

從食物安全角度看本地餐廳 處理漢堡包的情況

Handling of Burgers in Local Restaurants –
From a Food Safety Perspective

食物安全研討會2021
Food Safety Seminar for Trade 2021

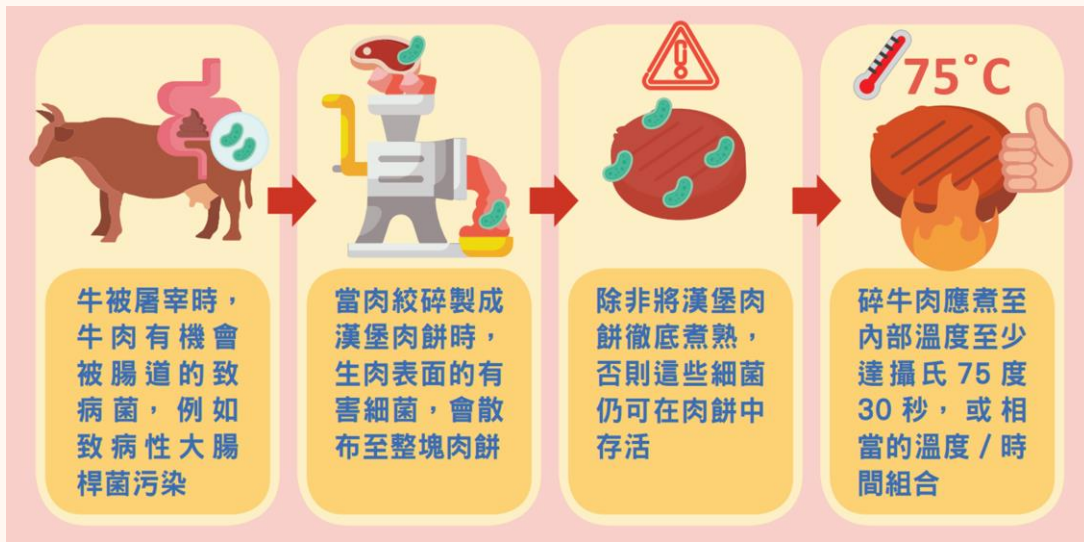


背景 Background

- 近年「美食風格」的漢堡包餐廳在本港興起
- 有些餐廳供應生或半生熟的漢堡包，認為在味道及口感上與全熟的截然不同
- 2020 年消費者聯繫小組的成員的調查：
96 人中的 37 人 (39%) 認為吃未煮熟的牛肉漢堡是安全的
- In recent years, there has been a trend for 'gourmet-style' burger restaurants in HK
- Some of them sell rare or medium burgers that give a taste and mouthfeel considered to be distinct from their well-done counterparts
- A survey on CFS's consumer liaison group members in 2020:
37 out of 96 people (39%) thought it was safe to eat undercooked beef burgers

漢堡肉餅易受污染

Burger patties are susceptible to contamination



Upon slaughter, harmful bacteria e.g. pathogenic *E.coli* from cattle's gut may contaminate the meat

When meat is minced to produce burger patties, harmful bacteria from the raw meat's surface are mixed throughout the whole piece

Unless the burger patty is cooked right through, these bacteria can remain alive on the inside

Ground beef should be cooked until the internal temperature reaches at least 75°C for 30 seconds or equivalent temperature-time combinations

牛肉漢堡的安全烹飪溫度-時間組合

Safe cooking temperature-time combinations of beef burgers

中心溫度 Internal temperature	時間(分鐘) Time (minutes)
60°C	45
65°C	10
*70°C	2
75°C	0.5 (30 secs)
80°C	0.1 (6 secs)

*WHO, 中华人民共和国卫生部, UKFSA, USDA, NSW Government Australia, Health Canada, American Meat Institute

致病性大腸桿菌可以致命

Pathogenic *E. coli* can be fatal

- 牛的腸道是**致病性大腸桿菌**的主要來源
 - 可引致急性腎衰竭，幼童及長者屬高危
- 90年代，美國一家連鎖快餐店的漢堡包感染數百人
 - 年齡大多在10歲以下，**當中有人死亡**，部分患者腎臟永久受損
- 類似的中毒事故在歐美等地仍不時發生
- The **intestinal tracts** of cattle is the main reservoir of **pathogenic *E. coli* bacteria**
 - May cause acute renal failure, particular in young children and the elderly.
- In the 90s, contaminated burgers from a fast food chain restaurant infected hundreds of people in USA
 - Majority of the victims < 10 years old → **some dead or left with permanent kidney damage**
- Similar food poisoning incidents still occurred in Europe USA from time to time

