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台灣靜脈暨腸道營養醫學會 Taiwan Society for Parenteral and Enteral Nutrition

108年度秋季學術研討會

2019 Autumn Academic Conference

靜脈營養治療及生酮飲食治療

10月6日(日) | 時間 *08:00-17:00*

地點 *彰化基督教醫院 福懋大樓B1 國際培訓中心*

主辦單位： 台灣靜脈暨腸道營養醫學會、彰化基督教醫院營養醫療小組 / 靜脈營養治療小組

協辦單位： 彰化基督教醫院體系營養暨膳食部

時 間	主 題	主講人	座 長
08:00-08:30	報　　到		
08:30-08:40	開場致詞	倪衍玄 理事長	
08:40-09:10	論文報告1		莊政諺 醫師 呂淑青 護理師
09:10-09:50	多腔室靜脈營養和客製化的複合式靜脈營養比較：技術面和結果面的評估	Professor Lingtak-Neander Chan	倪衍玄 醫師 徐中平 醫師
09:50-10:10	Coffee Break		
10:10-10:50	靜脈營養治療之評估監測與調整	曹連誠 醫師	許瀚水 醫師 陳銘仁 醫師
10:50-11:30	重症病房的靜脈營養：近10年來的進展	施耀明 醫師	王淑惠 醫師 何冠進 醫師
11:30-12:00	論文報告2		陳安琪 醫師 呂孟純 營養師
12:15-12:50	午餐會報A 利用優化耐受性配方進行重症疾病早期腸道復甦	韓吟宜 醫師	王照元 醫師
	午餐會報B EasyBag管灌密封式系統對於腸道營養支持的優勢	許自齊 醫師	王淑惠 醫師
12:15-13:30	Lunch Time		

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12:50-13:30	壁報導覽	蔡祥麟 醫師、王嘉宏 藥師、 李駿榮 藥師、呂建宏 藥師、 邱哲琳 營養師、孫麗珠 護理師	
13:30-14:10	生酮飲食的定義及臨床營養照護的應用	洪凱殷 營養師	陳以書 醫師 姜倩玲 營養師
14:10-14:50	生酮飲食與癌症	蔡松彥 醫師	鄒順生 醫師 楊雀戀 營養師
14:50-15:30	生酮飲食與大腦(癲癇、睡眠)	王煇雄 教授	楊美都 醫師 徐榆堡 醫師
15:30-15:50	Coffee Break		
15:50-16:40	Pro/Con: 生酮飲食與減重糖尿病	Pro: 陳恬恩 醫師 Con: 羅慧珍 博士	黃燦龍 醫師 唐修治 醫師
16:40-16:50	優秀論文獎頒獎典禮		倪衍玄 理事長
16:50-17:00	摸彩活動		
17:00	閉幕致詞		

優良論文報告 1

TSPEN 2019 Autumn Continuing Education

以RCA手法檢討靜脈營養調劑藥師延遲下班時間

Reviewing parenteral nutrition pharmacists to delay work time by Root Cause Analysis

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目的：
國內靜脈營養液調配多由藥師以 Ready-to-use 型態提供至護理單位。考量到臨床端與靜脈營養治療小組所開立靜脈營養處方之藥物銜接空窗期或過量的困擾，本院靜脈營養劑統一在下午 2 點整給藥，而調劑端須於中午 12 點半前發藥，院內規定已行之多年。但近年來發現靜脈營養調配藥師延遲下班較為頻繁，以 2018 年 8 月為例，調劑藥師延遲下班有 18 次，最晚延遲 75 分鐘發藥，導致護送人員領藥時間延後。故藉由根本原因分析（Root Cause Analysis；RCA），此一項結構化的問題處理手法，逐步找出問題的根本原因，進行檢討改善，以降低靜脈營養調劑藥師延遲下班的時間。

