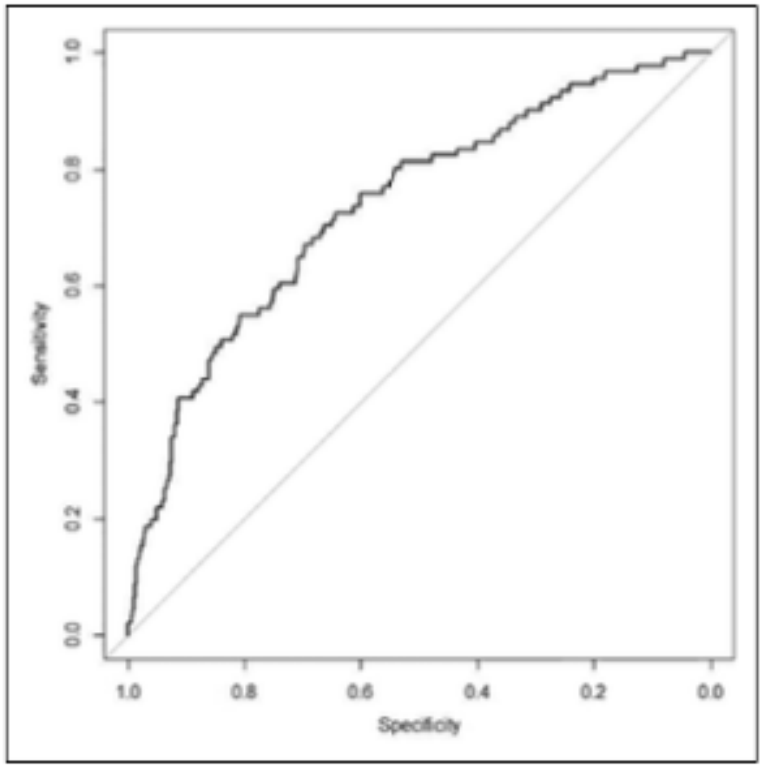
- 82 year
- Male
- Living in a nursing home
- Hb 6.5 g dl^{-1}
- COPD
- Diabetes

Brabant Hip Fracture Score-30

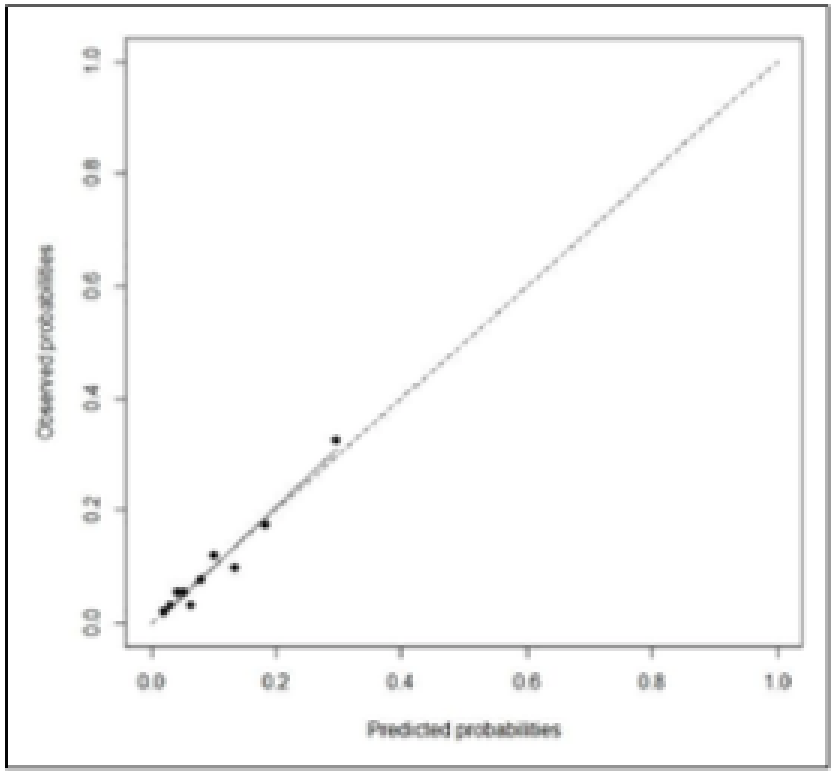
Variable	Value	Points
Age		**1*82**
Gender	Male	**0**
	Female	-13
Living in an institution	Yes	**22**
	No	0
Hb	mmol/L	**-12*6.5**
COPD	Yes	**13**
	No	0
Diabetes	Yes	**10**
	No	0
Malignancy	Yes	12
	No	**0**
Total		**49**

