高雄醫學大學附設中和紀念醫院
Kaohsiung Medical University Chung-Ho Memorial Hospital

~實證醫學報告~

營養介入對接受化放療頭頸癌病人之成效評估

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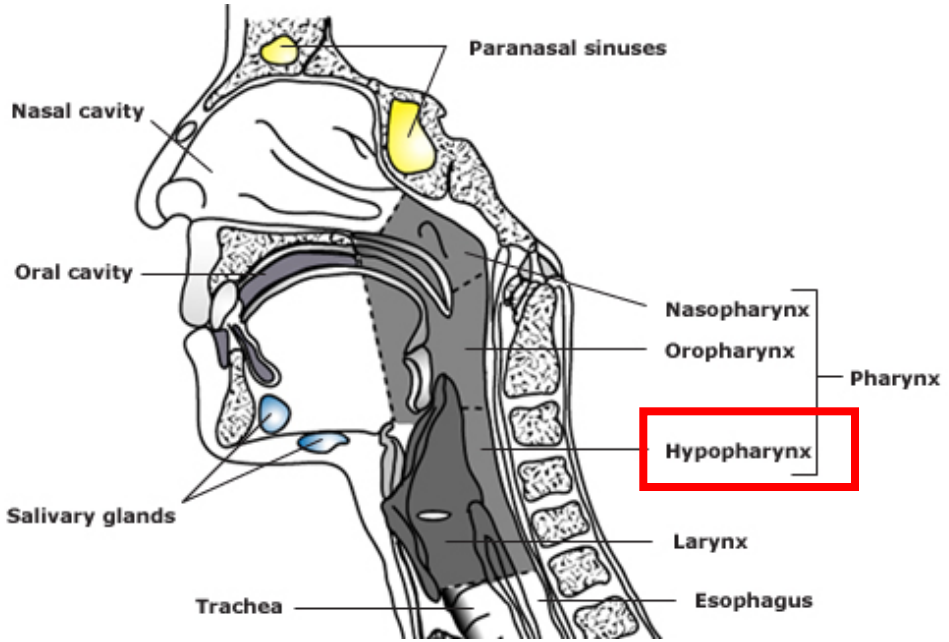
101年3月19日

病例

- 52yo male
  - hypopharyngeal cancer cT2N2bMx,stage IVA
  - 101.02.25 amitted for chemoradiotherapy.

- Symptoms:
  - sore throat(+)
  - odynophagia(+)
  - dysphagia(+)



Nutritional Assessment

- Nutritional intervention: 101.02.27
- Height: 168cm; 46kg; BMI:16.3; IBW: 62kg
- SGA score from nurse: 3 (BMI<18.5; 吞嚥困難; 癌症)
  - High risk for malnutrition
- Dietary intake:

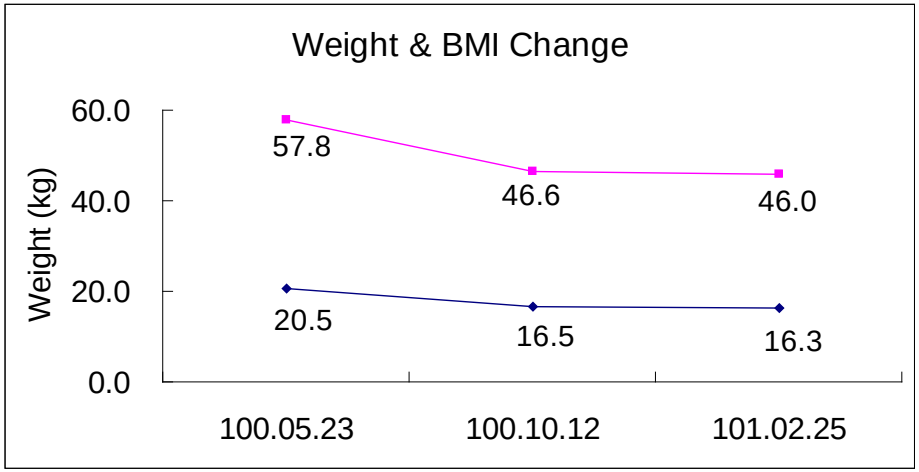
早餐	午餐	晚餐	晚點
菠蘿麵包1個 豆漿240cc	麵包1個 豆漿240cc	牛肉湯麵1份	麵包1個 白開水

Calorie: 1456kcal; Protein: 47g(13%); Fat: 60g(37%); CHO: 163g(50%)

- Total SGA scores: 5
  - Severe malnutrition
    - Weight loss >10% in 6 months (57.8kg → 46kg: loss 20%)
    - Depletion of fat store on 太陽穴.虎口.眼瞼

Nutrition problem & patient's question

- Nutrition problem:
  - Inadequate calorie and protein intake
  - Severe malnutrition



- 病人提出問題
  - 最近吞嚥疼痛，不想吃東西，體重下降很多，體力也變差
    - 要怎麼做才能增加我的體重和營養?