方法：
由靜脈營養團隊組成 RCA 工作小組進行回溯性搜集 2018 年 8 月至 2019 年 4 月期間，以時間序列表（tabular timeline）記錄事件發生的過程，以魚骨圖進行根本原因分析，歸納出主要的近端原因（proximate cause）為：(1) 異動處方延遲開立；(2) 靜脈營養工作量增加；(3) 靜脈營養調劑藥師工作不熟練。小組從中分析確認其根本原因為異動處方延遲開立。

結果：
依據此原因制定改善措施分別與開立成人和小兒靜脈營養醫囑醫師確認截單時間：成人與小兒截單時間分別為早上 11 點和 10 點，讓調劑藥師好掌握工作進度。統計 2018 年 8 月至 2019 年 4 月，調配靜脈營養藥師每月平均延遲下班的次數為 12.8±3.8 次，每月平均延遲下班時間為 32.1±3.8 分；2019 年 5 月至 7 月，調配靜脈營養藥師每月平均延遲下班的次數為 5.0±2.2 次，每月平均延遲下班時間為 8.9±2.1分。比較改善前後調劑藥師延遲下班次數有意義顯著下降(p=0.006)。

結論：
在人力工作管理中，解決延遲下班或調度人力支援往往是考驗管理者的智慧。為了做更有效率且主動、積極的管理，不妨透過 RCA 的手法確實能針對事件找出潛在根本原因，制定有效率的改善方案。

中晚期早產兒餵養配方種類不同與營養及體重增加成效

Different types of feeding formulas in early and late preterm infants and the effect of nutrition and weight gain

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School of Nutrition, Chung Shan Medical University.[4]

背 景
依台灣新生兒科醫學會之「台灣早產兒臨床營養建議手冊」指出，母奶是早期進食的「首選」，而配方奶亦可。只是母奶相較於配方奶來說，發生壞死性腸炎的機會較低，且早產兒比起餵哺配方奶，哺餵母乳較少發生餵食不耐受，有助於提早餵食足量的腸道營養。

目 的
本研究想瞭解早產兒是否因為餵養配方種類之不同，與營養及體重增加相關成效。

方 法
本研究採用回溯性研究方式，期間為 107 年 7 月至 12 月，入住新生兒加護病房之早產兒(妊娠週數低於37週)，排除條件為腸道閉鎖合併開刀或營養素代謝異常的先天性疾病者。分別觀察中期 (32-34週) 23 位及晚期早產兒 (34-37週) 23 位，以哺餵母奶組(含母奶併用母奶添加劑或一般嬰兒奶粉)及早產兒配方組(含早產兒配方奶或早產兒配方奶併用母奶)，在熱量、蛋白質、體重增加克數、住院天數及靜脈營養天數等相關成效，結果以 Independent Sample t test 統計方法比較，當 P 值 <0.05 時，具有統計上顯著性差異。

結 果
住院天數及靜脈營養天數無論在中期或晚期早產兒均無顯著性差異，熱量以出院卡路里在中期(P=0.014)及晚期(P=0.000)達顯著差異。蛋白質以出院蛋白質在中期(P=0.001)及晚期(P=0.000)、第15天蛋白質在中期(P=0.003)達顯著差異。體重增加克數無論在中期或晚期早產兒，早產兒配方組皆比母奶組增加克數較多，但未達顯著性差異。

結 論
早產兒配方組比母奶組在熱量、蛋白質及體重增加克數皆較多，尤其熱量及蛋白質達顯著性差異。早產兒在選擇餵養配方上，通常為尊重父母意願及醫療團隊專業建議決定。早產兒經由適當之營養支持，能幫助早產兒順利成長出院返家照護。

關鍵字
早產兒 (Preterm infants)、母奶 (human milk)
早產兒配方奶 (Bovine milk-based preterm formula)、新生兒營養 (neonatal nutrition)

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專題主講簡介

TSPEN 2019 Autumn Continuing Education

Lingtak-Neander Chan

Vice Chair and Professor, Department of Pharmacy;
Interdisciplinary Faculty, Nutritional Sciences Program,
University of Washington