Predicted 30-day mortality = 1/(1+e^(-(-2.037 +(49 x 0.038))))=0.46=46%

Discussion 1-2



AUC of the model was 0.71



Calibration plot

Discussion 1-2

Table 4. Prognostic and predictive values of the BHFS-30 with different cut-offs.

p_t (%)	BHFS-30	TP	TN	FP	FN	Sensitivity	Specificity	Sensitivity + specificity	PPV	NPV
5	−25	82	240	585	9	90.1	29.1	119.2	12.3	96.4
10	−5	64	545	280	27	70.3	66.1	136.4	18.6	95.3
15	7	47	675	150	44	51.7	81.8	133.5	23.9	93.9
20	15	35	753	72	56	38.5	91.3	129.8	32.7	93.1
25	24	18	791	34	73	19.7	95.9	115.6	34.6	91.6

Discussion 1-2

- ✓***In clinical practice a cutoff of BHFS-30 ⩾24 could identify frail elderly patients at high risk for early mortality and could support clinicians, patients and families in tailoring treatment for medical decision making.***

Discussion 1-3

Original Research Article

HIP International

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2020, Vol. 30(1) 101–106

DOI: 10.1177/1120700019832603
journals.sagepub.com/home/hpi
SAGE

Pre-fracture medication use as a predictor of 30-day mortality in hip fracture patients: an analysis of 141,201 patients

Christopher Jantzen[1], Christian M Madsen[1], Bo Abrahamsen[2], Susanne Van Der Mark[1], Benn R Duus[1], Jonathan Howland[3], Jes B Lauritzen[1] and Henrik L Jørgensen[4]

Discussion 1-3

Purpose: To evaluate the predictive value of pre-fracture medication usage on 30-day mortality following a hip fracture.

Methods: Information on age, sex, fracture type, time of death and Charlson co-morbidity index (CCI) was collected from the Danish National Patient Registry on all patients above 60 years, sustaining a hip fracture during the period January 1995 to December 2013. Information on drug usage was obtained from the Danish National Prescription Database. Hazard ratios were calculated with 30-day mortality as the outcome. A univariate and 3 multivariate analyses were conducted with increasing adjustments, starting with age, sex and fracture type, adding co-morbidity and dose in the latter.

Discussion 1-3

Table 1. Basic characteristics of the included patients.

	Alive at 30 days	Dead at 30 days	p
Number (%)	126226 (89.39)	14975 (10.61)	NA
Male/Female (%)	33085 (26.21)/93141 (73.79)	6183 (41.29)/8792 (58.71)	<0.0001
Median age (range)	77 (60–105)	83 (60–111)	<0.0001
Charlson Comorbidity index, *n* (%)			<0.0001
0	106062 (75.11)	12660 (84.54)	
1	5491 (4.35)	635 (4.24)	
2	13459 (10.66)	1469 (9.81)	
⩾3	1214 (0.96)	211 (1.41)	
Median number of medications (range)	10 (0–16)	13 (0–16)	<0.0001
Fracture types, *n* (%):			<0.0001
Femoral neck fracture	75211 (59.58)	8372 (55.93)	
Pertrochanteric femur fracture	43365 (34.36)	5561 (37.14)	
Subtrochanteric fracture	7650 (6.06)	1042 (6.96)	

