

REDUCING DIAGNOSTIC ERROR

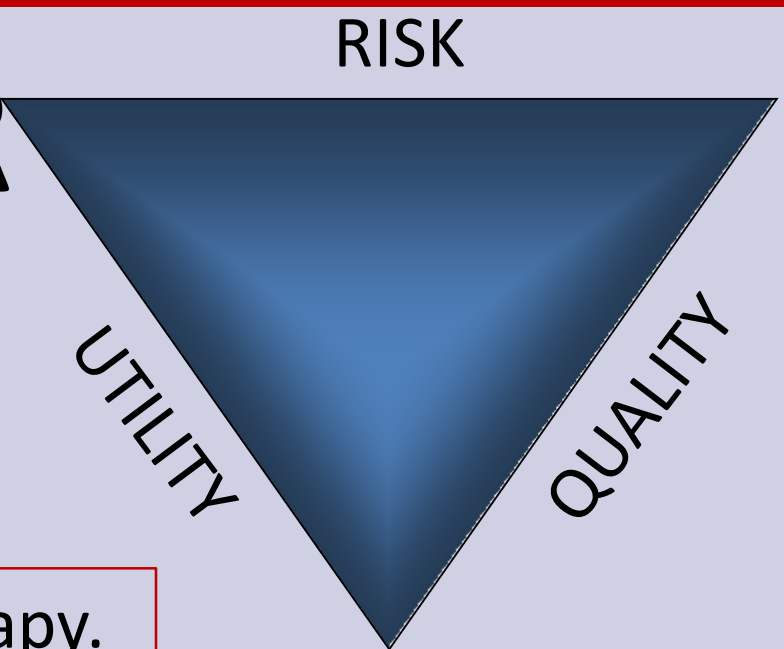


THE EARLY BIRD LOOSES THE DIAGNOSTIC WORM – SCREENING FOR EARLY DISEASE ↑ DIAGNOSTIC ERROR

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- Describe how advances in our capacity to screen for early disease has led to greater frequency and significance of diagnostic error.
- Explain how societal pressures have forced an increase in false positive diagnosis leading to inappropriate therapy.
- Discuss how the resulting harm this trend has caused our patients.



SITUATION

Advances in medical science have led to a dramatic increase in our capacity to screen for early disease. The hope is to increase diagnostic certainty thereby reducing morbidity and mortality. However, this new capability to detect earlier stages of disease has led to decreasing reliability of diagnostic criteria resulting in a downward spiral of litigation, legislation, and regulation forcing providers to systematically err on the side of making the diagnosis of disease that is not present.

This has led to our treating large numbers of patients without disease to avoid malpractice lawsuits, dodge social pressures, and escape hospital sanctions on false negative diagnoses. Considering the risks of therapy, this trend has paradoxically placed large numbers of patients in harm's way despite, and in fact, due to these efforts.

PROBLEM

How do we introduce new more powerful screening tools and continue to:

RISK	Maximize patient safety with correct and timely diagnoses, accurately communicated and acted upon
QUALITY	Minimize discomfort and the pain suffered due to wrong, delayed, or miscommunicated diagnoses
UTILITY	Minimize expenditure of scarce resources through improved cost effective diagnostic processes

SOLUTION

To significantly reduce diagnostic error that occurs due to screening we need to:

