

What is Allostasis?

Doctors are taught in medical school to regard health as a list of normal lab values.

- the body is viewed as a self-regulating machine which steadies these values automatically, like a thermostat.
- when something causes a sustained deviation, that is *un*-health or *dis*-ease.
- restore the value with a drug, and that is health.

This view explains many *immediate* causes of mortality.

- for example, if blood pressure rises for long periods, it causes vessels to clog and rupture, as in heart attack or stroke, and the idea is to block this rise with a drug.

But it *doesn't* explain what causes the pressure to rise, nor why it doesn't self-correct.

- nor does it explain why, despite drugs to reduce pressure, hypertension persists as a major killer.
- nor, does it explain why hypertension is more prevalent among African Americans.

This body-centered view (homeostasis) always blames "bad genes".

- bad genes supposedly give blacks more hypertension.
- bad genes supposedly cause obesity and type 2 diabetes.
- bad genes supposedly cause alcoholism, drug addiction, and mental illness.

But this view omits the brain!

- brain monitors all internal values, such as pressure, temperature, sugar, salt and so on to predict what will be needed.
- brain also evaluates external context, such as availability of nutrients, water, shelter, and danger.
- brain then integrates needs plus context to select behaviors, physiology, and metabolism that provide "just enough, just in time".
- such predictive control, because it prevents errors, is highly efficient.
- once we grasp that the brain is in charge, we reach a new definition of health:
- health is not constancy (homeostasis). Rather it is **responsiveness—the capacity to adapt to constant change.**
- this is allostasis.

This view greatly affects our approach to care, to outcomes, and also to costs.

- for example, one drug may reduce blood pressure by reducing heart rate, but the brain compensates, raising pressure by other means.
- now it directs the kidney to retain more salt water.
- block that with a second drug; and now brain constricts blood vessels.
- block that with a 3rd drug and pressure falls, but now the system cannot respond to changes in demand.
- each drug causes various effects that often require treatment with more drugs.
- e.g, the blood pressure drugs decrease capacity for exercise and increase type 2 diabetes.

Result is an unhealthy population stabilized precariously by "poly-pharmacy".

- requires huge medical-pharmaceutical-insurance industry with overwhelming costs.
- worse for African Americans because brain must constantly anticipate trouble.
- **that** is why the brain tweaks up their pressure, typed 2 diabetes and so on.

-- so medical schools, in continuing to pretend that the body is self-regulating and continuing to ignore the brain's potent role in mediating societal stress, may be fairly charged with teaching a racist medicine.

Solutions?

(i) reduce stress by reducing economic and social inequality. Black lives must matter.

(ii) indeed, all lives must matter. Highest death rates from despair are in the "red zones" where people have nothing to do.

(iii) human brain evolved to be so smart that we populated the whole planet using stone tools.

(iv) but now multitudes are consigned to punch a ticket or scan a bar code.

-- such "jobs" cannot meet our life-long needs for challenging activities—physical, intellectual, artistic, and spiritual.

-- without that, we despair and self-medicate.

(v) if we could rebuild with less inequality and more challenging activities, health would improve rapidly and cost far less.