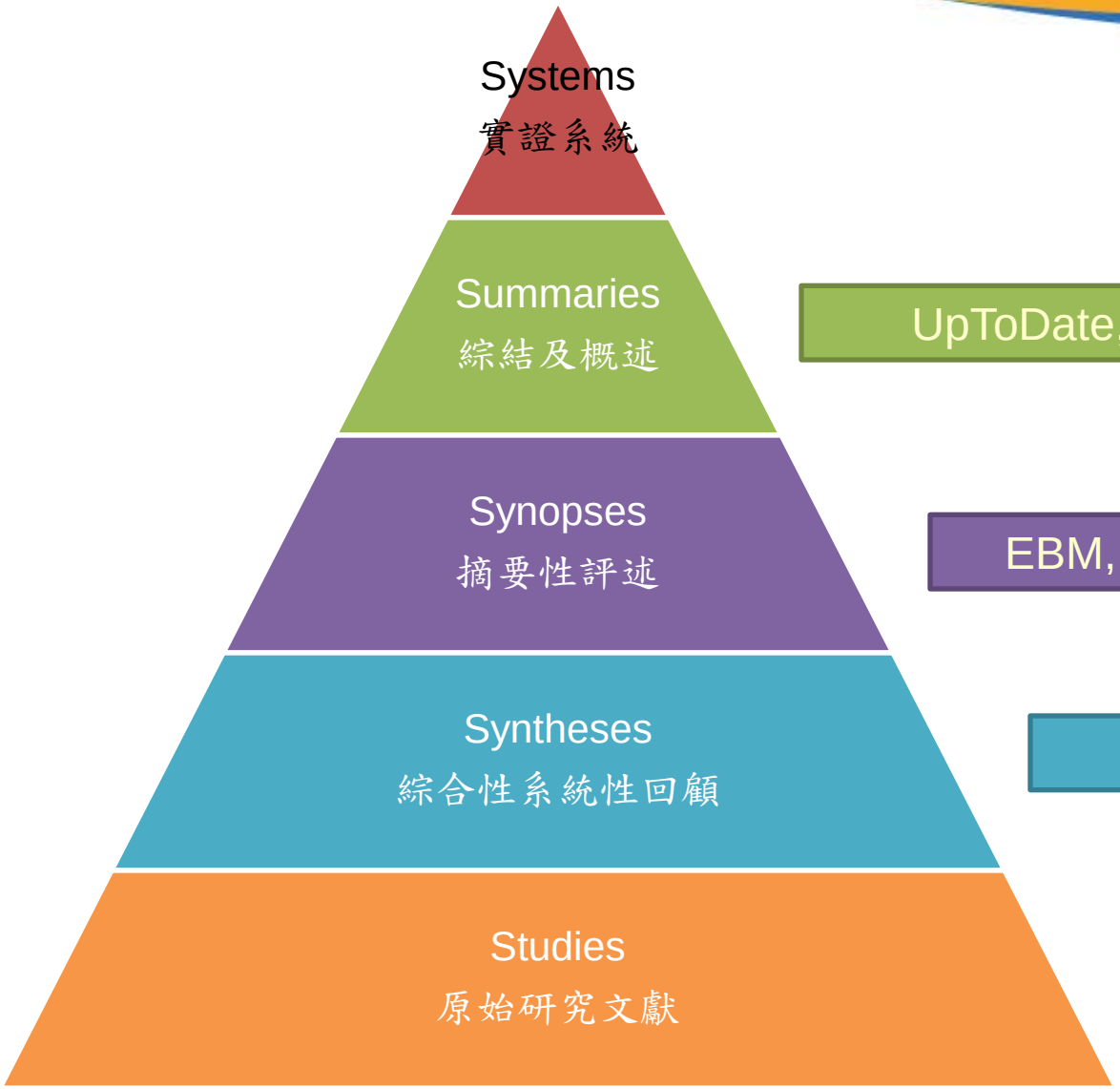
EBM step 1~【臨床問題呈現】

- 營養師的飲食介入對於頭頸癌症病人治療中及治療後是否真的有幫助?
  - 熱量及蛋白質攝取狀況
  - 營養狀況
  - 體重變化
  - 生活品質

EBM step 1~【PICO】

P Patient/Problem	52歲，男性，口咽癌，接受化學及放射治療，吞嚥困難進食量減少，體重減輕
I Intervention	營養師介入指導
C comparison	無營養師介入指導
O Outcome	體重變化、營養狀況、熱量及蛋白質攝取狀況、生活品質改善

EBM step 2~ 5S Information Resources



UpToDate, DynaMed

EBM, ACP Journal club

Cochrane reviews

PubMed

EBM step 3~ Appraise the evidences

Grade of Recommendation	Level of Evidence	Therapy
A	1a	Systemic review of RCTs
	1b	Single RCT
	1c	“All-or-none”
B	2a	Systemic review of cohort studies
	2b	Cohort study or poor RCT
	2c	“Outcomes” research
	3a	Systemic review of case-control studies
	3b	Case-control study
C	4	Case series
D	5	Expert opinion, physiology, bench research

Searching evidences

- MeSH keywords:
  - dietitian, nutrition intervention, dietary intervention
  - head neck cancer, head neck neoplasm
- Databases:
  - System/Summaries:
    - UpToDate (1), DynaMed (0)
  - Synopses:
    - EBM (0), ACP Journal Club (0)
  - Syntheses:
    - Cochrane library (1/16)
  - Studies:
    - PubMed (3/12)

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TOPIC OUTLINE

The role of nutritional support in patients with cancer

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Disclosures

All topics are updated as new evidence becomes available and our peer review process is complete.
Literature review current through: 一月 2012. | **This topic last updated:** 六月 10, 2011.

INTRODUCTION — Weight loss is common among cancer patients, and can be attributed to many causes, including mucositis, inability to ingest or absorb adequate calories because of a problem with the alimentary tract, loss of appetite, and metabolic aberrations. Unintentional weight loss is associated with decreased quality of life (QOL) and a poorer prognosis [1]. Furthermore, for patients who are already in a catabolic state, the increased metabolic demands associated with anticancer treatment (particularly surgery) further worsen the problem. (See "Clinical features and pathogenesis of cancer cachexia".)