Education

- PharmD, University of Washington
- Bachelor of Science in Pharmacy, Northeastern University
- Bachelor of Science in Toxicology, Northeastern University

Research Focus

- Nutrient-drug interactions
- Bariatric medicine

Courses Taught

- Pharm 510 : Current Topics in Clinical Nutrition
- Pharm 562 : Pharmacotherapeutics VI
- Pharm 569 : Fluid & Electrolytes & Parenteral Nutrition
- Pharm 570 : Critical Care Pharmacotherapy
- Pharm 571 : Current Topics in Acute Care Pharmacotherapy

Biography

Dr. Chan is a Professor of Pharmacy in the School of Pharmacy, an Interdisciplinary Faculty of the Graduate Program in Nutritional Sciences, and a full faculty of the UW Graduate School. He received BS degrees in toxicology and pharmacy, and a post-baccalaureate PharmD degree, followed by residency training in clinical pharmacy. He was formerly a faculty member of the College of Pharmacy and College of Medicine at the University of Illinois at Chicago. He is board certified in nutrition support pharmacy and an elected fellow of the American College of Nutrition.

His primary research focus is on the absorption kinetics of micronutrients and drugs after bariatric surgery and other GI tract repairs. Other key areas of interest include micronutrient deficiencies, intestinal failure, and general health and nutritional management after bariatric surgery and intestinal surgery. He has extensive practice experience in the critical care setting with expertise in clinical nutrition and obesity.

Dr. Chan is currently serving as a member of the Board of Directors for the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). He is also a member of the Specialty Council in Nutrition Support Pharmacy for the Board of Pharmacy Specialties. He has served as an Associate Editor for the Journal of Parenteral and Enteral Nutrition until 2016.

He is extensively involved in the didactic curriculum of the UW PharmD program, both as an instructor and a coursemaster. He has published book chapters, review articles, original research papers and a number of invited editorials, and has been an invited speaker at numerous scientific and professional conferences throughout the United States, Hong Kong, and Taiwan, and a recipient of numerous grants relating to his area of research. He also mentors many graduate students in the Nutritional Sciences Program at the UW School of Public Health and Community Medicine.

多腔室靜脈營養和客製化的複合式靜脈營養比較：技術面和結果面的評估

Multi-Chamber Parenteral Nutrition (PN) versus Individually Compounded PN: A Technical and Outcome Assessment

Lingtak-Neander Chan, PharmD, BCNSP Professor of Pharmacy Interdisciplinary Faculty in Nutritional Sciences University of Washington, Seattle, USA

Summary Abstract

The objectives of this presentation include:

1) to compare the rationales between multi-chamber PN versus individually compounded PN formulation;
2) to discuss the differences in the nutrient ingredients between multi-chamber PN and the compounded PN, and the implications on patient safety from the technical standpoint;
3) to review the published literature in patient and clinical outcomes between the use of multi-chamber PN and compounded PN.

Parenteral nutrition (PN) may be administered via individually, customized-compounded mix or commercially available ready-to-use multi-chamber bags. There exists limited research that compares the differences in clinical outcomes between patients who received PN through these delivery systems. Some data suggest that multi-chamber PNs were associated with lower incidence of blood stream bacterial infection. In a single-center trial, the overall hospital length-of-stay, 30-day mortality, and postoperative adverse events were found to be comparable between patients receiving multi-chamber PNs and individually compounded bags. However, these studies are limited by their design and intrinsic biases. The results may not be extrapolated to PN recipients across all clinical settings.

The potential technical benefits of multi-chamber PN over compounded PN have not been evaluated extensively. Limited data suggest that multi-chamber PN may be associated with lower error rate. But this finding may be a reflection of the complexity of the patients receiving multi-chamber PNs. It is important to note

that multi-chamber PN contains salt forms with more limited published information concerning stability and compatibility. Therefore, safety concerns related to compatibility of the line of IV infusion and the addition of other ingredients to the bag will need to be addressed with more investigations.

