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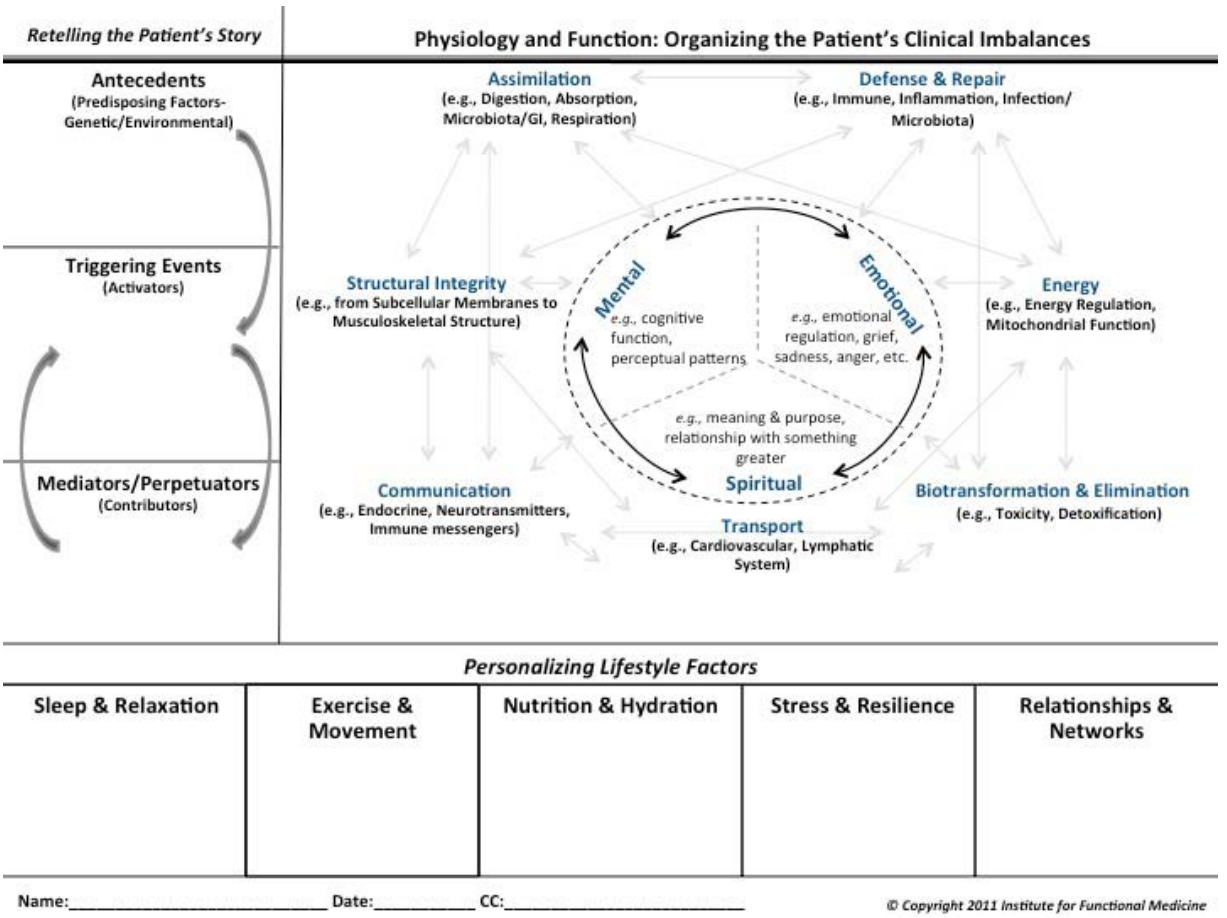
toxic burden, resulting in an elevated demand placed on glutathione production. Obese patients with elevated normal ranges of GGT levels have a higher association with diabetic risk. Laboratory testing for GGT is provided by mainstream labs such as LabCorp; however, the test is not included in a standard hepatic panel and needs to be specifically requested as a stand-alone evaluation.

Genetic testing. The detoxigenomic panel from Genova is one of the most comprehensive available to evaluate the impacts of genetic predispositions on detoxification functions and to support clinical guidance on lifestyle modifications. This panel reviews four of the six primary phase II conjugation pathways and identifies SNPs (single nucleotide polymorphisms) for the most common cytochrome P450 enzymes. The test report includes an extensive review of substrates that are processed or metabolized via each specific pathway. This provides insight for patient management, such as prescription medications the patient should avoid in order to reduce the risk of overdose or adverse side effects, and dietary modifications that could improve the functionality of specific detox-related metabolic pathways.

In some cases, patients may not produce adequate levels of phase I enzymes, compromising their ability to process certain chemicals or compounds. Other patients have an increase in the activity level of these enzymes, creating oxidative stress through an elevated burden of reactive oxygen intermediates. Inadequate support for phase II conjugation can also have an impact on the detox process. Metabolic byproducts of detox can place further demand on the body's endogenous systems. Genetic testing enables us to move beyond general recommendations to make more specific suggestions that address the patient's unique needs and support individualized healthy lifestyle choices.

Pulling together the details: benefits of the Functional Medicine Matrix. The Functional Medicine Matrix can assist the provider in organizing the medical case history, identifying repeated symptom triggers or triggering events, and ascertaining the primary underlying causes of the patient's health concerns. In my own work, before I began using the Matrix and applying a system's biology approach, I often struggled with detoxification because the topic is so vast, with so many variables. The Matrix provides indications of where to begin as we initiate care,