Discussion 1-3

Medication	*n* dead medicated	*n* dead unmedicated	Univariate analysis	
			HR [CI 95%]	*p*
ACE inhibitors, *n* = 19117	2306	12669	1.18 (1.13–1.23)	<0.0001
Antiarrhythmics, *n* = 12662	2269	12706	1.90 (1.82–1.99)	<0.0001
Beta blockers, *n* = 20601	2540	12435	1.21 (1.16–1.27)	<0.0001
Calcium channel blockers, *n* = 22629	2435	12540	1.02 (0.98–1.07)	0.35
Statins, *n* = 13538	1177	13798	0.80 (0.75–0.85)	<0.0001
NSAID, *n* = 25489	2429	12546	0.87 (0.83–0.91)	<0.0001
Proton pump inhibitors, *n* = 20435	2726	12249	1.34 (1.29–1.40)	<0.0001
Opioids, *n* = 12178	1539	13436	1.22 (1.16–1.29)	<0.0001
Acetaminophen, *n* = 43628	5895	9080	1.48 (1.43–1.53)	<0.0001
Loop diuretics, *n* = 33003	6057	8918	2.37 (2.29–2.44)	<0.0001
Psycholeptics, *n* = 54420	6601	8374	1.27 (1.23–1.31)	<0.0001
Thiazid diuretics, *n* = 22479	2315	12660	0.96 (0.92–1.01)	0.1

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Thiazid diuretics, *n* = 22479	2315	12660	0.96 (0.92–1.01)	0.1

Conclusion (1)

- ✓ ***Respiratory failure*** ***being the leading cause of mortality in patients with hip fractures after the operation.***

- ✓ ***Different scoring systems*** ***exist for prediction of 30-day mortality in patients with hip fractures after the operation, including NHFS and BHFS-30, in which*** **age, gender, living in an institution, Hb level, respiratory disease, diabetes and malignancy found to be predictors.**

- ✓ **Pre-fracture usage of certain drugs provides additional information for *mortality in patients with hip fractures***

Discussion 2-1

ORIGINAL ARTICLE

Arch Phys Med Rehabil Vol 89, April 2008

Effect of Nasogastric Tubes on Incidence of Aspiration

Steven B. Leder, PhD, Debra M. Suiter, PhD

Discussion 2-1

Objective: To determine what effect, if any, a nasogastric (NG) tube has on occurrence of anterograde aspiration during objective evaluation of swallowing using both liquid and puree bolus consistencies.

Design: Prospective, consecutive.

Setting: Large, urban, tertiary care, teaching hospital.

Participants: Referred sample of 1260 consecutively enrolled inpatients. Group 1 (n=630; 346 male, 284 female) had an NG tube and group 2 (n=630; 360 male, 270 female) did not have an NG tube at time of referral for dysphagia evaluation.

Intervention: Fiberoptic endoscopic evaluation of swallowing (FEES).

*** Aspiration was defined as entry of material into the airway below the level of vocal folds**

Discussion 2-1

Table 1: NG Tube Status and Sex

Subjects	NG Tube		Total
	Yes (%)	No (%)	
Male	346 (49.0)	360 (51.0)	706
Female	284 (51.3)	270 (48.7)	554
Total	630 (50.0)	630 (50.0)	1260

Table 2: NG Tube Status and Age

Decade (y)	NG Tube		Total
	Yes (%)	No (%)	
0–9	5 (83.3)	1 (16.7)	6
10–19	8 (53.3)	7 (46.7)	15
20–29	19 (57.6)	14 (42.4)	33
30–39	30 (55.6)	24 (44.4)	54
40–49	64 (56.1)	50 (43.9)	114
50–59	109 (60.2)	72 (39.8)	181
60–69	137 (59.3)	94 (40.7)	231
70–79	149 (46.9)	169 (53.1)	318
80–89	93 (36.8)	160 (63.2)	253
90–99	16 (29.6)	38 (70.4)	54
100–104	0 (0.0)	1 (100.0)	1
Total	630 (50.0)	630 (50.0)	1260

Table 3: NG Tube Status and Diagnostic Category

Category	NG Tube		Total
	Yes (%)	No (%)	
Iatrogenic			
Cardiothoracic surgery	47 (57.3)	35 (42.7)	82
Esophageal surgery	38 (84.4)	7 (15.6)	45
Head and neck surgery	36 (81.8)	8 (18.2)	44
Neurosurgery	64 (70.3)	27 (29.7)	91
Idiopathic			
Medical	116 (51.8)	108 (48.2)	224
Pulmonary	93 (52.0)	86 (48.0)	179
Cancer	15 (33.3)	30 (66.7)	45
Other	42 (34.4)	80 (65.6)	122
Neurologic			
Left stroke	42 (42.4)	57 (57.6)	99
Right stroke	40 (41.2)	57 (58.8)	97
Brainstem stroke	7 (38.9)	11 (61.1)	18
Parkinson's disease	4 (80.0)	1 (20.0)	5
Dementia	9 (29.0)	22 (71.0)	31
Other	76 (44.4)	95 (55.6)	171
Total	629 (50.2)	625 (49.8)	1253*