This presentation is aimed to provide a comprehensive discussion on the technical and clinical assessments between the two forms of PN delivery systems. Future research will also be proposed in addressing the safety issues related to the two delivery systems.

Suggested References

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- 彰化基督教醫院一般外科主治醫師（2013-迄今）
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靜脈營養治療之評估監測與調整

Assessment, Monitoring and Adjustment of Parenteral Nutrition Therapy

營養治療也如同其他醫療治療，因此也一樣需要持續追蹤評估，以決定是否需要調整治療的劑量、是否有治療相關的併發症、是否應該結束治療等等。正如同我們不可能使用升壓劑而不監測病人的血壓一般，給予營養治療，也有其相對應的監測指標。

營養治療評估要注意的包括：(一)腸胃道功能：是否有腹脹情形、殘胃容積如何、腹內壓力的測量、吞嚥功能評估；(二)營養配方評估：營養組成是否均衡、有無營養提供過少或過多的情況、蛋白質與氮平衡的評估等；(三)檢驗項目的監測：血糖及胰島素的使用、磷鉀鈉氯鎂、肝功能、三酸甘油酯、尿素、白蛋白、前白蛋白、麩醯胺酸等；(四)微量元素的調整：連續腎臟替代治療者、重大燙傷、長期使用腸道營養者；(五)身體組成與能量消耗評估：間接卡路里計、生物電阻抗分析、相位角分析等等。

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重症病房的靜脈營養：近10年來的進展

Parenteral Nutrition in the ICU : Lessons Learned Over the Past 10 Years

In critically ill setting, early enteral nutrition is advocated by society guidelines as the preferential choice of nutritional support. However, large surveys that audits feeding regimen in the ICU setting consistently reported hypocaloric enteral feeding pattern during the first week of ICU admission due to feeding intolerance, feeding interruption due to procedures, and frequent cessation of feeding due to disease progression (eg. Hemodynamic instability). Although the use of parenteral nutrition was once associated with increased mortality and morbidity (ie. Infectious complications, prolonged mechanical ventilation), current clinical practice has adapted to an inadequate early trickle enteral feeding combined with partial parenteral nutrition strategy. The lessons learned toward a safer use of parenteral nutritional support in critically ill patients has focused from avoidance of overfeeding (hyperalimentation) to the selection of lipid emulsions, followed by the emphasis on early protein target and a defined non-protein calorie to nitrogen ratio (ie. NPC:N of 100-100:1). Several studies have demonstrated that with progression of calorie and protein target toward goal during the early period of acute phase, the use of parenteral route for nutritional support is safe and effective in providing amino acids, micronutrients, and trace elements toward requirement not achievable with trickle enteral feeding during the early phase of nutritional therapy.

優良論文報告 2

TSPEN 2019 Autumn Continuing Education

以實證醫學方法探討，頭頸癌患者術後接受免疫營養之效益

Exploring the benefits of immunonutrition therapy in patients undergoing surgery with head and neck cancer through Evidence-Based Medicine.

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目的：
頭頸癌的患者通常有營養不良問題，且因手術較為複雜，患者經常有術後併發症之發生，如瘻管和傷口感染甚至是肺炎等。透過改善營養狀態是目前較可以加快恢復速度和降低併發症發生的方式。目前有許多研究指出免疫營養：氨基酸（arginine and glutamine）、核糖核酸（RNA）和/或脂質（omega-3 fatty acids），可以幫助頭頸癌患者之術後恢復。故，本篇研究想探討與標準配方餵食相比，接受免疫營養患者之術後恢復效益。

方法：
設立臨床問題（PICO）
P：Head and neck cancer.
I：Immunonutrition.
C：Standard feeding.
O：Mortality, length of hospital stay, infection.

