**Discussion5:**

**Data Sharing and Bioinformatics**

**Post a response that addresses how precision medicine might affect genetic testing in general and the research trial described in the scenario specifically. Be specific. Your post should include your approach for facilitating the reluctant physician’s use of the trial drug and reporting the needed data. Justify your role as the nurse informaticist as it pertains to the genetics trial drug use and reporting described in the scenario**.

Medical practice was based on physicians personal experience and case reports until the 20th century, which was guided by underlying pathophysiology. Patterns that were practiced were influenced by the logic and biases of a respected local "guru," whose therapeutic theology, though admired at the home institution, might be heresy to another institution's competing guru. For instance, Myocardial infarction, heart failure, and arrhythmia treatments were proven to be wrong, and millions where lives were saved by improved evidence-based practice.  (L & JS, 2019)

**Precision medicine and genetic testing**

Medical care has evolved from "in my experience" to "evidence-based" to "personalized/precision”. Genetic knowledge and the ready availability of genetic testing present amazing possibilities from advances in genomics to improve health through precision medicine.

Every patient does not respond the same to medications due to genetics. Genetic testing can better determine the best treatment options for individuals, advancing precision medicine. Depending on the patient's genes, the enzymes could have low, medium, and high functions, leading to different metabolizing rates and these differing rates create problems for physicians when trying to prescribe medications. when a senior shows up at urgent care of the emergency, it is related to issues with their medication, creating a considerable burden on the healthcare system. By conducting genetic testing, providers can strive for precision and personalized medicine to find the root of the problem. As healthcare continues to move towards precision medicine, providers should be conducting genetic testing to identify the best treatment options for the patient. (McNemar, 2021) New medicine and gene therapy are available that have brought unprecedented opportunities. In 2018, 42% of drugs newly approved by the U.S. Food and Drug Administration were personalized medications and targeted therapies are revolutionizing cancer care. CRISPR (clustered regularly interspaced short palindromic repeats) technology has been used experimentally to edit the genome of a child with β-thalassemia major. For other single-gene diseases (such as Huntington's disease), genetic prediction is essentially perfect, and drug trials are beginning. For many diseases of aging (for example, Alzheimer's disease), prediction is only probabilistic, and sometimes no substantive treatments are available. (L & JS, 2019)

**Approach for the reluctant physician**

In the scenario, the physician was reluctant to use the trial and felt utilizing the database was a HIPPA violation, In this case, my approach would be educating current and future physicians, as well as the lay public because Unfortunately, even the most dedicated physicians are unlikely to have the training or time to know when to consider genetic testing, what tests to order, the best laboratories to use, and especially how to interpret results. I would make the physician aware that in addition to the ethical duties of a physician to guard the privacy of a patient’s medical information, which are embodied in every contemporary code of medical ethics, for maintaining the confidentiality of health information, there are also statutory, regulatory, and common law requirements in the U.S.  for physicians. The federal Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule became operational in 2003 and is the main statutory basis for protecting a patient’s health information. Under the Privacy Rule, most uses and disclosures of protected health information (PHI) other than for treatment, payment, or health care operations require written authorization from the patient—although access to certain goods or benefits, such as long-term care insurance or disability benefits, may be dependent on PHI being released. Genetic information generated for the purpose of health care is deemed to be part of a person’s health information and therefore is protected under the Rule. (Stiles & Appelbaum, 2019)

**Role of Nurse Informaticists**

Nurse Informaticists can play a vital role in this scenario as well as precision medicine to improve the future of patient outcomes through an interdisciplinary approach to research and education. They can be the best people to educate as they have both knowledge of medicine and technology and research.

With readily available genetic data and patient-centered clinical data, NI can be at the forefront of performing genetic research to enhance patient care and precision medicine and to provide a framework for incorporating genetic-related disease information into clinical decision support tools. Along with enhancing the clinical aspect of electronic health records, they can move genetic research toward a patient-focused research model.

(Milner & Zadinsky, 2022)

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**Response1:**

Hello Elizabeth

Thank you for the informative post. Informatics and data science are surely the foundation of precision medicine as analyzing environmental data and lifestyle can identify risk factors and make recommendations for lifestyle changes that can prevent the development of certain diseases or conditions. These data used in the prediction and analysis can come from various sources such as electronic health records (EHRs), claims data, and wearable devices. Rapid and highly efficient data collection will radically transform how healthcare providers process complex information. Technological advancement has the potential to significantly transform the global system by providing powerful tools for identifying and addressing health risks, improving patient outcomes, and reducing healthcare costs. (Tinazli, 2023)

Just like the physician in the scenario, A common trend of hesitancy among physicians to apply precision medicine in medical science has been observed.  In addition to educating them at present about the importance of PM, the introduction of Precision medicine from the undergraduate level in medical school can help tackle such reluctance among service providers. The International Consortium for Personalized Medicine has the vision to produce a new generation of informed, empowered, engaged, and responsible healthcare providers by 2030 with the help of major changes in curricula[10Links to an external site.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10129149/#R10). (Lamichhane & Agrawal, 2023)

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**Response2:**

Hello Molly,

Healthcare Trust is essential for the patient when it comes to healthcare delivery. When patients are aware of what information is being shared then they can build that trust with the healthcare provider that will help with the diagnosis and treatment. In the scenario presented, open communication with the patient along with educating the physician can help the health care provider be more comfortable in tackling the issue. The ‘one-size-fits-all’ strategy to treat cardiovascular illnesses, cancer, and diabetes may not always succeed. These diseases are the result of the complex interplay of genetic, environmental, and lifestyle factors. Using this strategy can lead to ineffective treatment of outlier patients who do not belong to the same patient subgroup that was included in the clinical study. This could be one of the reasons behind the inapplicability and failure of treatment among a certain proportion of patients for a particular disease. (Tinazli, 2023) We can now analyze genomic data to predict patient outcomes, such as the likelihood of a patient responding positively to a particular treatment. Predictive analysis allows physicians to focus only on crucial and relevant data sets when formulating precise patient treatment plans.

According to MedlinePlus, Precision medicine holds promise for improving many aspects of health and healthcare. Some of these benefits will be apparent soon whereas, Long-term research on precision medicine may not be realized for years.  There is ongoing research and the introduction of new tools and approaches for managing data

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