Discussion 2-1

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Total	629 (50.2)	625 (49.8)	1253*

Discussion 2-1

Table 4: Aspiration Status of Liquid and Puree Consistencies Based on Presence of an NG Tube

Aspiration Status	NG Tube		Total
	Yes (%)	No (%)	
Liquid aspiration			
Yes	153 (24.3)	143 (22.7)	296
No	477 (75.7)	487 (77.3)	964
Total	630	630	1260
Puree aspiration			
Yes	91 (14.4)	93 (14.8)	184
No	539 (85.6)	537 (85.2)	1076
Total	630	630	1260

Discussion 2-1

- ***The present study confirms that a safe and successful swallow, defined as no aspiration during FEES, was not affected by the presence of an NG tube.***

Discussion 2-2

Original Research—Laryngology and Neurolaryngology

Effect of Presence/Absence of a Nasogastric Tube in the Same Person on Incidence of Aspiration

Michael Fattal, MD[1], Debra M. Suiter, PhD, CCC-SLP[2], Heather L. Warner, MA, CCC-SLP[3], and Steven B. Leder, PhD, CCC-SLP[1]

AMERICAN ACADEMY OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY FOUNDATION

Otolaryngology–Head and Neck Surgery
145(5) 796–800

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SAGE

Discussion 2-2

Objective. To determine what effect, if any, the presence or absence of a nasogastric (NG) tube in the same person had on the incidence of anterograde aspiration.

Design. Case series with planned data collection.

Setting. Large, urban, tertiary care teaching hospital.

Subjects and Methods. Referred sample of 62 consecutively enrolled adult inpatients for fiber-optic endoscopic evaluation of swallowing (FEES). Group 1 (n = 21) had either small-bore (n = 13) or large-bore (n = 8) NG tubes already in place and had a FEES first with the NG tube in place and a second FEES after NG tube removal. Group 2 (n = 41) did not have an NG tube and had a FEES first without an NG tube and a second FEES after placement of a small-bore NG tube. Time between FEES was approximately 5 minutes.

Discussion 2-2

Table 1. Participant Demographics and Nasogastric (NG) Tube Diameter Distribution

	Diameter of NG Tube		
Diagnostic Category	Small Bore	Large Bore	Total
Cardiothoracic surgery	5	0	5
Head and neck surgery	5	1	6
Neurosurgery	5	0	5
Medical	17	4	21
Pulmonary	12	0	12
Cancer	2	2	4
Left cerebrovascular accident	1	0	1
Right cerebrovascular accident	1	0	1
Parkinson disease	1	0	1
Dementia	0	1	1
Other neurologic	5	0	5
Total	54	8	62

Table 2. Participant Age and Gender for Group 1 and Group 2

		Age, y			
	n	Mean	SD	Male	Female
Group 1	21	66.3	15.8	14	7
Group 2	41	70.0	12.6	25	16
Total	62	68.2		39	23

Discussion 2-2

Table 3. Aspiration Status for Group 1 and Group 2 Based on Presence or Absence of a Nasogastric (NG) Tube and Bolus Consistency (Liquid and Puree)

	NG Tube Present[a]	NG Tube Absent[a]
Group 1 (n = 21)		
Liquid aspiration	6	6
No liquid aspiration	15	15
Puree aspiration	3	3
No puree aspiration	18	18
Group 2 (n = 41)		
Liquid aspiration	5	4
No liquid aspiration	36	37
Puree aspiration	2	2
No puree aspiration	39	39

Discussion 2-2

Table 3. Aspiration Status for Group 1 and Group 2 Based on Presence or Absence of a Nasogastric (NG) Tube and Bolus Consistency (Liquid and Puree)