以關鍵字 Head and neck cancer、Immunonutrition、Mortality、length of hospital stay 和 infection 於 Cochrane Library 和 Pubmed 進行文獻搜尋。
證據等級分類系統使用 Oxford Centre for Evidence-based Medicine — 2011 Levels of Evidence。

結果：
符合臨床問題的文獻有一篇，發表於 2018 年 Cochrane Library，證據等級為 Level 1。

研究結果：
19 RCTs (1099 participants) were included in the analysis.
1. Length of hospital stay (mean difference -2.5 days, 95% confidence interval (CI) -5.11 to 0.12; 10 studies, 757 participants; low-quality evidence)
2. Wound infection (risk ratio (RR) 0.94, 95% CI 0.70 to 1.26; 12 studies, 812 participants; very low-quality evidence),
3. Terms of tolerance of feeds between treatments (RR 1.33, 95% CI 0.86 to 2.06; 9 studies, 719 participants; very low-quality evidence).

4. Fistula formation may be reduced with immunonutrition; Absolute risks□11.3% and 5.4%, with a RR of 0.48 (95% CI 0.27 to 0.85; 10 studies, 747 participants; low-quality evidence).
5. All-cause mortality (RR 1.33, 95% CI 0.48 to 3.66; 14 studies, 776 participants; low-quality evidence), and other postoperative complications such as pneumonia and urinary tract infections were not commonly reported.

結論：

免疫營養的介入可以降低術後發生瘻管的風險，但未發現其他接受免疫營養的證據對本篇的評估有任何結果。本文判斷的總體質量對於住院時間和死亡率的結果為低度，並且對於傷口感染和不良事件顯示證據質量為極低。因此，應該有進一步更高更大質量的研究，來判定頭頸癌患者術後是否應接受免疫營養介入。

服用益生菌是否會影響流感疫苗的效果

The effects of probiotic supplementation on flu vaccine efficacy

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背景及目的：
本院病人前來詢問最近想施打流感疫苗但有在服用益生菌的習慣，是否會影響到疫苗的效果？因此藉由實證醫學的方法驗證服用益生菌是否會影響流感疫苗的效果。

方法：
以實證醫學步驟，用 PICO 方法形成問題，設定 P: Influenza vaccination in adult；I: Intake of probiotic；C: Intake of placebo；O: Influenza vaccine effectiveness；此為傷害型問題，關鍵字 ： Probiotic，Influenza vaccination，並運用布林邏輯針對標題與摘要進行檢索，依 secondary first 於次級資料庫 Cochrance library 內搜尋到 4 篇文章但皆不符合主題，於 pubmed 搜索，限定 ” Systematic Reviews” 之文章有 1 篇符合主題。其中文獻搜尋日期到 2017 年 7 月，再針對 2017 年 7 月之後的 RCT 文章搜尋，結果並沒有更新的文獻，最後選定於 2018 年發表的文章 The influence of prebiotic or probiotic supplementation on antibody titers after influenza vaccination : a systematic review and meta-analysis of randomized controlled trials ，並以 critical appraisal sheet 進行評讀，依 Oxford CEBM 2011 Level of Evidence 評定為 Level 2。

結果：
本篇系統性回顧文章中納入 12 項研究，結果顯示補充益生菌之成人在施打流感後，可以增加 A 型流感 H1N1（P=0.03）跟 H3N2（P=0.04）的抗體效價但對 B 型流感（P=0.12）則沒有顯著差異，另外也發現服用益生菌並沒有不良影響（P=0.49）。

結論：
根據實證結果，服用益生菌不會影響流感疫苗的效果，還可能有增強保護力的作用，因此建議病人可以持續服用。

Drug use evaluation of sodium glycerol-phosphate in pediatrics parenteral nutrition

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Introduction
Sodium glycerol-phosphate is organic salt could provide phosphorus. It's covalently bound to a glycerol backbone which hinders the formation of a precipitate with divalent calcium ions. Phosphate salts are organic has better solubility than inorganic salts. The advantage of the compounding parenteral nutrition is it could provide a wider range of calcium to phosphorus concentration. The aim of this study is not only to investigate the usage of sodium glycerol-phosphate in parenteral nutrition in NICU but also to evaluate whether it is beneficial to preterm infants.