Intuitively, it would seem that caloric repletion, by either the enteral or parenteral route, would be the optimal approach to the treatment of cancer-associated weight loss. However, the routine use of nutritional support in patients with cancer is controversial. Not all patients with malignancy or cancer treatment-associated weight loss benefit from nutritional support. Furthermore, the routine use of nutritional support in patients with advanced incurable cancer is associated with a higher risk of treatment-related complications [2,3]. Nevertheless, nutritional support is frequently prescribed for patients with cancer. In fact, malignant disease is the most frequent indication for home total parenteral nutrition (TPN), accounting for approximately one-half of all cases in one large series [4].

An overview of the general use of both parenteral and enteral nutrition in cancer patients and detailed discussions of nutritional support related to the perioperative setting, hematopoietic cell transplantation, head and neck cancer, esophageal cancer, colorectal cancer, and in patients with advanced incurable cancers are discussed here. The use of nutritional support in surgical patients and the intensive care unit setting, and the basic principles of enteral and parenteral nutrition (hyperalimentation) are discussed elsewhere. (See "Nutritional issues in the surgical patient" and "Nutrition support in critically ill patients: An overview".)

GENERAL OVERVIEW — Two large systematic reviews of the literature have examined the role of parenteral and enteral nutritional supplementation in patients with cancer.

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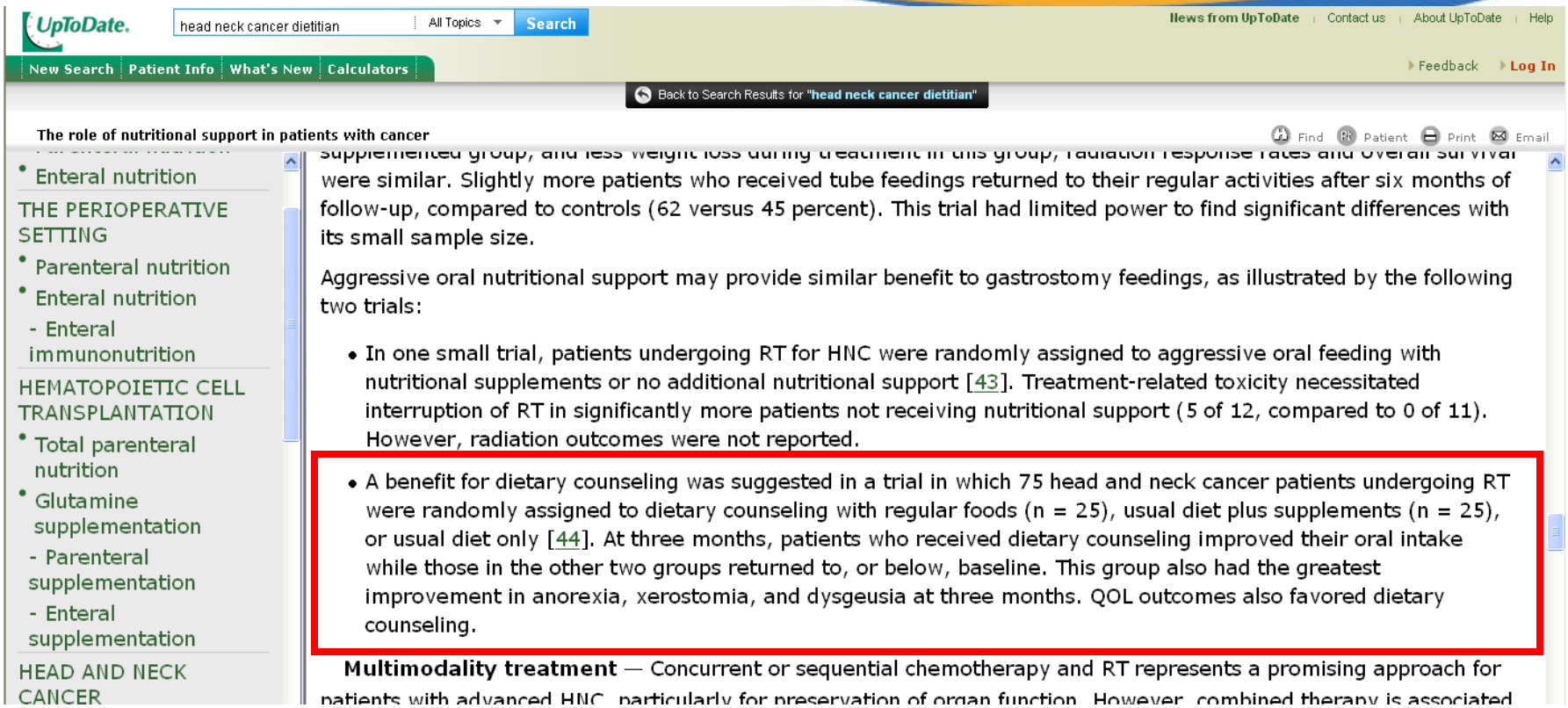
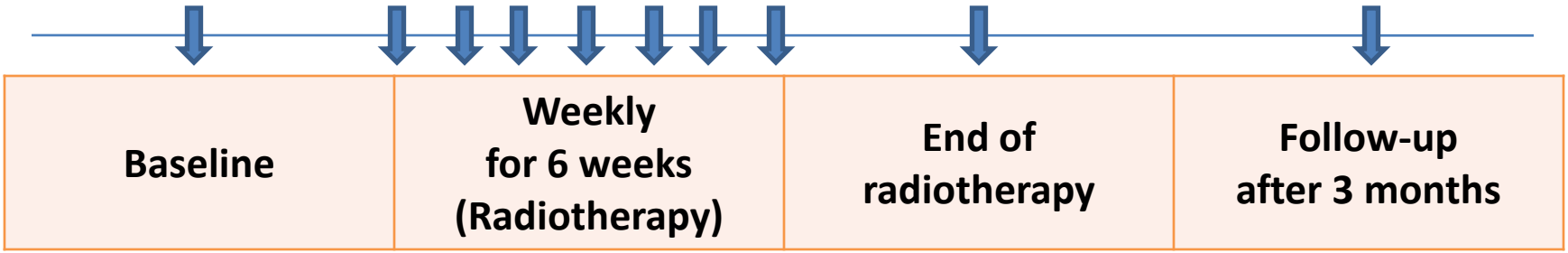
Up To Date
Head and neck cancer section



