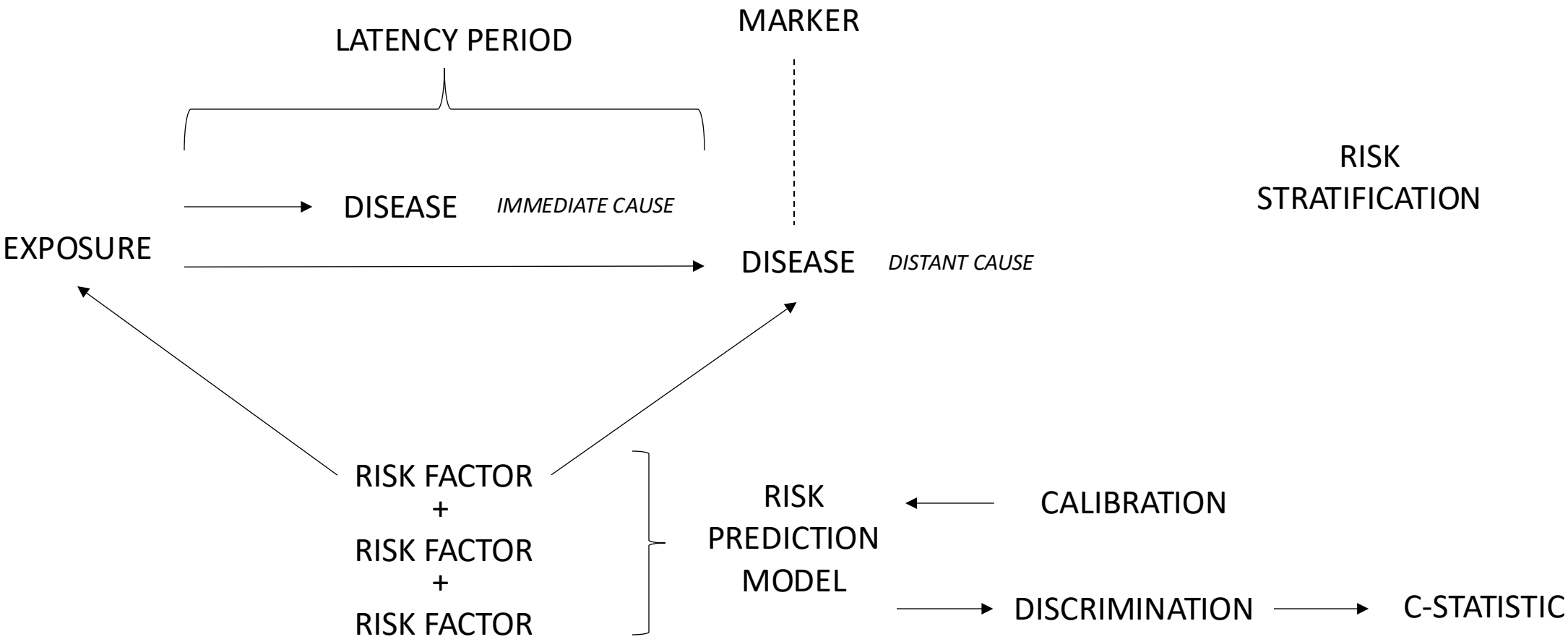
RISK: BASIC PRINCIPLES

CHAPTER 4 (5TH EDITION)

KEY WORDS


LATENCY PERIOD
MARKER
DISEASE
IMMEDIATE CAUSE
EXPOSURE
DISEASE
DISTANT CAUSE
RISK
STRATIFICATION
RISK FACTOR
+
RISK FACTOR
+
RISK FACTOR
RISK
PREDICTION
MODEL
CALIBRATION
DISCRIMINATION
C-STATISTIC