Methods
A retrospective study recruited preterm infants in NICU who using sodium glycerol-phosphate in parenteral nutrition from November 2018 to June 2019. Patient's characteristics, laboratory data, number of using days and other related information were also analyzed. All of the results were reported as means and the remaining descriptive statistics contents expressed as percentages.

Results
A total of 25 patients were obtained from the Department of Pediatrics with 3 patients diagnosed with metabolic bone disease. The average of gestational age is 24+1weeks to 35weeks, the median is 26+5weeks and the ratio of male: female is 0.79. The average number of using day is 23.3days, 3 days is minimum and 57days is maximum. Parenteral nutrition use concurrently ratio is 100%. The average birth weight is 986.5g. All of the results divided into 4 groups by birth weight (AGA): below 500g, 500 to 1000g, 1001 to 1500g and above 1500g. The patient number fulfill in each group are 1, 17, 5 and 2, the average number of using day is 51, 23.1, 17.4 and 26 days, respectively. The serum phosphate level has improved in group 500 to 1000g and above 1500g.

Conclusion
Sodium glycerol-phosphate in pediatrics parenteral nutrition could provide more calcium and phosphorus compatibility for clinical application. Pharmacists have the responsibility to perform drug use assessment and provide options for treatment plans. These efforts can optimize outcomes and lower adverse events in preterm infants with sodium glycerol-phosphate in parenteral nutrition.

專題主講簡介

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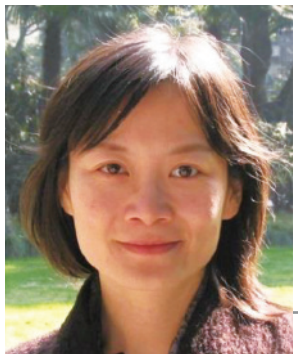

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午餐會報A | Lunch Symposium A

利用優化耐受性配方進行重症疾病早期腸道復甦

Tolerance-Promoting Formula Achieves Gut Rususcitation in Early Acute Phase of Critical Illness

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午餐會報B | Lunch Symposium B

EasyBag管灌密封式系統對於腸道營養支持的優勢

The Clinical Advantages of the EasyBag - Closed System TF for Enteral Nutrition Therapy

Maintaining nutrition status in patients with acute or chronic illness is essential. Enteral nutrition support is often indicated in patients with a functional gastrointestinal tract who are unable to meet their estimated nutrient needs with oral nutrition intake. A closed system (CS) consists of a sterile container of prefilled formula that is ready to administer to the patient.

Closed enteral systems to reduce infection from contaminated enteral formulas and to reduce nursing time. Commercially available liquid EN products are sterilized before distribution but can become contaminated when used at the facility. Contamination of enteral formulas can cause abdominal distension, diarrhea, and bacteremia following administration.

Several studies have shown that the risk of contamination is greater with open systems because these systems increase physical handling of EN. CS can decrease manipulation and human contact with enteral formulas and feeding administration sets, which in turn reduces the risk of contamination.

A study and publication to determine the safety and stability of closed enteral feeding systems at high ambient temperatures by nutritional support service of Mackay Memorial Hospital is going to be presented. Clinical Experiences of application of EasyBag Special Peptide Formula (Survimed) are also going to be discussed.

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生酮飲食的定義及臨床營養照護的應用

Definition and Application of ketogenic Diet

The Ketogenic Diet (KD) is to use fats as a primary fuel source. Ketone bodies are acetoacetate, 3-hydroxybutyrate [□OHB] and their spontaneous breakdown product, acetone, produced by the liver from fatty acids. Ketone bodies are water soluble that can transport across the inner mitochondrial membrane as well as across the blood-brain barrier and cell membranes to be the source of fuel for brain, heart and muscle.