- Impact of nutrition on outcome: a prospective randomized controlled trial in patients with head and neck cancer undergoing radiotherapy
  - Head and Neck (2005) 27:659-668
  - Class A; 1b: Single RCT

Subjects and Methods

- Subjects
  - 75 head and neck cancer patients undergoing radiotherapy
- Study Design
  - Randomly assigned patients
    - Dietary counseling with regular food; n=25
    - Usual diet plus supplements; n=25
    - Usual diet only; n=25
- Nutrition Intervention



Improvements on intake and nutritional status

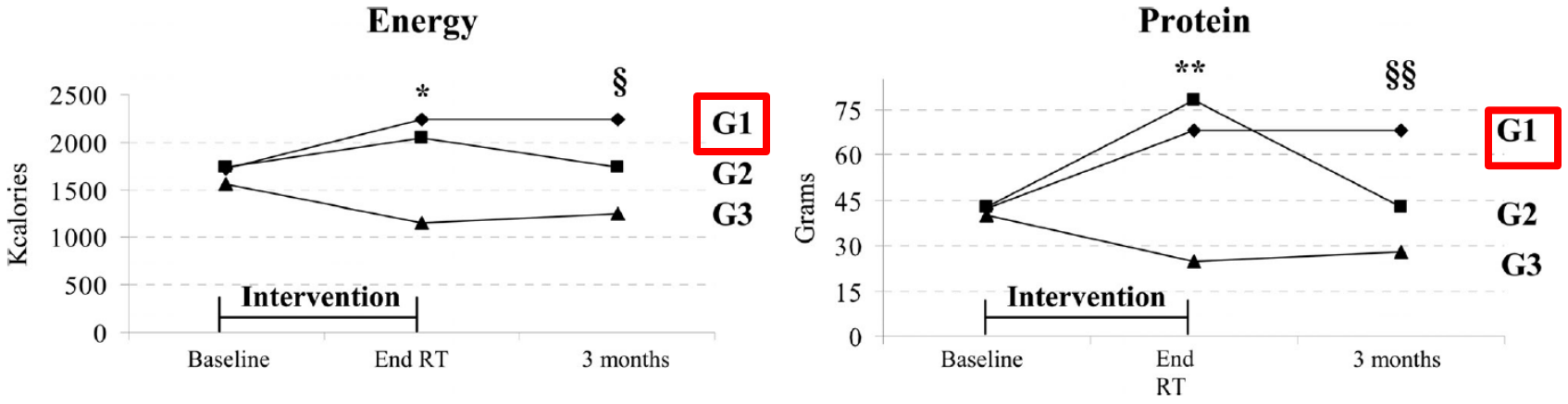


FIGURE 2. Energy and protein intake patterns during intervention and follow-up for the three study groups: group 1 (G1), dietary counseling based on regular foods; group 2 (G2), supplements; and group 3 (G3), ad lib intake. Energy: *G1 > G2 > G3 (p = .005) and §G1 > G2 > G3 (p = .001); protein: **G2 > G1 > G3 (p = .006) and §§G1> G2 > G3 (p = .001).

Table 2. Changes in nutritional status during RT and at 3 months as determined by PG-SGA.

	G1				G2				G3					
	Decline		Maintained/ improved		Decline		Maintained/ improved		Decline		Maintained/ improved			
Method	End RT	3 months	End RT	3 months	End RT	3 months	End RT	3 months	End RT	3 months	End RT	3 months	p^1	p^2
PG-SGA	5	3	20	22	19	24	6	1	24	25	1	0	<.002	<.001

Abbreviations: RT, radiotherapy; G1, group 1 (dietary counseling based on regular foods); G2, group 2 (supplements); G3, group 3 (ad lib); PG-SGA, Ottery's Patient Generated Subjective Global Assessment.

Note. Data are expressed as number of patients; NS = not significant; p^1 expresses the significance of statistical differences between intervention groups, regarding nutritional decline both at the end RT and at 3 months; p^2 expresses the significance of statistical differences between intervention groups, regarding maintenance/improvement of nutritional status at the end RT and at 3 months.

Improvements on quality of life and symptoms

Table 4. Median quality of life dimensions' scores.

Items	G1			G2			G3		
	Onset	End	3 months	Onset	End	3 months	Onset	End	3 months
Function scales									
Global QOL	48	75*	82†,‡	46	70*	62†	47	30*	30†
Physical function	49	74*	79†	48	69*	60†	45	21*	22†
Role function	50	78*	80†	52	68*	58†	48	20*	19†
Emotional function	55	79*	83†	50	66*	62†	51	28*	28†
Social function	52	82*	85†	51	66*	61†	49	19*	20†
Cognitive function	38	58*	60†	35	51*	54†	37	20*	20†
Symptoms, scales									
Fatigue	30	55*	26‡	31	75*	78†	29	78*	79†
Pain	25	63*	15†,‡	22	74*	45†,‡	23	78*	73†
Nausea and vomiting	15	50*	10†,‡	14	71*	60†,‡	12	72*	73†,‡
Symptoms, single items									
Dyspnea	15	39*	8†,‡	14	40*	38†	18	38*	38†
Sleep disturbance	30	55*	29†,‡	28	55*	75†,‡	32	60*	78†,‡
Appetite	45	68*	48†,‡	40	59*	72†,‡	42	65*	75†,‡
Constipation	12	10	10	11	9	8	9	8	8
Diarrhea	7	7	7	6	6	6	7	7	7
Finance	38	38	38	37	37	37	40	40	40

