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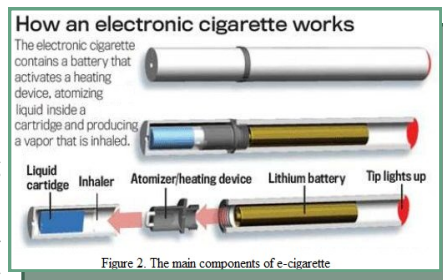
ELECTRONIC CIGARETTES & ITS EFFECT TO HEALTH

Recently, there is a growing trend among smokers vaping with e-cigarettes or famously known as electronic nicotine delivery device. The e-cigarettes which have been in the worldwide market for more than 5 years were first introduced as alternatives to assist traditional smokers who plan to quit or cutting down the habit³. Electronic cigarettes were marketed as equally satisfying and much less dangerous than traditional cigarettes which has led to health professionals being asked about the usefulness and its safety. Several studies on regular smokers who intend to quit find e-cigarettes helps to reduce the craving and smoking withdrawal symptoms³. The act of smoking and vapour release due to combustion helps in addressing the behavioral components in smoking addiction⁴. However, some e-cigarettes smokers complained that sometimes, little to no mist was produced when puffed¹ causing some discomfort to the throat when the e-cigarette is puffed.

Despite the 'pros' promoted by the manufacturers of e-cigs on helping smokers to quit smoking, the World Health Organization (WHO) looks at the product as an evident against tobacco cessation campaign⁶. The availability of e-cigarettes to all ages has increased the chances of the youngsters to buy it⁴. Most of the e-cigarettes in the market lack of quality control, delivers nicotine at inconsistent rate and may initiate nicotine dependence in youngsters³. Lots of electronic cigarettes contains assortment of taste such as strawberry, caramel, lemon and cherry that will encourage smoking in reality.

An e-cigarette consists of three main components: i) a cartridge with humectants carrier (propylene glycol and nicotine); ii) a tube where the cartridge is inserted, iii) a battery that helps heating the solution and producing mist and iv) indicator light and power source connection^{2,4,6} (Figure 2). The manufacturers did not issue out the complete listing of chemical ingredients in the e-cigarettes to public. Nicotine concentration is promoted as lower than in the cigarette. It is utilized as in liquid and at the concentration detected in the e-cigarettes, it is unlikely to cause cytotoxic effect⁷. Propylene glycol is a solvent commonly used in topical pharmaceutical products and also found in tobacco cigarette which has cytotoxic effect once pyrolyzed to acetaldehyde when smoking. Two other chemicals identified which cause harm to health are diethylene glycol (DEG) and tobacco specific nitrosamines (TSNAs). Studies reported lower concentration of TSNAs in e-cigarettes compared to regular cigarettes but did not excludes its link to cancers⁷. At a low concentration (0.1– 1%), diethylene glycol which also known as antifreeze substance can possibly cause harm to health upon breathing it.

With this regard, the public is urged to be considerate since consuming the nicotine liquid in e-cigarettes is no better than regular cigarette effects on health. Potentially safer nicotine alternative may not being safer or more dangerous than cigarettes. Currently, the regulatory of e-cigarettes remains in limbo. The US Food and Drug Administration (FDA) regulate the e-cigarettes as a tobacco product³ when more are looking at it as recreational nicotine alternatives. The abstinence of smoke and lower concentration of nicotine may promote the smokers to smoke in greater frequency and ends up in higher nicotine exposures. Commonly reported adverse effects were mouth and throat irritation, headache and vertigo¹. Still, health effects on the users, on long term exposure still not evident.



References

1. Bullen C, McRobbie H, Thornley S et al. (2010) Tobacco Control 19:98 – 103.
2. Cobb N. (2010) American Journal of Public Health 100(12): 2340 - 42.
3. Pokhrel P, Fagan P, Little MA et al. (2013) American Journal of Public Health e1-e6.
4. Chan Z & Siegel M (2010) Journal of Public Health Policy 1–16.
5. Laugesen, M. (2008) Safety Report on the Ruyan e-Cigarette Cartridge and Inhaled Aerosol. Christchurch, New Zealand: Health New Zealand, <http://www.healthnz.co.nz/RuyanCartridgeReport30-Oct-08.pdf> (accessed 16 July 2013)
6. World Health Organization (WHO). Study Group on Tobacco Product Regulation. Technical Report Series, No. 955 (2009).

FLOW CHART OF INTRAVENOUS IMMUNE GLOBULIN (IVIG) SUPPLY FROM INPATIENT PHARMACY

INDICATIONS

Idiopathic thrombocytopenic purpura (ITP), Systemic lupus erythematosus (SLE) (intensive care unit setting), Kawasaki, Toxic Epidermal Necrolysis (TEN) & Guillain Bare Syndrome (GBS)

Others

Government Servant

Non-Government Servant

For ALL patients
(Govt. & Non-Govt)

Doctor has to inform patient to obtain **Guarantee Letter*/Surat Pengesahan Kakitangan Kerajaan

Inpatient Pharmacy will supply/dispense IVIG (even though without payment & without Pengarah's approval on the JKTU form.

To inform doctor that:

1) IVIG is a Non-Formulary item (to be sold in Kedai Farmasi)

Patient is required to pay **FULL** amount first. If patient could not afford the full amount, a deposit of RM500 or more is required. Receipt of deposit must be sent to Inpatient Pharmacy (IPD) before supply can be made.

Doctor must inform patient the TOTAL COST INCURRED patient has to pay. This amount will be charged by the Finance Department once patient is discharged. This policy was set by the Drugs & Therapeutics Committee of PPUKM.

(total vial/day x no. of days x price of 1 vial of RM612.50)

2) JKTU Form is sent to Inpatient Pharmacy (IPD)

Please ensure that it is complete with:

- Specialist's **AND** Head of Department's signature & official stamp
- Patient's signature or guarantor's signature at the "Section 8: Consent" Column at the JKTU Form. **TOTAL COST INCURRED** must be stated clearly.

If patient brought **Guarantee Letter**, patient need to discuss with Finance Department. Inpatient Pharmacy (IPD) will still supply the IVIG but payment must be managed by Finance Department.

Please ensure there are :

- Receipt
- Completed JKTU form

(If the JKTU form is incomplete, kindly verify with Pharmacist's On Call on the next working day for follow-up)

* Two types of GL:

- General GL (for **ward** admission etc) ;
- Specific GL (for specific **drug**.)

Usually Finance Department **DO NOT** accept general GL to cover for drugs.

A publication of :

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Actions to be taken by In-Patient Pharmacist:

- ◆ Obtain the consent from Dean of Medical Faculty & Director of PPUKM.
- ◆ Send JKTU to the Medical & Social Work Officer to access the patient's ability to pay
- ◆ Send JKTU to Finance for payment processing