

## **CAPACITY OF PUBLIC HEALTH LAWS ENFORCEMENT BY HEALTH INSPECTORS IN STATE OF SELANGOR, MALAYSIA**

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### **ABSTRACT**

*A cross sectional study initiated among the Public Health Enforcement Inspectors in state of Selangor, Malaysia in July 2003 using a self administered questionnaire and universal sampling with the purpose to determine the capacity of public health laws enforcement and factors influencing it. A total of 99 respondents from the Health Districts Offices and 100 respondents from the Local Municipal Health Departments participated in this study. It was found that the level of enforcement is generally low in all the units except for two units; the Food Unit and Sanitary and Hygiene Units. Factors found to influence enforcement capacity are the units' the enforcers work in and the length of service being in the same unit. Further analysis using multiple logistic regression, showed that respondents from the Food Unit (adjusted odds ratio 22; CI 95% :7.851, 58.896), enforcers from the middle level category (adjusted odds ratio 5; CI 95% :1.397, 17.630), duration of service of 4 years and above in the same unit (adjusted odds ratio 6; CI 95% :2.174, 13.747), past acceptance of formal service rewards from their departments (adjusted odds ratio 3; CI 95% : 1.150, 6.917); low exposure to bribery (adjusted odds ratio 46; CI 95% : 2.336, 1000) and have in the past being offered bribes while on the field (adjusted odds ratio 3; CI 95% : 1.018, 4.772) are associated with higher enforcement capacity. In conclusion; due attention must be looked into the enforcement organization with respect to the duration of service, acknowledgement via service rewards and monitoring of bribes exposure will help shape a better public health laws' enforcement capacity.*

*Keywords: Health enforcement, enforcement, public health laws.*

### **INTRODUCTION**

Protecting the public's health comes hand in hand with its public health laws and their enforcement. According to Gasner et al. (1999), Gebbie (2000), Fidler (2001), WHO (2002), Baker & Koplan (2002); for handling the diversity and further commitment of public health laws enforcement, the working capacity and effectiveness of public health officers are pertinent in meeting the above objectives. Mismanagement and mishandling of public health laws coupled with under capacity of public health laws enforcers, will cause a disarray among public health organizations, the public they're protecting and consequences to the public health itself (Scott et al 2002, Zafarullah and Siddique 2001). Sadly to say, studies of public health laws enforcement and its capacity among public health inspectors are relatively few in existence (Transparency International 2000, Zafarullah and Siddique 2001). To meet the demand above, this study was carried out in the state of Selangor.

### **LITERATURE REVIEW**

Important and crucial public health laws in this state are pertaining to food hygiene and sanitation control, tobacco control and infectious diseases control. This is because cases of food poisoning in this state still occurs sporadically, while food and water borne diseases have never actually died down (Selangor Health Report 2001). In 2001, from 4634 food samples taken, chemical violation was found to be the highest due to additives usage. While for physical food violation, the highest cause was from foreign bodies pollution and violation in food labelling. Chemical violation with the beta agonist drug in pigs were also noted to be high (14.9% of samples taken). In 2001, 57.3% of confiscated food samples that were found not to abide with the Food Act 1983 was brought to court and 67.2% (52 out of 83 cases) were prosecuted. Tobacco control regulations comes under the Food Act 1993 and was fully enforced in 1994. The purpose of this programme is to reduce the prevalence of smokers to less than 10% in the year 2010 (as health impacts related to tobacco inhalation and consumption are tremendous); deter and discourage teenagers from taking up smoking; to encourage smokers to quit smoking; reduce and halt the risk of tobacco smoke to the public or inhalation at work place and lastly to cultivate new agricultural alternative in replace of tobacco (Ministry of Health 1999, Nabilla Al-Sadat and Zariyah Zain 2002). Smoking at prohibited places such as schools, hospitals, shopping complexes will be fined and the total