GI, dietary counseling based on regular foods; G2, supplements; G3, ad lib *intake; higher scores on function scales indicate better functioning, higher scores on symptom scales/single items denote increased symptoms or worse financial impairment. — Highlights overall significant improvement, –– highlights overall significant deterioration.*

**Significant differences between baseline end of RT.*

†Significant differences between baseline and at 3-months.

‡Significant differences between end of RT and at 3 months.

Conclusions

- Nutrition intervention positively influenced outcome
  - Nutritional intake
  - Nutritional status (PG-SGA)
  - Treatment related symptoms
  - Quality of life (QOL)

The Cochrane Library

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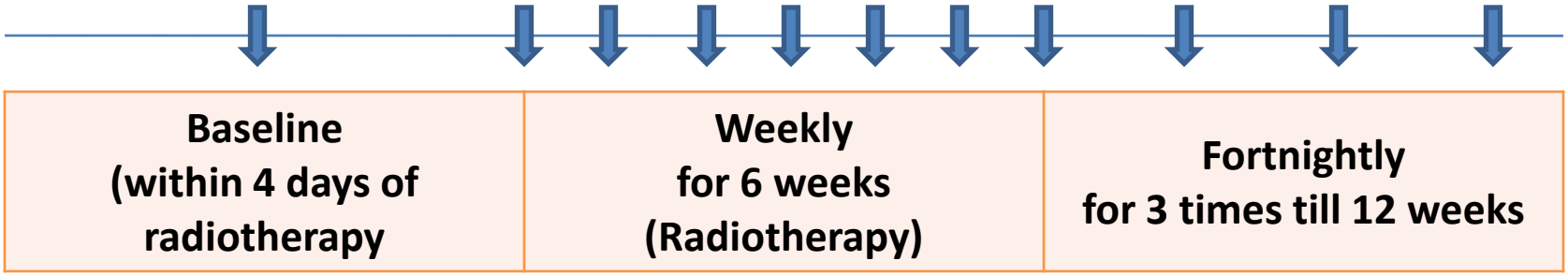
- Nutrition intervention is beneficial in oncology outpatients receiving radiotherapy to the gastrointestinal or head and neck area
  - British Journal of Cancer (2004) 91,447-452
  - Class A; 1b: Single RCT

Subjects and Methods

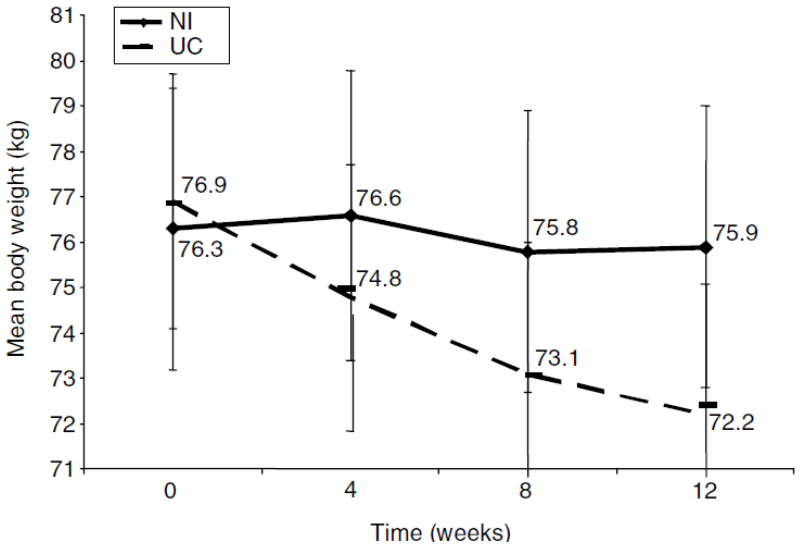
- Subjects
  - 60 patients with gastrointestinal or head and neck caner receiving radiotherapy

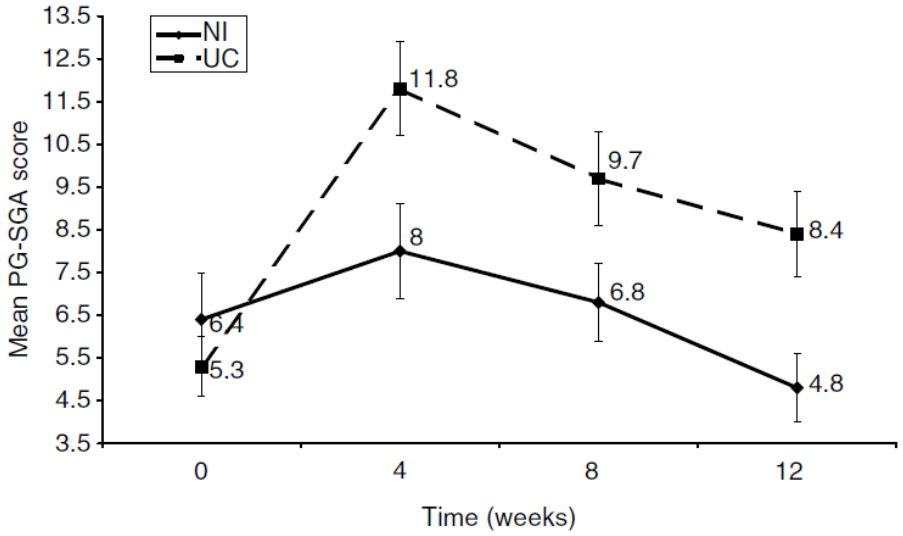
- Study Design
  - Prospective, randomized-controlled
    - Intensive nutrition intervention (NI); n=29 (male:female 24:5)
    - Usual care (UC); n=31 (male:female 27:4)