The classic ketogenic diet (CKD), medium-chain triglyceride diet (MCTD) and Modified Atkins diet (MAD) are most common performed in Chang Gung Children's Hospital. We offer the individualized meal plan based on which keto-diet the patient choose.

The initiation of ketogenic diet was non-fasting in the 5-day hospital admission. The registered dietitian calculated the energy requirement based on the daily activity, dietary history, age, body weight and body height. During the 5-day admission, patients received one-ninth of total calories on Day 1, increasing calories gradually: one-sixth on Day 2, one-third on Day 3, two-thirds on Day 4, then the full calories given on Day 5. After diet education by dietitians, all patients were discharged on Day 6. Meal plan on Day 5 was the final prescription that participants should follow at home.

So far, KD is a treatment for diseases such as infantile spasms, febrile infection–related epilepsy syndrome (FIRES), Dravet syndrome, Angelman syndrome, Glucose transporter protein 1 (Glut-1) deficiency syndrome, tuberous sclerosis complex, Rett syndrome and so on.

KD is not a balance diet. Our medical team is responsible for teaching and preventing possible side effects. Thanks to the understanding and support of every patient family to make the ketogenic diet success.

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生酮飲食與癌症

ketogenic Diet for Cancer

最近幾年的研究結果顯示生酮飲食，一種高脂肪/低碳水化合物/適量蛋白質飲食方式，可作為癌症治療的輔助療法。生酮飲食療法的學理乃依據瓦格效應(Warburg effect)，這是一種生物化學現象，癌細胞主要利用糖酵解 (glycolysis)而不是氧化磷酸化 (oxidative phosphorylation) 來產生ATP。此外，由於粒線體功能障礙和酮體利用所需的不足，一些癌症細胞缺乏代謝酮體的能力。因此，在癌症治療中提供高脂肪/低碳水化合物飲食的基本原理是降低血液循環中的葡萄糖水平並誘導酮症，使得癌細胞缺乏能量，而正常細胞適應其代謝狀況得以使用酮體並存活。此外，通過降低血糖，胰島素和類胰島素生長因子(這二者是癌細胞增殖的重要驅動因素)的水平也下降。

眾多臨床前期的研究結果雖然有時矛盾，但總體而言仍傾向於支持生酮飲食抗腫瘤的效果。促腫瘤效應雖然很少見，還不能完全排除。目前臨床前期研究證據指出生酮飲食作為輔助癌症治療的可行性主要取決於腫瘤的類型及其遺傳改變型態。未來，針對臨床上癌症病患的生酮飲食建議仍有待隨機對照臨床試驗(randomized controlled clinical trials) 的結果提供進一步的證據。

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生酮飲食與大腦（癲癇、睡眠）

ketogenic Diet for Brain

斷食治癲癇古人早就觀察到，新約聖經上也有記載，直到20世紀初，才有人猜測是不是飢餓生"酮"的功勞，但總不可餓著病人直到玉石具焚。後來才發現低醣、高脂肪、適量蛋白質維持酮化（ketosis）的生"酮"飲食，竟可達成至少半數頑固癲癇病人少掉一半以上的發作次數，其中兩、三成甚至可完全不再發作。

回顧人類的飲食歷史，百萬年前的遠古時代，可能跟猴子吃的差不多，採食食、野菜為主，有時抓到小動物就可補充點蛋白質，或等到猛獸吃完牠們的獵物不吃離開了，才啃牠們吃剩的骨髓得到脂肪，當時有一餐沒一餐的，多數時間處於半飢餓狀態，身體也常處於酮化狀態。

除了癲癇，生酮飲食也有助糖尿病、先天葡萄糖攜帶異常、部分粒腺體異常、肥胖、巴金森氏症、老年痴呆症、多發硬化症、腦瘤等等之外，近來許許多多倡導低糖、飢餓、少吃...的飲食策略，包括動物實驗上也有越來越多的正面支持證據，我們真該好好改變習以為常的飲食習慣--所謂美食多不生酮，十大死因方有機會改觀，人類壽命的上限始能質、量俱進。