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compound issued in the year 1999 was 12,858. Lopes and Fonseca (2002) gave the example of how public health laws enforcement's negligence, which resulted in a rise of communicable diseases including dengue fever. Brian (1999), Crabtree et al. (2001) and American Public Health Association (2001) agreed that in an attempt to reduce the burden of mosquito population, capacity of enforcement should be stepped up. Another example of public health laws enforcement can be seen in a more stringent form in cases of respiratory tuberculosis epidemic seen in Wales England in 1997-1998 (Annas 1993). Through their Public Health Act 1984, air borne and infectious tuberculosis was examined mandatory and treated. Lack of health enforcement saw the surge in incidence and multidrug resistant strain of tuberculosis in New York (Frieden et al 1993 & 1995) and globally (Oscherwitz et al 1997, Schluger 2002). The district health departments and the local health councils, mainly provide the public health services and facilities in this country. The public health laws pertinent in the district health departments which falls under the Ministry of Health, are the Food Act 1983 and Tobacco Control Regulations 1993, Destruction Of Disease Bearing Insects Act 1975 and the Prevention and Control of Communicable Diseases Act 1988. Meanwhile the local health councils, which are under the jurisdiction of the Housing and Local Government, are the Local Health Act 1976 although they are empowered to utilize the health laws used by the Ministry of Health. Factors felt contributing to the capacity of public health inspectors enforcement are their working place and the unit they're in; post in employment; motivation; support from superior officers; acceptance of awards; acknowledgement given while in services; length of being in service; length working in a unit; knowledge in the Dangerous Diseases Bearing Insects Act 1975; income; exposure to bribery; frequency of bribery offered on the field; the adequacy in numbers of staffs and the sufficiency of enforcement equipments.

#### **OBJECTIVE AND HYPOTESIS**

To measure and compare the enforcement capacity of public health inspectors in the district health departments and local health councils throughout the state of Selangor. The working hypotheses are there will be a relationship between enforcement capacity and working place. Public health inspectors that have been in service longer, that have worked longer in their respective units, that work in the Food Control Unit, have higher (formal) income, have been awarded 'Anugerah Khidmat Cemerlang', have

received acknowledgement while in services, have better superior support, are better motivated, have adequate numbers of staffs and sufficient equipment preparation and have better knowledge have higher enforcement capacity. While health inspectors that are more exposed to bribery and are offered bribery while on the field have lower enforcement capacity.

#### **MATERIALS AND METHOD**

A cross sectional study was initiated from July till August 2003 using a self-administered questionnaire and universal sampling. With the power of 80% and a significance level of 0.05, a total of 286 public health inspectors are included in the sampling frame. Exclusion criteria's are inspectors that have not been in service for the past 6 months (just started working or they are on leave). Inclusion criteria are inspectors that are required to do enforcement activity either individually or during activities together as a unit or with other units. The districts involved are Sabak Bernam, Kuala Selangor, Hulu Selangor, Klang, Gombak, Hulu Langat, Sepang, Kuala Langat and Petaling. There are 11 Districts Health Departments and 8 Local Health Councils, which participated. Public health laws used are pertaining to health laws used by both district and local health departments in this state. Estimation of sample size was calculated using difference in proportions between 2 group comparisons, using the formula by Dawson-Saunders and Trapp (1994). Thus sample needed is 88 individuals for each group and total of 176 health inspectors was required.

#### **DATA COLLECTION**

The self-administered questionnaires for each individuals are pertaining to the socio-demographic background of the respondent, the enforcement capacity for the past 6 months and factors thought to influence enforcement ability (intrinsic, extrinsic and environmental influencing factors). Questionnaires are sealed in an individually stamped and addressed to the researcher, thus it can be mailed straight without having to go through their superior. Content validation of the questionnaire was done with inputs from 2 experienced, senior public health inspectors in the field of public health laws enforcement. Alpha Cronbach's reliability analysis for the overall questionnaire was 0.7608. Enforcement indicators used are to reflect the enforcement capacities. These are the number of compounds issued; number of unsanitary premises closure including food premises (with Medical Officer of Health) or closure of premises that contain breeding sites (for mosquitoes);

number of food sampling taken; number of food items confiscated; number of registered cases in court and number of cases won in court. A scoring system was used in evaluating the enforcement indicators given in the questionnaire. The scores given will depend on the difficulty of the enforcement activity itself and a cut off point was given to delineate between high and low enforcement capacity. The cut off point of 42 was reached after taking the official Ministry of Health enforcement indicators for the state of Selangor for one health

inspector's enforcement capacity during 6 months. Likert scale was used to score the factors thought to influence enforcement capacity. The factors are; the perception of superior support (10 questions), motivation of staff (11 questions), knowledge (17 questions), the adequacy in numbers of staffs and the sufficiency of enforcement equipments (7 questions), exposure to bribery (10 questions) and frequency of bribery offered on the field (scale from 0 to 10). Bribery offer of 2 or more in a month is considered high category of bribe offer.