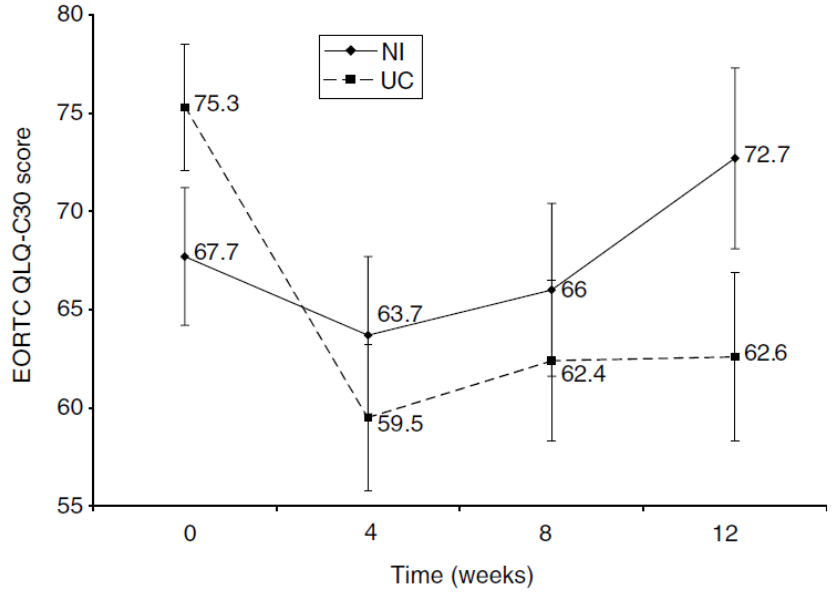
- Nutritional Intervention

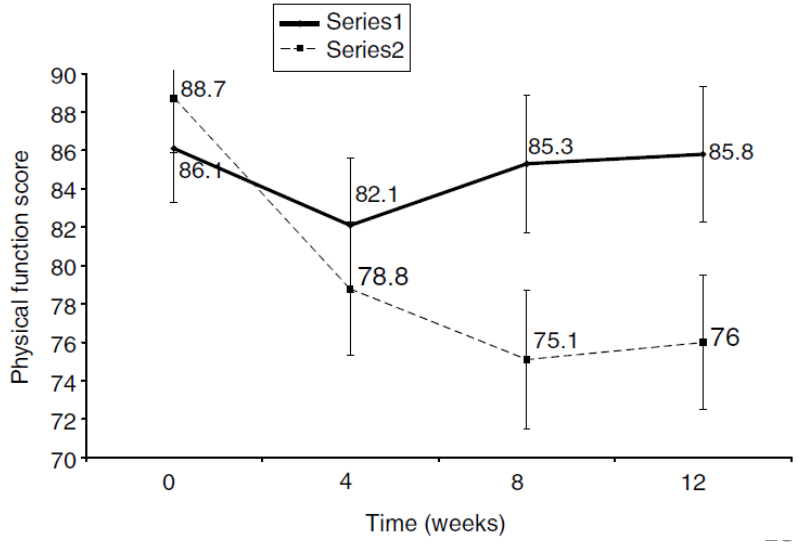


Improvements on body weight, PG-SGA, quality of life and physical function









Conclusions

- Early and intensive nutrition intervention provides beneficial outcomes in ambulatory oncology patients receiving radiotherapy to the gastrointestinal or head and neck area
  - minimizing weight loss
  - minimizing the deterioration in nutritional status
  - improving global QOL and physical function

PubMed 2004~2012; (3/12)

PubMed.gov
US National Library of Medicine
National Institutes of Health

- Nutritional counseling and oral nutritional supplements in head and neck cancer patients undergoing chemoradiotherapy
  - Journal of Human Nutrition and Dietetics. 2012
  - Class B; 2c: Outcome research

- A dietitian-led clinic for patients receiving (chemo)radiotherapy for head and neck cancer.
  - Support Care Cancer. 2011 Nov 16
  - Class B; 3b: Case-control study

- Comparison of the effect of individual dietary counseling and of standard nutritional care on weight loss in patients with head and neck cancer undergoing radiotherapy.
  - British Journal of Nutrition. 2010 Sep;104(6):872-7
  - Class A; 1b: Single RCT

Subjects and Methods

- Subjects
  - 38 patients with head and neck cancer undergoing radiotherapy

- Study Design
  - Prospective, randomized-controlled
    - Individual dietary counseling by dietitian (IDC); n=20
      - Male:Female 14:6
    - Standard nutritional counseling by an oncology nurse (SC); n=18
      - Male:Female 8:10

- Nutritional Intervention

Baseline (Diagnosis)	Weekly for 6 weeks (Radiotherapy)	Weekly for 10 weeks (Rehabilitation)

