

**Important Definitions for the Quantico – Resiliency Presentation**

**(And Suggested Reading)**

S.S.A., Russell Kleber, Quantico Virginia

Steve Pitts, City of Reno, Chief of Police

Tammy Lopes, Battalion Chief, City of Reno Fire Dept.

E. James Greenwald, M.D.

If an Orthopaedic Surgeon is getting ready to do a complicated Total Hip Replacement, a difficult Total Knee, or repair a complex fracture for example, it is best to pre-operatively plan. The surgeon studies the x-rays and other images, often makes sketches and draws out a plan, sometimes days before, so that every step is considered, problems are identified, and special needs (like equipment) are anticipated well beforehand.  Then, step 2, the team (every member) goes over the plan so that everybody is prepared and knows their part. Finally, just before surgery begins, there is a “TIME OUT”, one final check to be completely sure that everything is a GO. Great pre-operative planning reduces mistakes, improves efficiency, and leads to much better outcomes. Besides that it’s FUN. When the TEAM accomplishes something really outstanding, everybody feels wonderful.

Insulin Resistance is especially important for our FIRST RESPONDERS, but it is also tricky. Some of the concepts are new; some are contra-intuitive; and some challenge basic long held beliefs. People can get uncomfortable, especially if we present 2 or 3 new concepts cold without any preparation beforehand.  The risk is that audience members will overload, shut down, tune out, and not learn anything at all.  We really want to avoid overload, and for that reason we are giving you this handout early.  **This is our preoperative plan**.  We aren’t asking you to believe all that we say just yet.  We are asking, however, that you consider several ideas before the conference. Just get them into your brain and get ready for the lights to go on. We think, you will understand Insulin Resistance as we apply these ideas to three Reno Police Officers and turn their lives around.

The first important idea is that *it’s the Carbohydrates that make us fat*. (See the Newsweek article we enclosed, page 34.) It’s not the fat that is making us fat, it’s the sugars that are “literally fattening” and also move our Cardiac Risk Factors in the wrong direction.  We will show you how this happens and how the Risk Factors correct on 3 different Police Officers as we cut the carbs. Doesn’t that seem strange? It’s not the fats that make us fat, it’s the sugars. REALLY!

The second idea that many people struggle with is the fact that an overweight person can actually loses weight by eating more fat**.** It’s the fat in our diet that satiates us (it makes us feel full), so we actually eat less as we increase fat intake.  We also avoid the spikes of blood glucose that are followed by insulin spikes and then the crashes of both when we are on a High Carbohydrate diet. Carbs drive Insulin, Insulin drives Fat …and when insulin levels are high, fat stays locked in the fat cell.  If insulin levels are chronically high, like in Insulin Resistance, we continue gaining weight over time. Please see the Newsweek article again.  Look carefully at the attached Introduction and Article Overview.  This is the KEY idea we want you to be thinking about before the conference.  This is why we get FAT!! Gary Taubes says it just beautifully.

The third fact that confuses both patients and Docs is that a person can be at very high risk with a normal LDL (bad cholesterol) value. This is the most common serious mistake that we see by far!! Docs and patients both are lulled into a false sense of security by supposedly normal LDL numbers. Advanced testing clears up the confusion. We will show you the particles that carry the cholesterol; they are called Lipoproteins, and help you understand that it is ALWAYS the particle number that most accurately reflects the risk. It’s not the passengers (the cholesterol); it’s the cars (the particles) that we care about.  What we really want to know in the Insulin Resistant patient is the particle number (LDL-P), and if we need to make it lower. Then we prevent Heart Attack, Stroke, Diabetes Mellitus Type 2, weight gain, etc.

So...please see the definition of Insulin Resistance and the brief words about the test we like so much, the NMR. We will go over a few simple basics about sugars and show you pictures and a model of the particles (the Lipoproteins). Then we will correct the risk profile of 3 Police Officers. A typical force of First Responders will be about 30 to 35% Insulin Resistant. IR is incredibly common and most of the people have NO IDEA that they are Insulin Resistant.

**Insulin Resistance (IR):** *This is as simple as I can say it and still be accurate.*

When humans become **insulin resistant,** the glucose receptors of our liver and muscle cells get clogged up. Insulin has a difficult time allowing glucose to get into the cell. Blood glucose levels go up and so does the blood insulin level, as our pancreas keeps pumping out more and more insulin to try and keep blood glucose levels under control. Right around 80 is ideal.

The combination of increased blood glucose and sometimes very increased blood insulin levels causes many other problems. It leads to the “Metabolic Syndrome” and the “Diseases of Civilization”.  You can see many of these around the Insulin Resistance Wheel.

**Insulin Resistance Wheel** **(attached):** Please notice all the diseases that cluster around insulin resistance. There is so much to be gained by reversing insulin resistance. Insulin Resistance is our biggest public health problem by far.

**NMR:** The NMR is our follow-up blood test of choice for patients with a high triglyceride and a low HDL on routine testing (the insulin resistant patient).

A Triglyceride/HDL ≥ 3.5 in men or Triglyceride/HDL ≥ 2.5 in women = Insulin Resistance.

The NMR is a magnetic resonance scan (MRI) done on 3 cc’s of fasting blood sent overnight to Liposcience in Raleigh, North Carolina. The test gives us a count of the lipoprotein particles that are carrying Cholesterol and Triglycerides, LDL-P, the total particle number, which is the critical number we need! Risk for heart attack *always* trends with the particle number (LDL-P), not the cholesterol number (LDL-C).

“It’s not the passengers, it’s the cars.”

We also get an insulin resistance score from Liposcience that we like very much. This score is on a scale of 0 -100, the lower the better. A score of ≥ 45 marks the patient as insulin resistant. The insulin resistance score reflects the very first undesirable change in insulin resistant people. It is the “Magic Window” (Dr. Tara Dall) to the earliest understanding of human disease!! Priceless! It is especially valuable for our first responders, who are so predisposed to be insulin

resistant.

In November 2011, Robb Wolf (former research biochemist and New York Times bestselling author of The Paleo Solution) moved to Northern Nevada. We have gotten to know Robb and his friends. We like the Paleo (Evolutionary/Darwinian) approach very much and find it complimentary with our Lipidology point of view. Robb agrees, and this has added depth and a new perspective to our Wellness and Prevention Program.  We call it Paleo/Low Carb.

I don’t know of anyone; anywhere doing wellness quite like we are here in Nevada. Paleo nutrition is very solid. The addition of an exercise and sleep piece makes it just perfect for Police and Fire. The results have been impressive in Insulin Resistant First Responders. With them in the lead, we believe that we can attack and reverse the Insulin Resistance, Type 2 Diabetes, and the Obesity epidemics that are plaguing our country. It’s time to get to work!

 Thanks.

 EJG