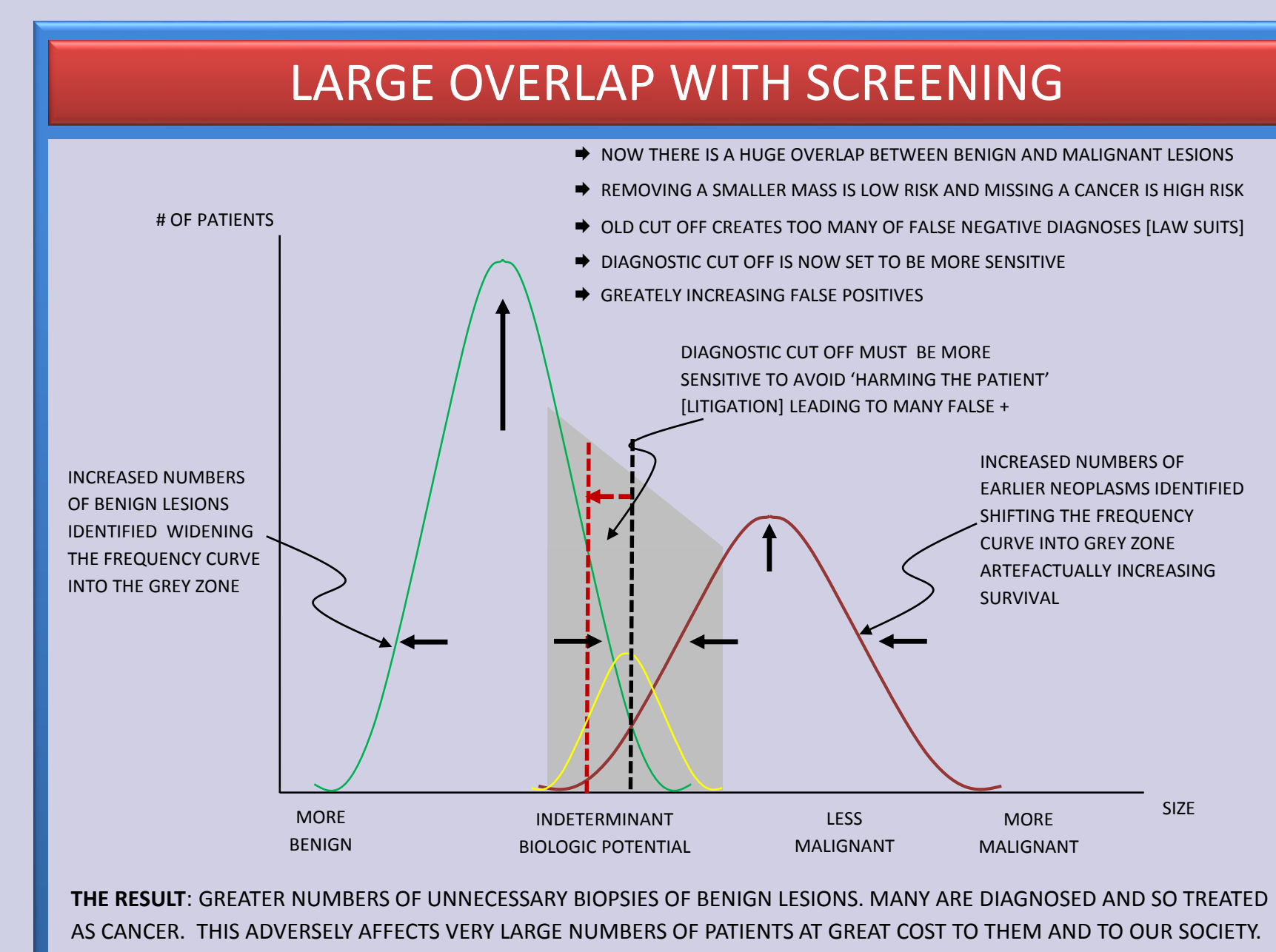
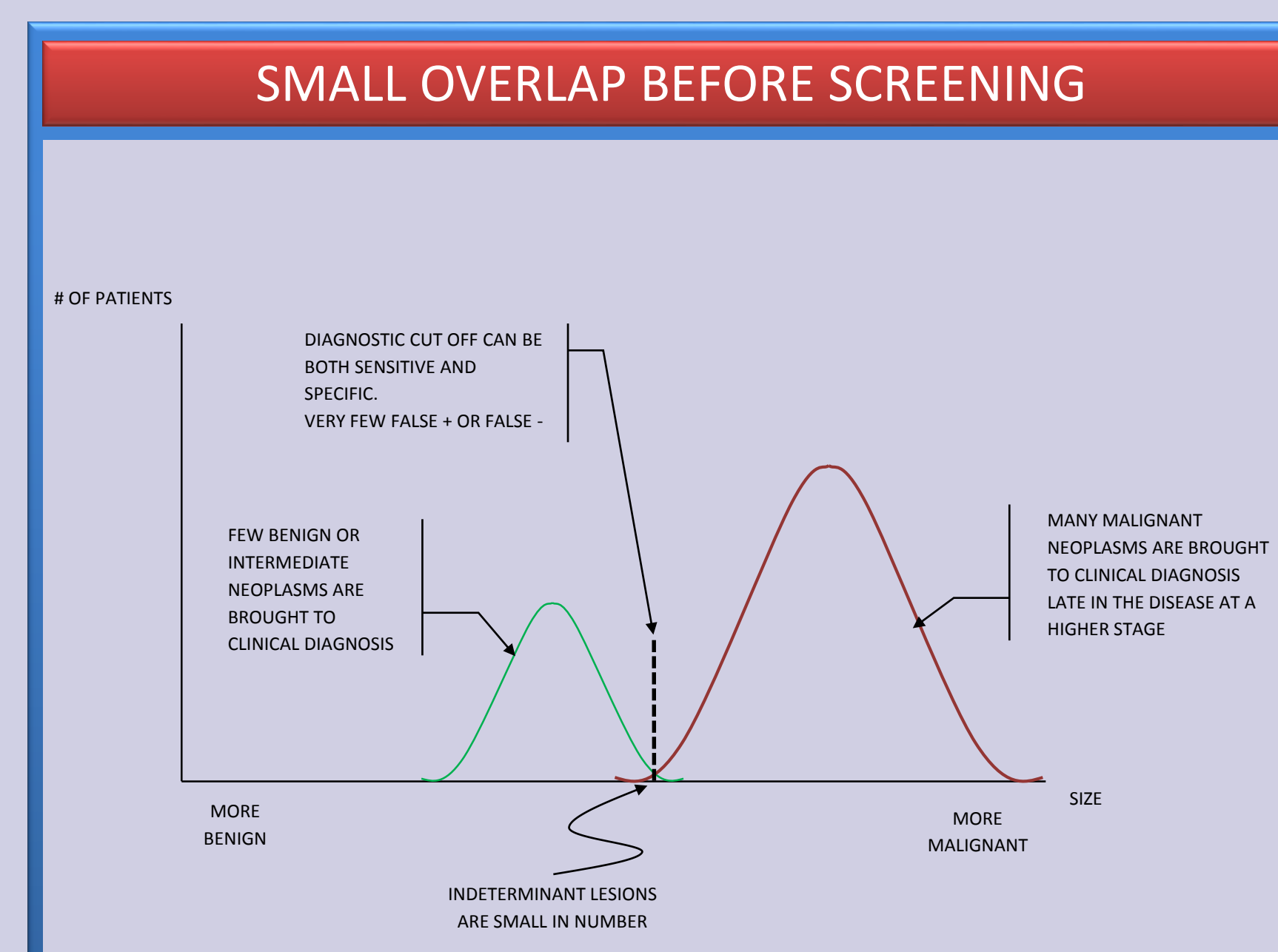
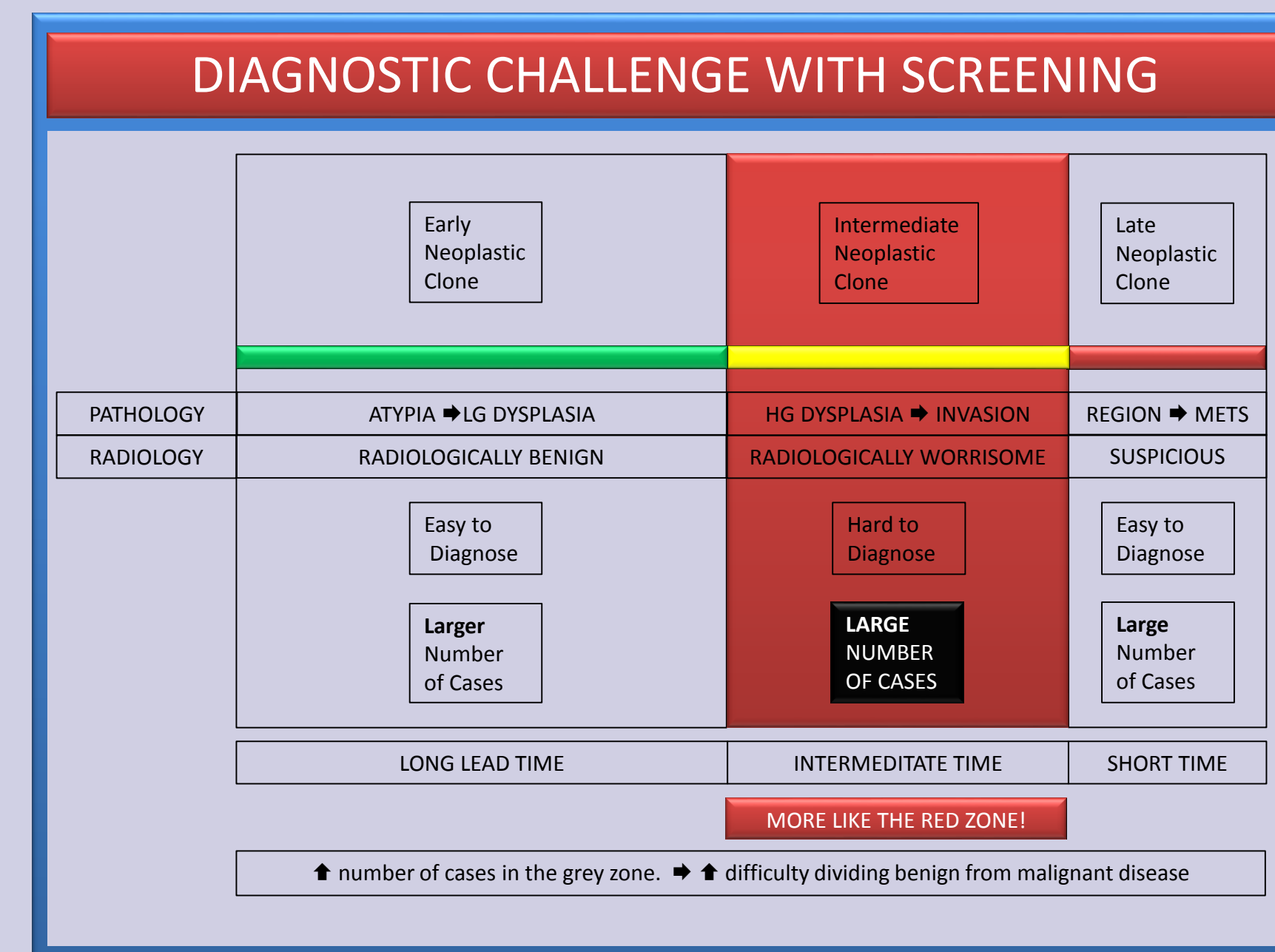
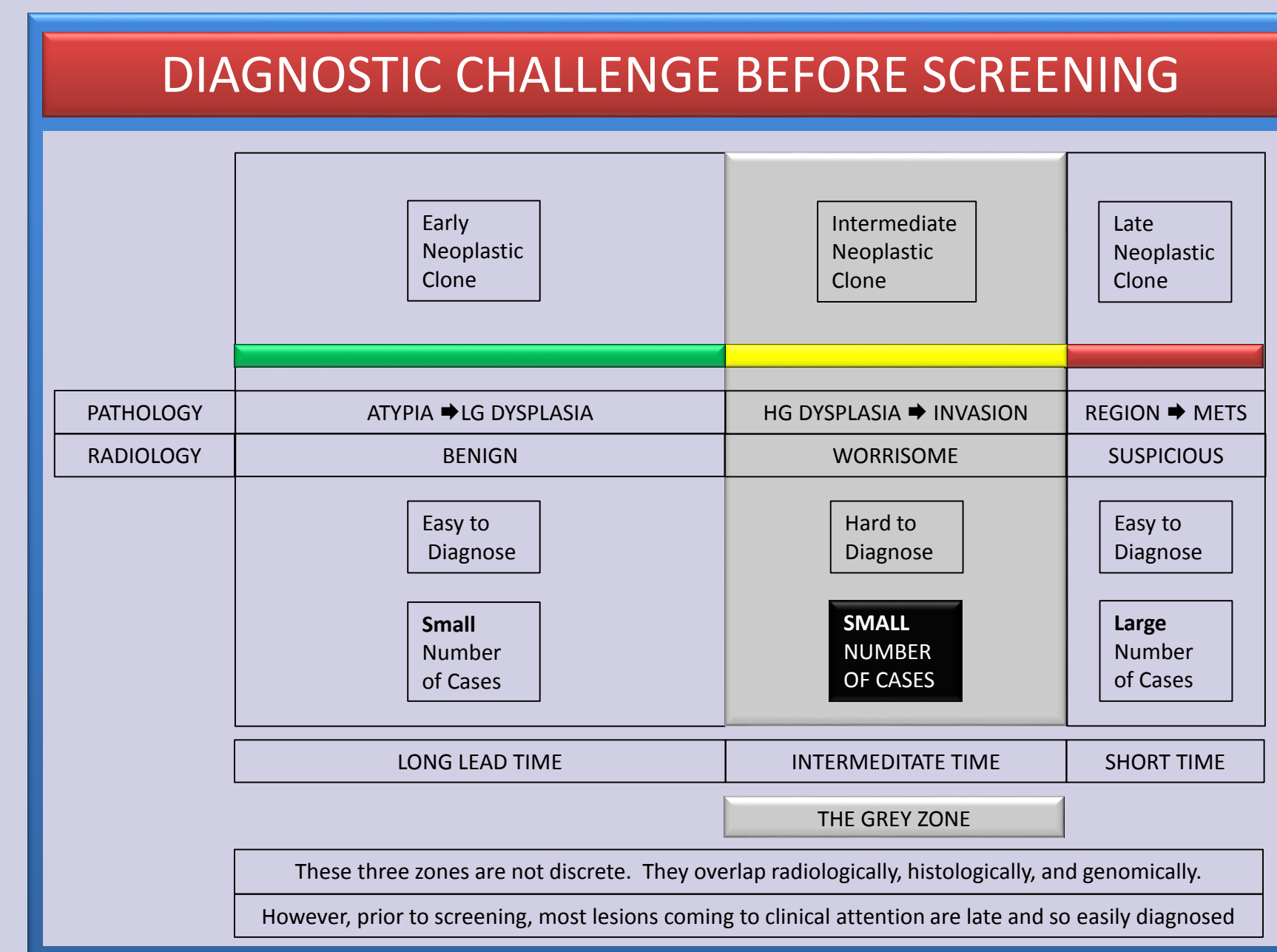