Improvements on percentage weight change

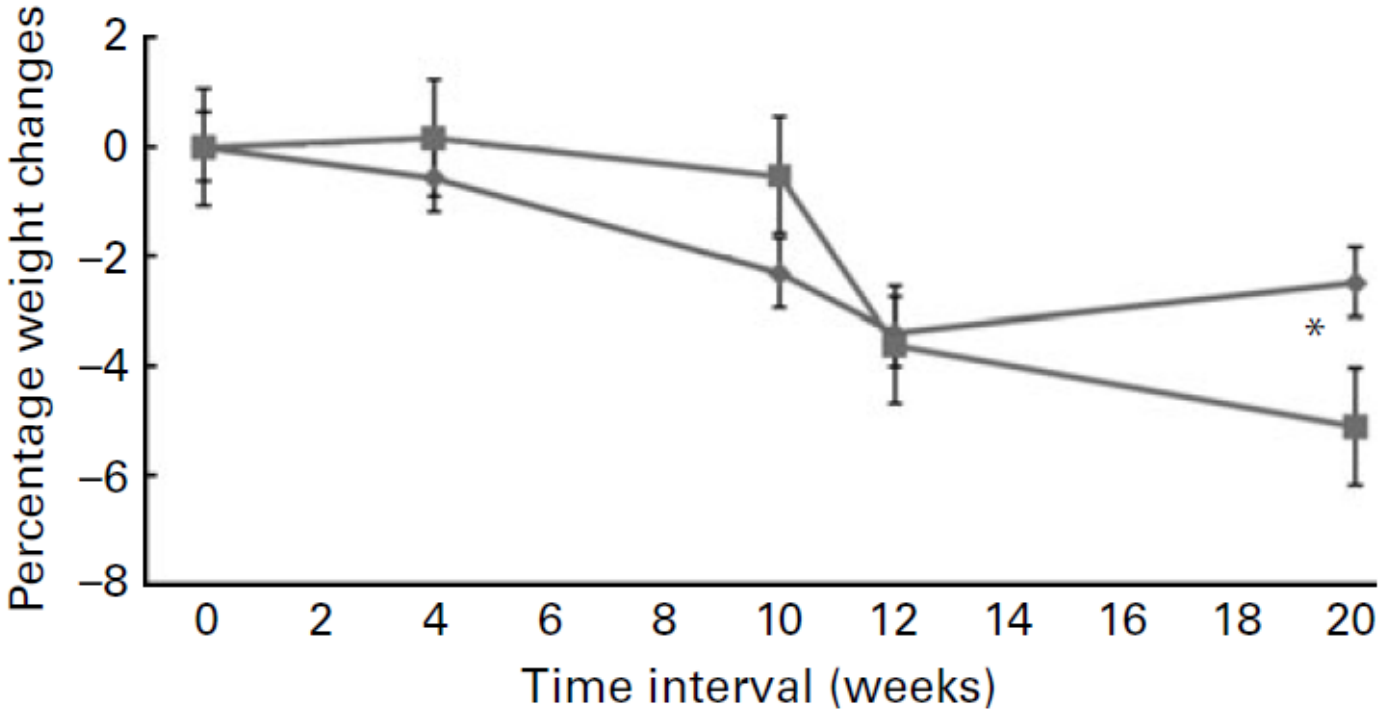


Fig. 2. Percentage of unintended weight loss as a function of time (means with their standard errors), with baseline as reference. IDC, individual dietary counselling (—◆—, *n* 20); SC, standard nutritional care by a nurse (—■—, *n* 18). *Mean values were significantly different between SC and IDC groups (P=0·03).

Improvements on nutritional status

Table 2. Prevalence of malnutrition* in individual dietary counselling (IDC) and standard nutritional care by a nurse (SC) groups from diagnosis until rehabilitation

	Number of patients per nutrition intervention		
Interval	ICD (*n* 20)	SC (*n* 18)	Total (*n* 38)
Diagnosis	4·0	3·0	7·0
Treatment	3·0	4·0	7·0
Early rehabilitation	0·0†	5·0†	5·0
Rehabilitation	1·0	3·0	4·0

* Malnutrition was defined as 'unintended weight loss ≥5 % within 1 month'.
† Prevalence of malnutrition in IDC and SC groups was significantly different ($P < 0{\cdot}05$).

Conclusions

- Early and intensive individualized dietary counseling by a dietitian produces clinically relevant effects in patients with head and neck caner undergoing radiotherapy
  - Decreasing weight loss
  - Decreasing malnutrition

Summary~ 【PICO】

		UpToDate	Cochrane	PubMed
P	Head and neck cancer patients undergoing radiotherapy			
I	Baseline	V	V	V (4 times)
	(Radiotherapy) Weekly for 6 wks	V	V	V
	End of radiotherapy	V	V	V
	Follow-up	After 3 months	Fortnightly for 6 weeks	Weekly for 10 wks
C		No intervention	Intervention by nurse	Intervention by nurse
O	Weight change	-	V	V
	Nutritional status	V	V	V
	Nutritional intake	V	-	-
	Treatment related symptoms	V	-	-
	Physical function	-	V	-
	Quality of life	V	V	-

實證應用~回答病人問題

P (Patient / Problem)	將執行化放療的頭頸癌病人
I (Intervention)	配合營養師的營養介入 -於治療中：每週一次為期六週 -於治療後：每週一次或每兩週一次為期6~12週
C (comparison)	沒有營養師的營養介入
O (Outcome)	有效提升及改善： -體重、營養素攝取量、營養狀態 -治療副作用 -生活品質

EBM step 4&5~ 證據應用及效果評估

- 頭頸癌病人接受營養照護會診成效
  - 台灣膳食營養學會雜誌 (2011) 3(1):25-36

- Subjects
  - 193 male head and neck cancer patient
  - admitted for chemotherapy or radiotherapy