**Table 1: Alpha Cronbach Reliability Analysis For Questionnaire**

Variables	Capacity		Alpha Cronbach Reliability Analysis
	Low	High	
Superior support	10 - 39	40 - 50	0.7128
Motivation	11 - 43	44 - 55	0.7136
Adequacy in staffs and enforcement equipments	7 - 27	28 - 35	0.7185
Knowledge	17-67	68 - 85	0.6044
Exposure to bribery	10 - 39	40 - 50	0.7844

**DATA ANALYSIS**

Data analysis was done using the SPSS 10.00. Data presented descriptively and analytically using t-test, Mann Whitney U Test, Chi Square and multiple logistic regression.

**RESULT**

A total of 99 respondents out of 145 district health departments' health inspectors and 100 respondents out of 141 health inspectors, from the local health councils participated. This gave the response rate of 71.0% from the district health departments and 70.9% from the local health councils. This was due to difficulties retrieving the self-filled questionnaires from the respondents. Filling the questionnaire are also guided by one's own self of truthfulness and it may be difficult to give true input if respondent might query their superior's sense of suspiciousness on the subject. Mean values were added for missing values. To make sure that there was no significant difference between the 2 groups of health inspectors that participated in this study, t-test analysis for normally distributed data and Mann-Whitney U Test done for non-parametric data. This revealed that among the

respondents; length of service, length working in a unit and income (official and outside income) was not significantly different between the health inspectors from district health departments or the local health councils ( $p>0.05$ ). The min age for health inspectors from the district health departments are younger ( $34.7 \pm 9.3$  years) while their counterparts from the local health councils are relatively older ( $38.7 \pm 7.6$  years). T-test showed a significant difference at  $p<0.001$  among the age of health inspectors from the two different setting with health inspectors from the local health councils are relatively older. Qualitative variables such as post, race, acceptance of awards and acknowledgement given while in services were not associated with place of work. Factors of superior support, motivation, knowledge, adequacy in staffs and enforcement equipments was found to be better in health inspectors from the local health departments and it was statistically different with  $p<0.05$ . Their enforcement capacity was also higher but was not statistically significant from the health inspectors in the district health departments. Exposure to bribery and frequency of bribe offered were not statistically different between the 2 groups of health inspectors.

**Table 2: Univariate Analysis For Differences Between The 2 Groups Of Health Inspectors**

Variables	Mean level		p value
	District Health Dept.	Local Health Council	
Age (years)	34.7 ± 9.3	38.7 ± 7.6	<b>0.001*</b>
Length of service (years)	10.2 ± 9.1	12.2 ± 7.7	0.087
Length in unit (years)	5.48 ± 6.18	5.69 ± 5.07	0.711
Income (RM)	1939.1%640.2	2101.85 520.6	0.059
Outside income	505.11%720.03	411.92 ± 245.49	0.224
Total income (RM)	2030.4 ± 754.7	2212.2 ± 600.8	0.062
<b>Superior support</b>	31.47 ± 7.85	34.70 ± 6.57	<b>0.002*</b>
<b>Motivation</b>	37.10 ± 6.08	38.88 ± 5.99	<b>0.037*</b>
<b>Adequacy in staffs &amp; enforcement equipments</b>	20.60 ± 5.08	22.69 ± 7.05	<b>0.017*</b>
<b>Knowledge</b>	62.00 ± 7.20	64.60 ± 6.98	<b>0.010*</b>
Exposure to bribery	23.47 ± 7.53	25.15 ± 7.04	0.101
Frequency of bribe offered on the field	2.30 ± 1.98	1.84 ± 1.57	0.263
Enforcement capacity	94.69± 156.92	115.38± 184.59	0.125

\*Significant at p<0.05

Only 91 health inspectors (45.7%) were in the high enforcement capacity category, that is enforcement scores of more than 42; while 108 (54.3%) was in the low enforcement capacity category. Bivariate chi square analysis was done

to determine the association between enforcement capacity and factors influencing it (socio-demographic as well as intrinsic, extrinsic and environmental influencing factors).