本地情況 Local situation

- 過去曾接報零星由未煮熟的碎牛肉引致的O157:H7型大腸桿菌感染個案
- 未煮熟的漢堡肉餅可能帶有一些甚至具有**抗菌素耐藥性的細菌**，會減低抗生素的藥效，導致感染情況更為複雜，難以治療
- Sporadic cases of *E. coli* O157:H7 infection linked to undercooked minced beef reported in the past
- Undercooked burger patties may contain some bacteria that even carry **antimicrobial resistance (AMR)**. AMR results in reduced efficacy of antibiotics, resulting in more complicated infections that are difficult to treat

研究目的 Objectives

- 探討食物處理人員對於**烹製漢堡包的食安知識、態度和做法**
- 協助食物業處所在配製食物的過程中採取適當的措施，以烹製和售賣可供安全食用的牛肉漢堡包
- 研究結果有助中心推廣食物安全及就高風險食物與公眾和食物業界進行溝通
- To explore **knowledge, attitudes and practices of food on the preparation of beef burger**
- Help food premises implement appropriate measures in the course of food preparation to produce and sell safe beef burgers
- Study findings help CFS in promoting safe cooking of burgers and communicate with the public and food trade about high-risk foods

方法 **Methods**

第一階段：電話調查

Phase 1: Telephone survey

- 2021 年 2 月開始
 - 從OpenRice搜尋餐廳
 - 受訪者被問及可否提供未煮熟的漢堡（例如五成熟漢堡）
-
- Started in February 2021
 - Potential vendors derived from OpenRice
 - Respondents were asked if they could make an order of an undercooked burger (e.g. medium burger)



第二階段：面對面訪談和觀察

Phase 2: Face-to-face interview and observation

- 2021 年 5 月至 8 月進行
 - 隨機抽取24家餐廳
 - 問卷: 餐廳和廚師的基本資料、食安知識、態度、做法等
 - 研究員會根據現場觀察進一步提出後續問題
-
- Conducted in May to August 2021
 - Random sampled 24 restaurants
 - Questionnaire: Data of restaurants and chefs, food safety, knowledge, attitudes, practices, etc.
 - Researchers probed further with follow-up questions based on on-site observation



第二階段：面對面訪談和觀察

Phase 2: Face-to-face interview and observation

- 廚師：烹製不同熟度的漢堡肉餅
 - 5成熟/7成熟/全熟
- 研究人員：在整個烹飪和靜置過程中用數字溫度計測量肉餅的核心溫度
- Chefs: cooked the burger patties with different doneness
 - Medium/Medium well/Well done
- Researchers: measured the core temperature of patties with a digital thermometer during the entire cooking and resting processes





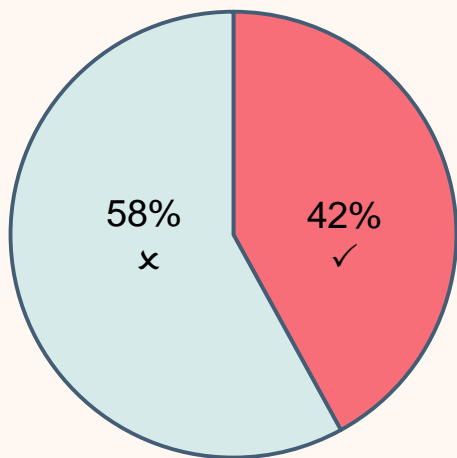
結果及討論

Results and discussion

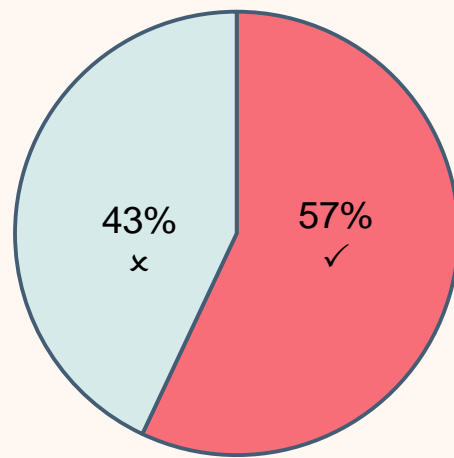
電話調查結果 Telephone survey results

可否提供不全熟，例如5成熟的漢堡？

May I have my burger not fully cooked such as cooked to medium?