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Pro / Con : 生酮飲食與減重糖尿病

Pro : Dr. Tien-En Chen

Pro / Con : ketogenic Diet for Weight Reduction in Diabetes

Effects of Ketogenic Diet to Obesity and Diabetes

-Obesity and Diabetes are risk factors of Cardiovascular Disease;
-Why low carb and high fat /protein diet is protective and beneficial to cardiovascular disease: evidence from human studies

The treatment of obesity, diabetes and hypertriglycemia is one of the most difficult and important challenges nowadays. Weight loss is frequently offered as a therapy and is aimed at improving some of the components of the metabolic syndrome. Among various diets, ketogenic diets, which are very low in carbohydrates and usually high in fats and/or proteins, have gained in popularity. Results regarding the impact of such diets on cardiovascular risk factors are controversial, but some improvements notably in obesity and type 2 diabetes have been described.

Saturated fat has been viewed as direct cause of coronary artery disease and had been advised to be replaced with monounsaturated fats or polyunsaturated fats for many years, however the evidence was insufficient. Recently, large prospective trial stands by the side of saturated fat and proves its innocence.

近來流行的低碳飲食或生酮飲食能在短期之間成功減重，並且有效改善糖尿病以及新陳代謝症候群；然而高蛋白或是高脂的飲食對心血管的安全性疑慮仍然存在在一般民眾與醫療人員。美國AHA飲食2017年仍維持建議將飽和脂肪酸換成不飽和脂肪酸或是穀物(澱粉)，以換得更佳的心血管預後，然而檢視實際資料，會發現許多自相矛盾的地方。Lancet在2017-8發表18個國家的前瞻性研究，發現飽和脂肪酸對人體的整體益處甚至大於不飽和脂肪酸，而碳水化合物對心血管疾病是有害的。總結:低碳飲食與適量的脂肪攝取，相對於低脂飲食，對體重管理，血糖，血脂等心血管疾病危險因子的管理會更有效益。

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Pro / Con : 生酮飲食與減重糖尿病

Con : Dr. Hui-Chen Lo

Pro / Con : ketogenic Diet for Weight Reduction in Diabetes

生酮飲食與減重及糖尿病的迷思

傳統的低熱量、低脂肪及高纖飲食介入雖然對減重及血糖控制有一定的效用，但須長時間遵循，故近年逐漸被具快速減重及降血糖效果的生酮飲食取代。

所謂的生酮飲食是指每天的碳水化合物攝取量需低於50公克，而其餘熱量則大部分由脂肪提供。然而攝取過高的飽和脂肪酸，易增加心血管疾病的風險。其他生酮飲食可能引發的危險亦不宜忽視，包括減少蔬菜、水果及穀類的攝取時，可能增加微量元素缺乏的風險；大量脂肪酸代謝所產生的游離脂肪酸，可能增加脂肪肝的發生；採用高蛋白質、低碳水化合物、高脂肪的飲食，可能因增加含氮廢物或尿酸等代謝物，而增加腎臟的負擔；生酮飲食的纖維性食物攝取降低，可能造成腸道菌相的改變及便秘的問題。

此外，生酮飲食的食物選擇性較少，一般大眾較難藉由日常食物自行調配，需要額外搭配高油食物精準的設計，故遵從度較低，且有潛在的危險性。目前雖已有文獻指出攝取生酮飲食長達兩年的減重及降血糖功效卓越，且無酮酸血症及增加心血管疾病的危險，但尚未有研究探討一旦停止生酮飲食後，患者會產生何種變化。由人類正常生理代謝及流行病學的研究結果推論，營養均衡的低熱量飲食搭配規律的運動方為體重管理及血糖控制的最佳選擇。