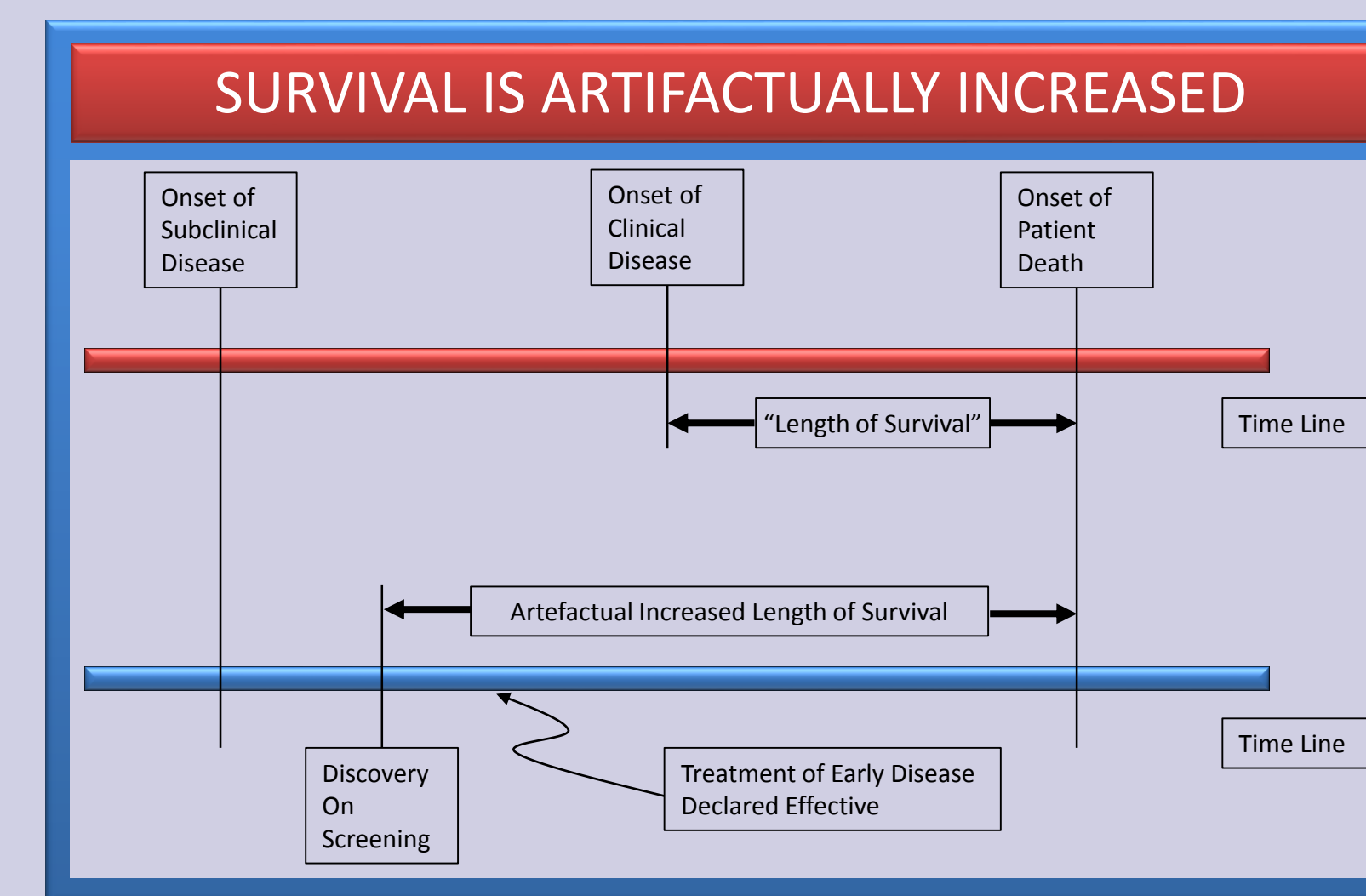
- Determine an accurate measure of disease prevalence
- Attempt to establish how disease is distributed in specific patient populations
- Establish an accurate representation of the natural history of the disease
- Establish more reliable diagnostic criteria for earlier lesions and disease processes
- Develop more reliable diagnostic methodologies to establish diagnostic criteria
- Develop genomic/ribonomic/proteomic screening/diagnostic modalities
- Push back against social/regulatory/legal/financial pressures that harm patients
- Educate our clinicians as to the present limitations of early screening
- Educate our patients regarding the limitations of medical science at this juncture