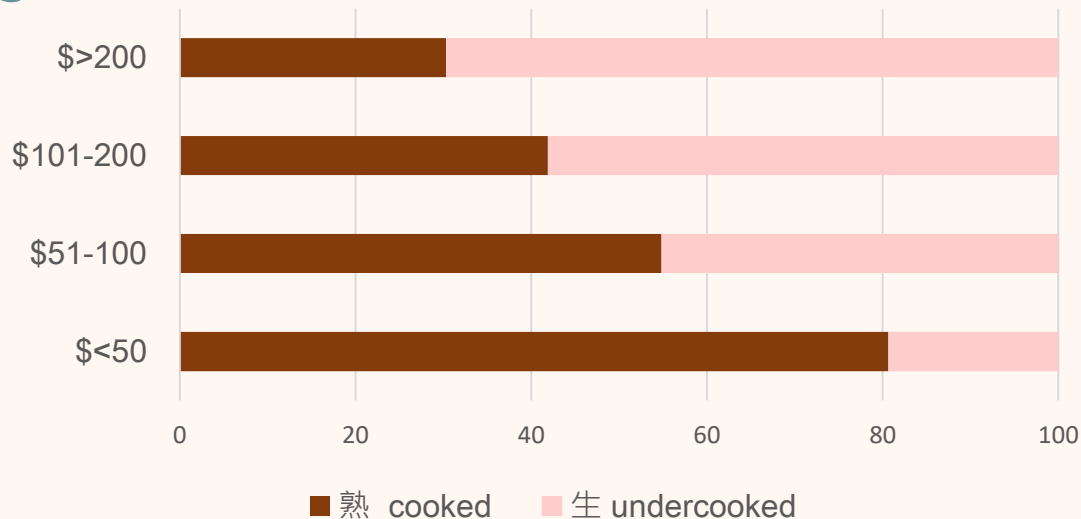
受訪餐廳數目: 1025
No. of restaurants interviewed: 1025



連鎖店只計算一次後的餐廳數目: 531
No. of restaurants after counting chain
stores only once: 531

提供漢堡包的餐廳的價格比較

Comparison of price between restaurants that provide burgers



- 餐價與漢堡熟度之有顯著關係
- 收取高價格的餐廳更有可能提供未煮熟的漢堡
- Significant relationship between meal price and burger doneness
- Restaurants charging higher prices were more likely to serve undercooked burgers

