Case Study 6 – Vaping on FHIR

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1. *How could FHIR be used to help identify patients with Vaping-Associated Lung Disease?*

    Fast Healthcare Interoperability Resource (FHIR) protocol was created in order to standardize the interoperability of health information across various sites around the world. FHIR resources contain unique tags which can be accessed using URL addressing. With this design, developers in any country can gain access to data no matter what architecture is used on the end of the medical care provider [1].

    Simply by implementing a survey for patients on their vaping use, medical researchers can cross evaluate vaping use with lung disease statistics to see if the two groups coincide in relevant statistical significance.

    Additionally, some laboratory data point to vitamin-E acitate as linked to an outbreak of E-cigarette or Vaping Associated Lung Injury (EVALI). By tracking lab results of patients with heightened levels of vitamin-E acitate in concordance with lung injury or lung disease can also help determine vaping related disease [2].

2. *In addition to FHIR, what technologies would be needed to analyze medical charts to identify these patients automatically?*

    One technology undergoing great advancements in the past years has been the advancement of Machine Learning algorithms for medical data. Specifically, Machine Learning classification can help categorize data sets into proper categories. Clustering Machine Learning models can help find distinctive patterns in data that may not be obvious to the human analyst. Finally, regression can help analyze variable correlation and the outcome of predictions made on the data [3].

3. *Provide us with examples or ideas you have for communicating the risks of vaping to young people most effectively?*

    One way of effectively communicating health risks to young people is to advertise with Visual Aids in schools and public areas. As young adults, attention to surroundings does not last long. As such, visual Aids act as a

quick image for a person to retain. Next time that person goes to use vaping, that mental image may resurface again.

   Another way of communicating vaping dangers may be to advertise in schools or educate teachers on the signs of vaping in schools. By arming teachers with this knowledge, they can prevent, communicate, and notify when vaping is noticed on school grounds.

   Finally, Social Media is a powerful tool for communication, persuasion, and trendsetting. Lately Social Media has been blamed as well as glorified for toppling governments, election interfering and overall ruling of everyday lives. As such, properly contrived and targeted campaigns can curb the growing wave of vaping stigma and adaptation by young adults [4].

References

[1] (n.d.). Retrieved from https://www.hl7.org/fhir/overview.html

[2] Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products. (2020, February 11). Retrieved from https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html

[3] Team, D. F. (2019, October 19). Machine Learning in Healthcare - Unlocking the Full Potential! Retrieved from https://data-flair.training/blogs/machine-learning-in-healthcare/

[4] (n.d.). Retrieved from https://therealcost.betobaccofree.hhs.gov/vapes?gclid=EAIaIQobChMI8N_omJrY5wIVwCCtBh04FQUFEAAYASAAEgJnpfD_BwE&gclsrc=aw.ds