	NG Tube Present[a]	NG Tube Absent[a]
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No liquid aspiration	15	15
Puree aspiration	3	3
No puree aspiration	18	18
Group 2 (n = 41)		
Liquid aspiration	5	4
No liquid aspiration	36	37
Puree aspiration	2	2
No puree aspiration	39	39

Discussion 2-2

Table 4. Aspiration Status Based on Nasogastric (NG) Tube Diameter (Small Bore or Large Bore) and Bolus Consistency (Liquid and Puree)

	NG Tube Present[a]	NG Tube Absent[a]
Small-bore (n = 54)[b]		
Liquid aspiration	9	8
No liquid aspiration	43	44
Puree aspiration	5	5
No puree aspiration	48	48
Large-bore (n = 8)		
Liquid aspiration	2	2
No liquid aspiration	6	6
Puree aspiration	0	0
No puree aspiration	8	8

Discussion 2-2

Table 4. Aspiration Status Based on Nasogastric (NG) Tube Diameter (Small Bore or Large Bore) and Bolus Consistency (Liquid and Puree)

	NG Tube Present[a]	NG Tube Absent[a]
Small-bore (n = 54)[b]		
Liquid aspiration	9	8
No liquid aspiration	43	44
Puree aspiration	5	5
No puree aspiration	48	48
Large-bore (n = 8)		
Liquid aspiration	2	2
No liquid aspiration	6	6
Puree aspiration	0	0
No puree aspiration	8	8

Discussion 2-2

- ***The presence of an NG tube**, regardless of age, diagnostic category, or tube diameter, **did not affect incidence of aspiration** for either liquid or puree food consistencies.*

Discussion 2-3

Chou *et al. BMC Geriatrics* (2020) 20:60
https://doi.org/10.1186/s12877-020-1464-9

BMC Geriatrics

RESEARCH ARTICLE Open Access

Nasogastric tube feeding versus assisted hand feeding in-home healthcare older adults with severe dementia in Taiwan: a prognosis comparison

Hsiao-Hui Chou[1], Meng-Ting Tsou[1] and Lee-Ching Hwang[1,2*]

Discussion 2-3

Background: All individuals with severe dementia should be offered careful hand feeding. However, under certain circumstances, people with severe dementia have a feeding tube placed. In Taiwan, tube feeding rate in demented older home care residents is increasing; however, the benefits of tube feeding in this population remain unknown. We compared the clinical prognosis and mortality of older patients with severe dementia receiving nasogastric tube feeding (NGF) or assisted hand feeding (AHF).

Methods: Data from the in-home healthcare system between January 1 and December 31, 2017 were analyzed to identify 169 participants over 60 years of age in this retrospective longitudinal study. All subjects with severe dementia and complete functional dependence suffered from difficulty in oral intake and required either AHF or NGF. Data were collected from both groups to analyze pneumonia, hospitalization, and mortality rates.

Discussion 2-3

Table 1 Characteristics of subjects with severe dementia in AHF and NGF

	Total	AHF	NGF	*p*
Numbers no. (%)	169	39 (23)	130 (77)	
Sex (Male) no. (%)	56 (33)	10 (26)	46 (35)	0.257
Age (years, mean ± SD)	85.9 ± 7.5	86.7 ± 6.8	85.7 ± 7.7	0.458
Barthel index (< 10) no. (%)	129 (76)	21 (54)	108 (83)	<.001
Caregiver no. (%)	95 (56)	19 (49)	76 (59)	0.282
Diagnosis				
Alzheimer's disease no. (%)	24 (14)	3 (8)	21 (16)	
Vascular dementia no. (%)	32 (19)	9 (23)	23 (18)	
Others no. (%)	113 (67)	27 (69)	86 (66)	
Pressure sores no. (%)	27 (16)	6 (15)	21 (16)	0.908
BMI (kg/m^2, mean ± SD)	21.7 ± 3.6	22.7 ± 3.3	21.4 ± 3.6	0.042
MNA-SF (mean ± SD)	9.3 ± 2.7	9.9 ± 2.5	9.1 ± 2.7	0.103
Norton scale (mean ± SD)	10.1 ± 2.1	10.7 ± 3.1	10.0 ± 1.6	0.161
Serum albumin (g/dL, mean ± SD)	3.8 ± 0.6	4.0 ± 0.6	3.7 ± 0.6	0.045
Hb (g/dL, mean ± SD)	11.0 ± 1.7	11.0 ± 1.9	11.0 ± 1.6	0.942
WBC ($10^3/\mu L$, mean ± SD)	10.4 ± 3.9	9.8 ± 3.1	10.6 ± 4.0	0.296