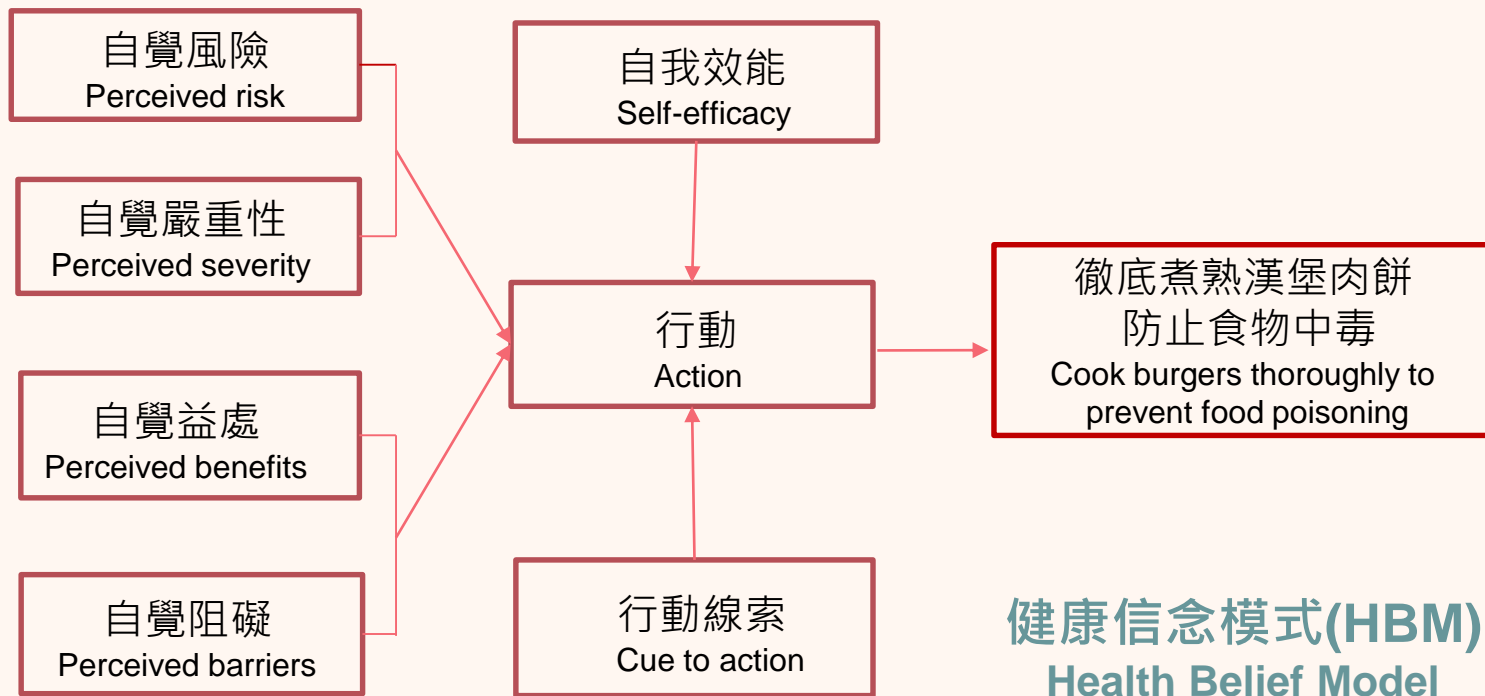
食物安全知識 Food safety knowledge

- 不熟悉「食物安全五要點」、「未煮熟食物的微生物風險」← 大部分
- 將未煮熟的肉類引起的食物中毒誤認為是「食物過敏」← 部分
- 錯誤地認為生的漢堡肉餅比生的牛排更安全← 部分
- Unfamiliar with the '5 Keys to Food Safety, ' the microbiological risks of undercooking' ← Majority
- Food sickness caused by undercooked meat mistaken as a 'food allergy' ← Some
- Raw burger patties misbelieved as safer than raw steak← Some



對徹底煮熟漢堡肉餅態度

Attitudes towards thoroughly cooking of burger patties



健康信念模式(HBM)
Health Belief Model

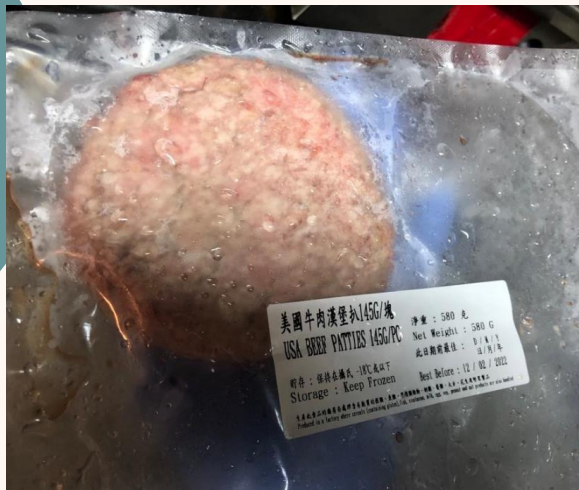
	主題 Themes	代表性的引句 Representative quotes
自覺風險 Perceived risk	食物中毒在香港並不常見 Food poisoning not common in HK	<p>「好少聽到有食物中毒」 「未聽過半生熟漢堡包含有大腸桿菌」 「有時可能係個客有食物敏感」</p> <p>'Seldom heard of food poisoning outbreaks' 'Haven't heard of undercooked burgers containing E. coli' 'Sometimes it may be that the customer has food allergies'</p>
自覺嚴重性 Perceived severity	食物中毒症狀因人而異 Food poisoning symptoms vary	<p>「腹瀉、嘔、暈、脫水、休克、死」 'Diarrhea, vomiting, dizziness, dehydration, shock, death'</p>
	食物中毒對我的顧客來說是一個非常嚴重的問題 Food poisoning is a very serious matter for my customers	<p>「客人如果有食物中毒，後果會好嚴重」 「我自己覺得食物中毒唔算係太嚴重嘅病，但對客人來講當然係嚴重啦」</p> <p>'If my customers got food poisoning, the consequences would be serious' 'To me food poisoning is not a serious illness, but of course it would be a serious matter if my customers got food poisoning.'</p>