**Table 3: Chi Square Analysis To Determine The Relationship Between Enforcement Capacity And Influencing Factors**

Variables		Enforcement capacity (%)		p value
		Low	High	
Post of health inspectors	Top level (U6, U7)	68.0	32.0	0.141
	U8	52.3	47.7	
Race	Malays	54.4	45.6	0.997
	Chinese	53.6	46.4	
	Others	54.5	45.5	
Age (years)	<37 years	58.7	41.3	0.194
	≥37 years	49.5	50.5	
<b>Units</b>	<b>Food Control</b>	<b>21.7</b>	<b>78.3</b>	<b>&lt;0.0001*</b>
	<b>Sanitary &amp; hygiene</b>	<b>47.4</b>	<b>52.6</b>	
	<b>Others</b>	<b>71.7</b>	<b>28.3</b>	
Length of service (years)	<9 years	60.8	39.2	0.059
	≥9 years	47.4	52.6	
<b>Length in unit (years)</b>	<b>&lt;4 years</b>	<b>66.0</b>	<b>34.0</b>	<b>&lt;0.0001*</b>
	<b>14 years</b>	<b>40.9</b>	<b>59.1</b>	
Income (RM)	<2000	55.8	44.2	0.631
	≥2000	52.3	47.7	

Outside income (RM)	No	56.4	43.6	0.249
	Yes	46.5	53.5	
Total income (RM)	<2000	57.3	42.7	0.377
	≥2000	51.0	49.0	
Acceptance of awards	Yes	48.5	51.5	0.248
	No	57.1	42.9	
Acknowledgement given while in services	Yes	46.6	53.4	0.161
	No	57.4	42.6	
Superior support	Poor	54.9	45.1	0.710
	Good	51.4	48.6	
Motivation	Poor	54.6	45.4	0.842
	Good	52.8	47.2	
Adequacy in staffs and enforcement equipments	Poor	55.0	45.0	0.625
	Good	50.0	50.0	
Knowledge	Poor	53.6	46.4	0.760
	Good	55.9	44.1	
Exposure to bribery	Poor	55.2	44.8	0.181
	Good	20.0	80.0	
Bribe offered on the field	No	59.5	40.5	0.081
	Yes	47.0	53.0	

\*Significant at  $p < 0.05$

After controlling for confounding factors in multiple logistic regressions, 6 out of 17 factors became significant in the predictability

of public health enforcement capacity of health inspectors as shown in this table.

**Table 4: Logistic Regression**

B.	Factors	β coefficient	p value	Odds Ratio	95.0% CI	
					Lower	Upper
1.	Food Control Unit	3.068	<0.0001*	21.504	7.851	58.896
2.	Health inspectors U8	1.602	0.013*	4.963	1.397	17.630
3.	Length in unit 4 years and above	1.699	<0.0001*	5.466	2.174	13.747
4.	Acknowledgement given while in service	1.037	0.023*	2.821	1.150	6.917
5.	High exposure to bribery	-3.797	0.012*	0.022	0.001	0.428
6.	Being offered bribe	0.790	0.045*	2.204	1.018	4.772

\*Significant at  $p < 0.05$

**DISCUSSION**

Health enforcement's level on the whole for health inspectors is low (below the score of 42). Health inspectors from the local health councils are relatively older and more experienced from their counterparts from the district health departments and this was found to be significant statistically at  $p < 0.001$ . 41.5% of respondents from the district health departments are below 30 years old, while majority from the local health council, are between 35-45 years of age (46.0%). This was due to the fact that most of health inspectors from local health councils was previously employed by the Ministry of Health. Income is also higher among the health inspectors from the local health councils but it is not statistically significant. Other socio-demographic backgrounds are not significantly

different between the 2 groups of health inspectors. Factors such as superior support, motivation, knowledge, adequacy in staffs and enforcement equipments was found to be better in health inspectors from the local health councils and it was statistically different with  $p < 0.05$ . To see the reasons behind this, a brief background of the organizations is important. Local health council's fall under the jurisdiction of Ministry of Housing and Local Government while district health departments comes under the Ministry of Health. Power for health enforcement by health inspectors under the Local Government Act 1976 (Ministry of Housing and Local Government) are greater and widely more diverse than the power of health acts under the Ministry of Health. Health inspectors from local health councils more widely use the acts that