- Nutrition intervention
  - 入院48小時由營養師訪視介入衛教
  - 訪視1~2週後追蹤1次

Improvements on dietary intake

表三、住院頭頸癌病人接受營養師會診前後熱量及蛋白質攝取變化狀況

項目	會診時機	overall (n=193)	BMI <18.5 (n=61)	BMI=18.5-22.9 (n=90)	BMI23-24.9 (n=21)	BMI ≧ 25.0 (n=21)	*p* for trend ≠
實際熱量	初診	1574.6 ± 454.6	1414.9 ± 408.5	1608.2 ± 486.6	1661.6 ± 374.1	1707.2 ± 377.1	<0.001
攝取 (kcal)	複診	1704.1 ± 429.2	1595.7 ± 461.0	1734.1 ± 395.0	1706.6 ± 496.9	1887.7 ± 337.5	
	p	<0.001	0.005	0.004	0.438	0.054	
實際蛋白質	初診	65.1 ± 20.0	60.3 ± 18.1	65.2 ± 21.6	67.6 ± 16.7	75.5 ± 17.5	0.002
攝取 (g)	複診	71.6 ± 20.6	68.4 ± 22.4	72.3 ± 20.1	71.6 ± 21.5	78.0 ± 15.3	
	p	<0.001	0.004	0.001	0.169	0.254	
達熱量	初診	83.3 ± 23.0	77.9 ± 22.4	84.2 ± 25.0	88.0 ± 18.5	90.4 ± 17.0	0.014
建議攝取 (%)*	複診	90.3 ± 21.8	87.8 ± 24.5	91.1 ± 20.3	89.8 ± 25.7	94.6 ± 15.3	
	p	<0.001	0.009	0.004	0.592	0.046	
達蛋白質	初診	78.6 ± 25.2	75.0 ± 24.2	78.6 ± 27.6	81.3 ± 21.2	86.1 ± 20.1	0.069
建議攝取 (%)#	複診	86.5 ± 26.4	84.9 ± 29.2	87.1 ± 25.9	86.3 ± 27.7	89.1 ± 18.8	
	p	<0.001	0.006	0.003	0.171	0.222	

數值以平均值 ± 標準差表示，會診前後之差異以 paired t-test 分析，結果以 p <0.05 定義為具統計上之顯著差異。

Abbreviations: BMI, body mass index。BMI 分組定義根據 WHO international classification 標準：<18.5 (體位消瘦)、18.5-22.9 (體位正常 I)、23-24.9(體位正常 II)、≧ 25.0(體位過重)。

*：達熱量建議攝取 (%) = 實際熱量攝取量 / 建議熱量攝取量 × 100%。

達蛋白質建議攝取 (%) = 實際蛋白質攝取量 / 建議蛋白質攝取量 × 100%。

§ 人數不足 193 人。

≠ 達熱量及蛋白質建議攝取比例與不同體位分層之趨勢相關性以簡單線性迴歸 (simple linear regression) 分析，結果以 p <0.05 定義為具統計上之顯著差異。

Improvements on biological markers and weight change

表四、住院頭頸癌病人接受營養師會診前後營養相關指標及體重變化情形[1,2]

項目	會診時機	overall (n=193)		BMI <23 (n=151)		BMI ≧ 23 (n=42)	
		Mean ± SD	*p*	Mean ± SD	*p*	Mean ± SD	*p*
hemoglobin (g/dL)*	初診	11.0 ± 2.4		10.7 ± 1.7		12.2 ± 3.8	
	複診	10.4 ± 1.7	<0.001	10.1 ± 1.5	<0.001	11.3 ± 1.9	0.102
C-reactive protein (mg/dL)*	初診	97.4 ± 66.7		100.3 ± 67.1		86.8 ± 66.8	
	複診	90.6 ± 93.2	0.434	96.6 ± 96.1	0.722	68.7 ± 80.7	0.202
albumin (g/dL)*	初診	2.8 ± 0.6		2.8 ± 0.6		2.9 ± 0.8	
	複診	2.9 ± 0.5	0.126	2.9 ± 0.5	0.073	2.9 ± 0.4	0.950
體重 (kg)*	初診	56.3 ± 12.1		51.3 ± 7.8		70.8 ± 10.5	
	複診	56.6 ± 11.9	0.114	51.9 ± 8.0	0.019	70.5 ± 10.6	0.384

數值以平均值 ± 標準差表示，會診前後之差異以 paired t-test 分析，結果以 p <0.05 定義為具統計上之顯著差異。BMI, body mass index。BMI 分組定義根據 WHO international classification 標準：<18.5 (體位消瘦)、18.5-22.9 (體位正常 I)、23-24.9 (體位正常 II)、≧25.0 (體位過重)。

*：人數不足 193 人。

Study Limitation

		UpToDate	Cochrane	PubMed	Our Article
	Study design	Prospective RCT	Prospective RCT	Prospective RCT	Retrospective Outcome study
P	Head and neck cancer patients undergoing radiotherapy				
I	Baseline	V	V	V (4 times)	48hrs after admission
	(Radiotherapy) Weekly for 6 wks	V	V	V	only 1 time
	End of radiotherapy	V	V	V	-
	Follow-up	After 3 months	Fortnightly for 6 weeks	Weekly for 10 wks	-
C		No intervention	Intervention by nurse	Intervention by nurse	No comparison
O	Weight change	-	V	V	V
	Nutritional status	V	V	V	-
	Nutritional intake	V	-	-	V
	Symptoms	V	-	-	V
	Physical function	-	V	-	-
	Quality of life	V	V	-	-

Limitation

- No systemic review of RCTs or meta analysis on the topic of nutrition intervention and outcomes on head and neck cancer patients published recently

Thanks for your listening !

感謝營養部主任.組長.全體營養師 ☺