	主題 Themes	代表性的引句 Representative quotes
自覺益處 Perceived benefits	保護顧客 Customer protection	「會建議孕婦食全熟」 「減低食物中毒風險」 'Will recommend pregnant women to eat well-done[burgers]' 'Lower risk of getting food poisoning'
	顧客不喜歡“血水” Customers do not like 'blood/red juice'	「味道好D啲、較少血水」 「太生嘅話好少人接受」 'Taste better and less blood/red juice' 'Only a few people would accept burgers cooked too rare'
自覺阻礙 Perceived barriers	顧客不接受乾漢堡 Customers will not accept dry burger	「顧客不接受全熟，會太乾」 「五成熟的品質最佳，不然會太乾」 'Customers do not accept well-done burgers, they are too dry' 'Medium is the best, otherwise it will be too dry'
	優質肉類可以安全地生吃 Meat with high quality can be eaten rare safely	「澳洲和牛漢堡肉可以生食」 「五成熟既安全而又可以平衡到品質」 'Australian Wagyu burger patties can be eaten raw' 'Burgers cooked to medium are safe, yet have quality'
	五成熟比全熟更容易控制品質 It is easier to control the doneness to medium than to well done	「五成熟 溫度容易控制」 「表面乾身、裏面Juicy、仍有餘溫」 'Controlling the doneness to medium is easier' 'The surface [of the patties] is dry while inside is juicy and still warm'

	主題 Themes	代表性的引句 Representative quotes
自我效能 Self-efficacy	有信心提供安全食品 Confidence in providing safe food	「有信心可以防止客人食物中毒」 「餐廳應要乾淨，要確保來貨品質好」 'I have confidence that I can prevent my customers from food poisoning' 'Our restaurant is clean and the quality of food ingredients are guaranteed'
行動線索 Cues to action	僅在需要時才完全煮熟 Fully cook only if requested	「顧客要求」 「法例規定」 'Customers' request' 'Legal requirement'
	保護高危人士 Protect susceptible populations	「會為孕婦同細路仔煮到全熟」 'Will cook food thoroughly for pregnant women and kids'
	食品事故頻發 Food incidents emerge	「本地發生中毒個案」 'Unless there is a food poisoning case'

有食物安全風險的做法(1)

Practices that pose food safety risks (1)



室溫解凍

Defrost **at room temperature**

有食物安全風險的做法 (2)

Practices that pose food safety risks (2)



即食的醬料及供半生熟食用的漢堡肉餅和其他生肉放在一起
Ready-to-eat dressings beef patties intended to be eaten undercooked
are **placed together with raw meat**

有食物安全風險的做法(3)

Practices that pose food safety risks (3)



不用溫度計測量漢堡肉餅中心溫度

使用其他方法: 質地、外觀、預定時間、程序、表觀溫度

Do not use a thermometer to determine patty doneness

Other methods used: Texture, Appearance, Pre-determined time, Procedure, Apparent temperature

漢堡肉餅的中心溫度

Internal temperatures of burger patties

- 漢堡肉餅煮熟程度-- 客人要求:餐廳提供情況
 - 5成熟: 100%未煮熟
 - 7成熟: 74%未煮熟
 - 全熟: 17% 未煮熟
- 5間餐廳不會詢問客人的要求
 - 設定熟度為7成熟，當中3個(60%)未煮熟
 - ⇒ 消費者有機會在不知情的情況下進食未煮熟的漢堡牛肉
- Patty doneness -- Customers' requests VS as served in restaurant
 - Medium: 100% undercooked
 - Medium well: 74% undercooked
 - Well done: 17% undercooked
- 5 restaurants NOT asking customers' preferences
 - Medium well by default; 3 of them (60%) were undercooked
 - ⇒ Consumers may have eaten undercooked burger patties unknowingly

迷思1：牛肉呈褐色代表徹底煮熟

Myth 1: Browning means thorough cooking

- 以褐色作為煮熟的指標並不可靠
 - 肌紅蛋白(肌肉組織的色素蛋白)的化學狀態及酸鹼度等，可能令牛肉過早褐變
 - 過早褐變(轉成啡色)是指肉餅內部在達到安全溫度之前，已經呈現暗褐色或熟透的外觀
- 為了確保碎肉徹底煮熟，**應使用食物溫度計**
- The brown visual colour is not a reliable indicator of doneness.
 - Many factors such as the chemical state of myoglobin, a pigment protein of muscle tissues, and pH affect the occurrence of premature browning
 - Premature browning is a condition in which the interior of cooked patties appear to have a dull brown or well-done appearance before the patties reach a safe temperature
- To ensure thorough cooking of ground meat, **always use a food thermometer**