come under their jurisdiction, rather than acts from the Ministry of Health. They have better incentives and service for their staffs such as allocation of private health facilities, loan incentives for death or weddings, personal loans and remunerations. Decentralization of management also gives much authority to the health inspectors of local health councils. Even though it is still a top-down hierarchy of control, lateral spread of control is also evenly spread out (Transparency International Source Book 2000). Support in monetary sense, are easier to receive in the local health councils than district health departments. These give more motivation for their health inspectors and perceive better superior support from top-level health inspectors or the management. Revenues collected by local health council's inspectors are for the usage of the municipal itself, where else in the district health department's revenues are returned to the Ministry of Health itself. Local health councils are better off financially than district health departments as the background of the ministries involved differs. Their enforcement capacity was also higher but was not statistically different from the health inspectors in the district health departments. Exposure to bribery and frequency of bribe offered were not statistically different between the 2 groups of health inspectors. Generally, offer for bribery in the field is high i.e. twice in a month for all the health inspectors. The fact that it could be higher can't be denied. Food Control Unit is noted to have high enforcement capacity (adjusted odds ratio 22; CI 95%: 7.851, 58.896). This is attributed to its long history since 1950's as an agent for food safety and hygiene control in the country (Ministry of Health 1999). This makes it a formidable force in health enforcement capacity both in the districts health departments and local health councils. However it is the unit most offered bribe (30.2%). The working target for food control units and tobacco control are also stringent and makes the health inspectors always on their toes and uphold the enforcement capacity of this unit. Unfortunately, that can't be said about the control of vector borne diseases in the state. The capacity of health enforcement of this unit is relatively low and does not correlate with the burden of vector borne diseases such as dengue in this state. The offer for bribe in this unit is 15.6%. Under capacity of this unit is very detrimental to the outcome of vector borne diseases (Brian 1999), Crabtree et al. (2001), American Public Health Association 2001). There is also under capacity of the other units. Sanitary and hygiene unit under the local health council's jurisdiction also has a high capacity of enforcement. Offer for bribe is 9.5%. This is in relation of their work that handles the general neglect of cleanliness,

sanitary of local parks/housing areas, toilets etc. Other units e.g. Communicable Diseases Control Unit are also facing under capacity of health enforcement. This is because the health departments generally do not compound or sanction anyone with communicable diseases. This differs from communicable disease control such as tuberculosis in New York 1998 (Frieden et al. 1993 & 1995) where incarceration and mandatory treatment was used. The under capacity in health enforcement can be caused by poor supervision by top management as in studies by Samart Powpaka (2002), Saleem Marsoof (2003) and James (2002). In this study, majority of respondents perceive superior support as poor and are in the low enforcement category (54.9%). However it was not found to be one of the influencing factors for enforcement capacity of health inspectors in this study. The perceived ideas to condone bribery reflect how someone are exposed and inclined to accept bribery on the field. Literatures have noted that bribery will reduce any type of enforcement and hampers any laws From being effective (James 2002, Scott et al 2002, Zafarullah and Siddique 2001). This also applies to public health laws. A bribe will persuade authority to deter the enforcement action against wrongdoers and turn it towards their own incentive (James 2002, Jacobson and Wasserman 1999, Transparency International Source Book 2000). This study has found that low exposure to bribery (adjusted odds ratio 46; CI 95% : 2.336, 1000) will produce better enforcement capacity. An offer of bribe does not mean that they have accepted it. Laguerre (1994) found that if the culture of bribery is so rampant, another bribe just might be ignored and accepted as a norm and part of the 'culture'. This offer of bribe occurs when the health inspectors are in the field doing their job of health laws enforcement activities. This is when the conflict of interest occurs and an offer might be suggested to the health inspectors. This study has found out that bribe offers occurs in high capacity health enforcement (adjusted odds ratio 3; CI 95% : 1.018, 4.772). I suggest two reasons for them. The offer of bribe occurs when an enforcement activity occurs. The more enforcement activity done, the frequency of bribe offer will increase. When an offer occurs, health inspectors will continue the initial enforcement actions and in fact become more determine to uphold the law. Another possibility is that when a bribe offer occurs, the offer might just be not lucrative enough for the officer to heed to the wrongdoer and will continue enforcement actions till a justifiable bribe offer come into hand (Laguerre 1994, Samart Powpaka 2002). It was found from bivariate and multiple logistic regressions, that length of working in a unit