IMPLEMENTATION

The paradox of screening for subclinical disease is so deeply embedded in our healthcare system socially, professionally, and financially that the implementation of the proposed solution will not be simple. Steps that should be considered:

- Re-design of medical school curricula to emphasize the mathematical background to diagnostics: **STATISTICS, EPIDEMIOLOGY, AND LOGIC**
- Re-design of residency training curricula to emphasize the need to develop a view to balance benefits against risks in the screening process
- Rethink how basic science research is carried out and translated into clinical trials and so screening, diagnosis, and treatment modalities
- Institute vigorous and exacting validation of journal articles to prevent the implementation of poorly worked out "Science" in medicine

ILLUSTRATION OF THE EFFECT OF INCREASING SCREENING SENSITIVITY



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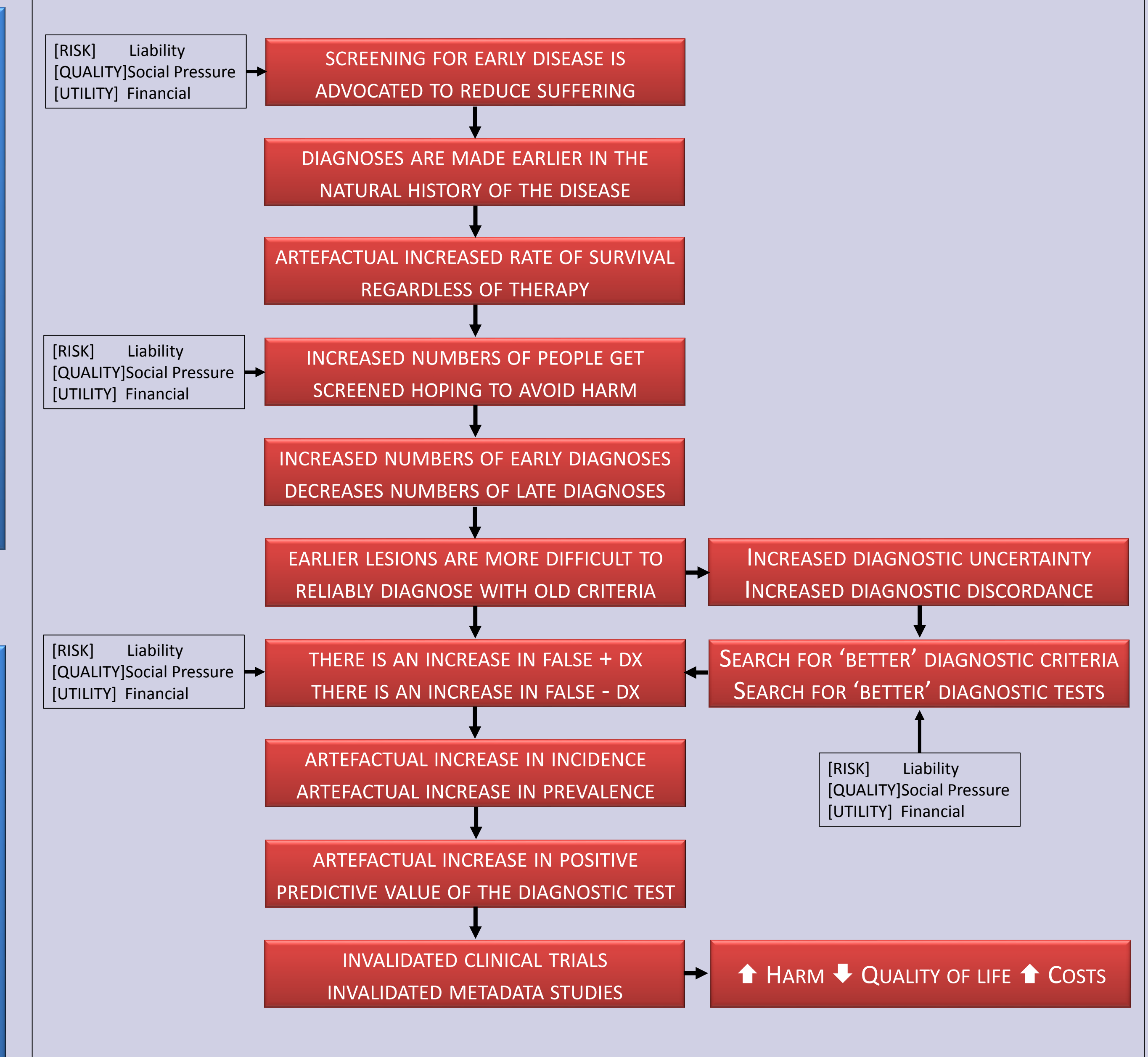
COST BENEFIT ANALYSIS

The benefits of handling high sensitivity screening is significant including but not limited to:

RISK	Decreased in false positive diagnoses leading to reduced harm Shift of diagnostic criteria to be more sensitive further increases this harm
QUALITY	Reduced false positive diagnoses reduces patient anxiety and suffering improving their quality of life
UTILITY	More effective use of better designed screening tests leads to reduced waste of scarce resources while improving the benefits accrued

The benefits of pushing this is incalculable!

CASCADING PARADOX OF SCREENING



CONCLUSION

- The paradox of increasing diagnostic error with early screening has introduced confounding influences that reverberate throughout the entire healthcare system from clinical research and therapeutic trials to government regulation.
- The adverse affect this has on patient safety, quality of care, and cost of health care is substantial.
- Therefore, a major sea change is necessary in scientific inquiry, medical education, and social behavior before we can begin to significantly:

REDUCE DIAGNOSTIC ERROR IN MEDICINE