不建議採用蛋糕測試針判斷肉的煮熟程度

Not recommend using cake testers to determine meat doneness

- 不應以手背或下巴感應蛋糕測試針插入漢堡肉餅後的溫度，用作判斷肉的煮熟程度，因為蛋糕測試針：
 - 並非衡量肉類煮熟程度的可靠工具
 - 可能會燙傷皮膚
 - 如未經適當清潔便重用，可導致食物交叉污染
- Do not determine the burger patty's doneness by using the back of hand or chin to feel the heat of a cake tester after inserted into the patty because cake testers:
 - are not a reliable tool for indicating the doneness of meat
 - can cause scald injuries to your skin
 - can cause cross-contamination of food when reused without proper cleaning

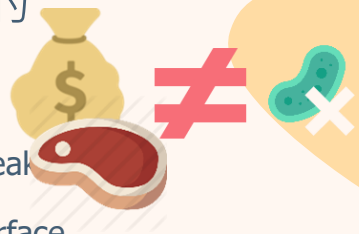


迷思2：以優質或昂貴的肉製成的漢堡肉餅無須煮熟

Myth 2: Burger patties made from good quality or expensive meat can be undercooked

- 原塊牛扒經煎烤後，表面的細菌會被殺死，可供安全食用
- 但當肉絞碎製成肉餅時，生肉表面的細菌會散布至整塊肉餅
- 如漢堡肉餅未徹底煮熟，細菌仍可在肉餅中存活
- 所有漢堡肉餅都可能含有有害細菌，包括以優質或昂貴的肉製成的漢堡肉餅

- Harmful bacteria can be carried on the surface of whole cuts of meat. When a rare intact steak is seared these bacteria are killed, making the steak safe to eat
- However, when meat is minced to produce burger patties, any harmful bacteria from the surface of the raw meat spread throughout the patty
- Unless the burger patty is cooked right through, these bacteria can remain alive on the inside.
- This happens to all burger patties, including those made from good quality or expensive meat



迷思3：漢堡肉餅煮至全熟會影響其品質

Myth 3: Cooking a burger patty to well-done will compromise its quality

- 全熟的漢堡肉餅較為乾韌？
 - 沒有使用食物溫度計 → 不知道肉餅溫度是否適當 → 容易將其煮至遠高於安全所需的溫度 → 導致肉餅過熟
- A well-done burger patty is less juicy and tender?
 - Without the aid of a food thermometer → right temperature unknown → likely to cook the burger patty to a temperature much higher than necessary for safety → resulting in overcooked patty



85°C

保持肉質鮮嫩的方法



Tips for keep meat moist and tender



- 在製作漢堡肉餅前將水加入肉中，有助於在烹煮過程中保持肉餅的水分
 - 避免過早在漢堡肉餅中加入調味料，這會吸走肉中的水分
 - 烹煮時，避免按壓漢堡肉餅，以免肉汁流失
 - 避免使用過高的熱力，以免漢堡肉餅表面過熟，但內部仍未熟透
-
- Adding water into the meat before shaping burger patties helps maintain moisture of the patty during cooking.
 - Avoid seasoning a burger patty too far in advance, which pulls liquid from the meat.
 - Avoid pressing down a cooking burger patty, which drains out its juice.
 - Avoid extremely high heat that can overcook the outside of the burger patty while the interior remains underdone.



選用合適溫度/時間組合

Choose suitable time and temperature combination

漢堡肉餅內部溫度 	時間 
攝氏 60 度	45 分鐘
攝氏 65 度	10 分鐘
攝氏 70 度	2 分鐘
攝氏 75 度	0.5 分鐘 (30 秒)
攝氏 80 度	0.1 分鐘 (6 秒)

Internal temperature of the burger patty 	Time 
60°C	45 mins
65°C	10 mins
70°C	2 mins
75°C	0.5 min (30 secs)
80°C	0.1 min (6 secs)



中心的計劃 Our plan

1. 對食物處理人員進行安全製作漢堡的教育

Educating food handlers on the safe preparation of burgers

- 安全烹製牛肉漢堡包的業界指引
- Guideline on safe preparation of burgers at food premises



2. 促進良好的衛生習慣

Promotion of Good Hygiene Practices

- 製作培訓教材，以促進食物管理人員及處理人員應用良好衛生規範
- 會以圖解指南及短片講解食物安全信息
- Produce training materials to promote the application of GHPs by the food handlers and business operators
- Use illustrated guides and short videos will be used to explain food safety information



3: 進一步探討食物處理人員及消費者的食安知識、態度和做法

Food safety education to the general public

- 加強宣傳教育，以提高公眾對生或未煮熟食物的風險的認識
- Enhance promotion and education to increase public awareness of the risk of raw or undercooked food





謝謝!
Thank you!