determine the capacity of enforcement. The length of working 4 years and above in a particular unit makes the health inspector perform better, more in tune of the needs and responsibilities that is in need of them (Goulet and Frank 2002). Having worked for a shorter time does not make them more competent but in fact are less effective health enforcers. However, the factor of being in service longer than 9 years does not improve enforcement. Probably this is due to the fact after a longer period of time they will ultimately lose interest in their work and boredom sets in (Strait 1998, Transparency International Source Book 2000). As health inspectors, they also get posted in multiple different units that might not use much enforcement activities and becomes less productive. They might also get posted into more upper management position that does not see them running around doing ground enforcement work. Analysis found that working in the normal /lower post (U8 post) makes them better health enforcers (adjusted odds ratio 5; CI 95% :1.397, 17.630). These health inspectors are also more junior and more motivated to perform health enforcement activities. Study by Keily and Peek, 2002 found that younger police officers perform better enforcement capacity. Top management health inspectors (U6 and U7 post) are usually more as middle managers and generally supervise and handle the court cases due to their experience and greater responsibility. They generally does not do much enforcement activity in the field unless it is a group unit or with the Medical Officer of Health. The U8 health inspectors handle most of the local activity of health enforcement. That is why they have a higher capacity for enforcement than the U6 and U7 category. Enforcement capacity was not influenced by the health inspector's income. This is inconsistent with other studies that mentioned income is associated with the enforcement capacity (Bartosch and Pope 2002). The total incomes are actually combined outside income plus formal income. Formal income are also not influenced by the enforcement capacity of the health inspector, but income get higher according to seniority in service and post of the health inspectors. Outside income are actually incomes that are rather not declared by the health inspectors as it sometimes has legal implications. Thus any enforcement activity that the health inspectors do does not actually bring any income to them (unless taking monetary bribe). In a way, greater enforcement capacity does not bring any positive reward for them. However, this study found that acknowledgement given in service (adjusted odds ratio 3; CI 95% : 1.150, 6.917); either in the form of certificate or medal of excellence (due to good performance and high

standard of duty) increases enforcement capacity of health inspectors. This is concurrent with other studies that found positive rewards would reinforce and further motivates workers to produce better performance (Maslach et al. 2001, Mills 2003).

Factors that induce motivation can be divided into intrinsic factors and extrinsic factors (Li-Ping Tang dan Abdul Hamid Safwat Ibrahim 1998). Examples of intrinsic factors are personal satisfaction of achievements or pleased with own working performance. External motivating factors are things such as monetary rewards or income. In enforcement of public health laws, external motivating factors such as formal income are somewhat static. This is in the sense, you won't get higher pay if you achieve a target of enforcement activity. Achievements that are not recognized by own working superiors (poor superior support); which majority of the respondents are in (54.9%), leads to poor staffs motivation in achieving enforcement targets. Knowledge in this questionnaire is quite restricted to knowledge pertaining to facts in the Destruction Of Disease-Bearing Insects Act 1975 and its Amendment 2000. Both district and local health departments can use this act. However, it does not reflect the overall knowledge in public health laws enforcement, as it will be extensive and more diverse. The fact why knowledge of this act was asked is because of the burden of dengue as a vector borne disease in this country. The disease is so wide spread with high incidence that extensive knowledge of this act is important (Ministry of Health 1999). However majority of respondents (140 out of 199 respondents or 70.4%) are in the low knowledge category and of poor enforcement capacity.

## **CONCLUSION**

This study is aimed at defining the factors that play a role in determining enforcement capacity of public health enforcers. The overall enforcement capacity in this study, found to be low with high frequency of bribe on the field. Emphasis on ethics and morale of public health staffs; better supervision and transparency to deter bribery coupled with working rotation in the respective working units are steps that might ensure better enforcement capacity of staffs. A more practical and uniformity of public health laws might help enforcers better utilize the health laws in use. Lastly, further studies on public health laws enforcement and its capacity need to be further emphasized.

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