Discussion 2-3

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Discussion 2-3

Table 2 Variables associated with pneumonia, hospitalization and one-year mortality rates

	Pneumonia			Hospitalization			Mortality		
Variables	Yes	No	*P*	Yes	No	*P*	Yes	No	*P*
Total no. (%)	72 (43)	97 (57)		107 (63)	62 (37)		22 (13)	147 (87)	
Age (years, mean ± SD)	85.9 ± 8.2	85.9 ± 7.0	0.990	85.9 ± 7.6	85.9 ± 7.5	0.974	88.4 ± 6.0	85.6 ± 7.7	0.105
Sex (M) no. (%)	31 (43)	25 (26)	0.018	37 (35)	19 (31)	0.601	4 (18)	52 (35)	0.146
Feeding (NGF) no. (%)	62 (86)	68 (70)	0.015	86 (80)	44 (71)	0.162	19 (86)	111 (76)	0.415
Feeding (AHF) no. (%)	10 (14)	29 (30)	0.015	21 (20)	18 (29)	0.162	3 (14)	36 (25)	0.415

Discussion 2-3

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Discussion 2-3

Table 3 Risk factors of pneumonia, hospitalization and one-year mortality rates with logistic regression

	Pneumonia		Hospitalization		Mortality	
Factors	aOR	95% CI	aOR	95% CI	aOR	95% CI
Age	1.01	0.97–1.06	1.00	0.96–1.05	1.05	0.98–1.12
Sex (male)	1.96	0.97–3.97	1.64	0.74–3.62	0.44	0.13–1.42
Feeding (NGF)	2.20	0.92–5.30	1.94	0.82–4.60	2.38	0.58–9.70
Pressure sore	0.20	0.07–0.60	0.20	0.08–0.53	0.45	0.10–1.96
Barthel index	1.69	0.74–3.85	0.70	0.29–1.70	1.23	0.31–4.82
Albumin	0.58	0.32–1.03	–	–	–	–
Hb	–	–	0.63	0.50–0.80	–	–
Norton scale	–	–	–	–	0.76	0.59–0.98

Discussion 2-3

Conclusions: For older patients with dementia requiring in-home healthcare, NGF is not associated with a significantly lower risk of pneumonia than AHF. Additionally, neither mortality nor hospitalization rates decreased with NGF. On the contrary, a nonsignificant trend of increased risk of pneumonia was observed in NGF group.

Conclusion (2)

- ✓ ***The presence of an NG tube did not affect incidence of aspiration for either liquid or puree food consistencies.***

- ✓ ***On the other hand, a nonsignificant trend of increased risk of pneumonia was observed in patients with nasogastric tube feeding.***

Back to our patient

- ✓ *BHFS-30 = 1*88-12*7.7+12 = 7.6*
- ✓ *Predicted 30-day mortality = 1/(1+e^(-(-2.037+(7.6 x 0.038)))) = 14.8 %*
- ✓ *Other risk factors: PPI use; intertrochanteric fracture*
- ✓ *LLL pneumoniae: may or may not be aspiration*
- ✓ *Early NG placement: questionable*

Back to our patient

- ✓ *Increase pre-op Hb level*
- ✓ *Adjust antibiotics for better anaerobic coverage*

Take Home Message

- ✓ ***Respiratory failure*** ***being the leading cause of mortality in patients with hip fractures after the operation.***

- ✓ ***Different scoring systems*** ***exist for prediction of 30-day mortality in patients with hip fractures after the operation***

- ✓***The presence of an NG tube did not affect incidence of aspiration*** ***for either liquid or puree food consistencies.***


THANKS FOR YOUR ATTENTION
PLEASE CLAP AND DON`T ASK TOUGH QUESTIONS
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