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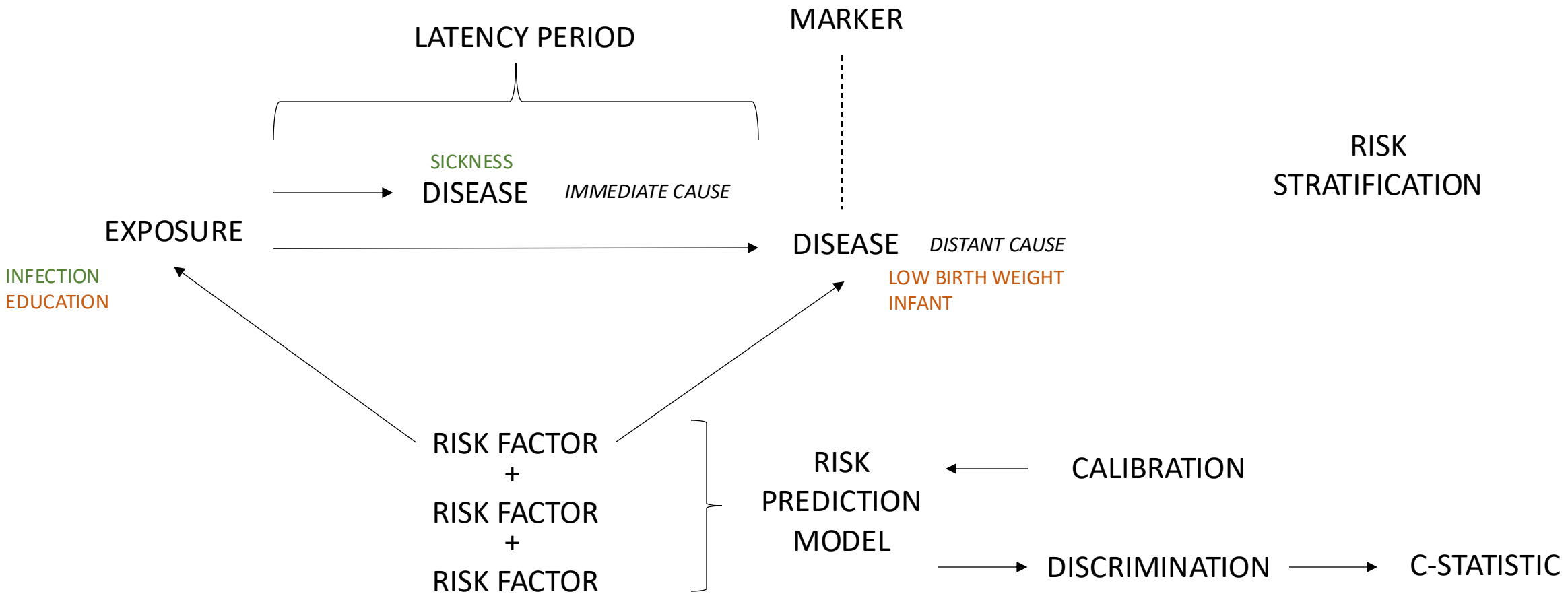
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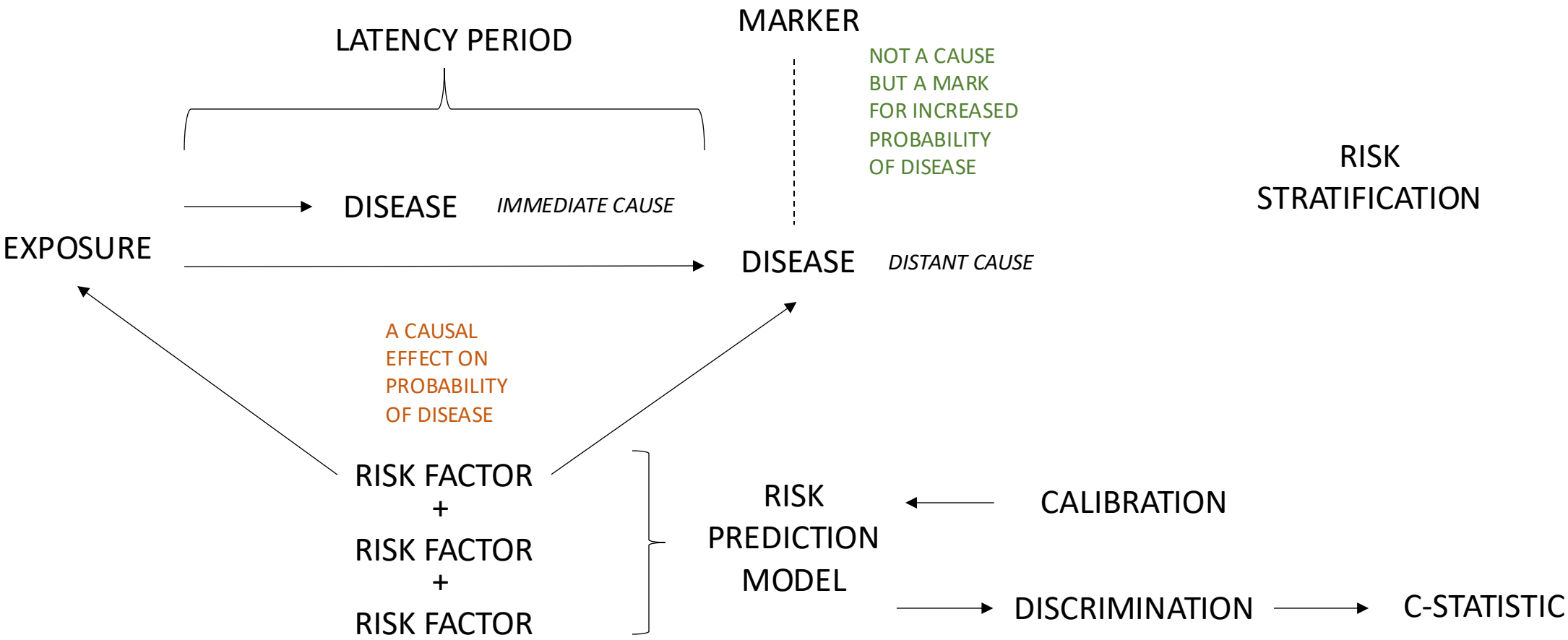
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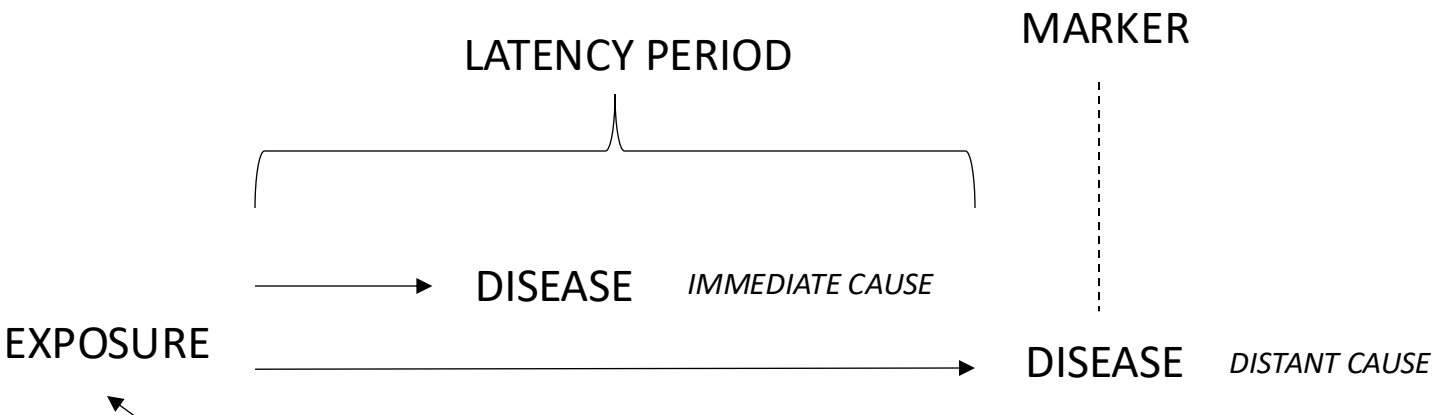

SUBGROUPS WITH DIFFERENT RISK LEVELS (LOW/MEDIUM/HIGH)

RISK STRATIFICATION

RISK FACTOR + RISK FACTOR + RISK FACTOR

STATISTICAL COMBINATION OF SEVERAL RISK FACTORS PRODUCES RISK PREDICTION MODEL

RISK PREDICTION MODEL

ESTIMATES HOW CORRECT THE PREDICTION TOOL PREDICTS THE PROPORTION OF THE GROUP WHO WILL DEVELOP THE DISEASE

CALIBRATION

DISCRIMINATION → C-STATISTIC

HOW THE RISK PREDICTION MODEL PREDICT PREDICTION SCORE IN A PAIR OF RANDOMLY SELECTED INDIVIDUALS

→ DOES IT PREDICT A HIGHER PREDICTION SCORE FOR THE INDIVIDUAL LATER DEVELOPING THE DISEASE?

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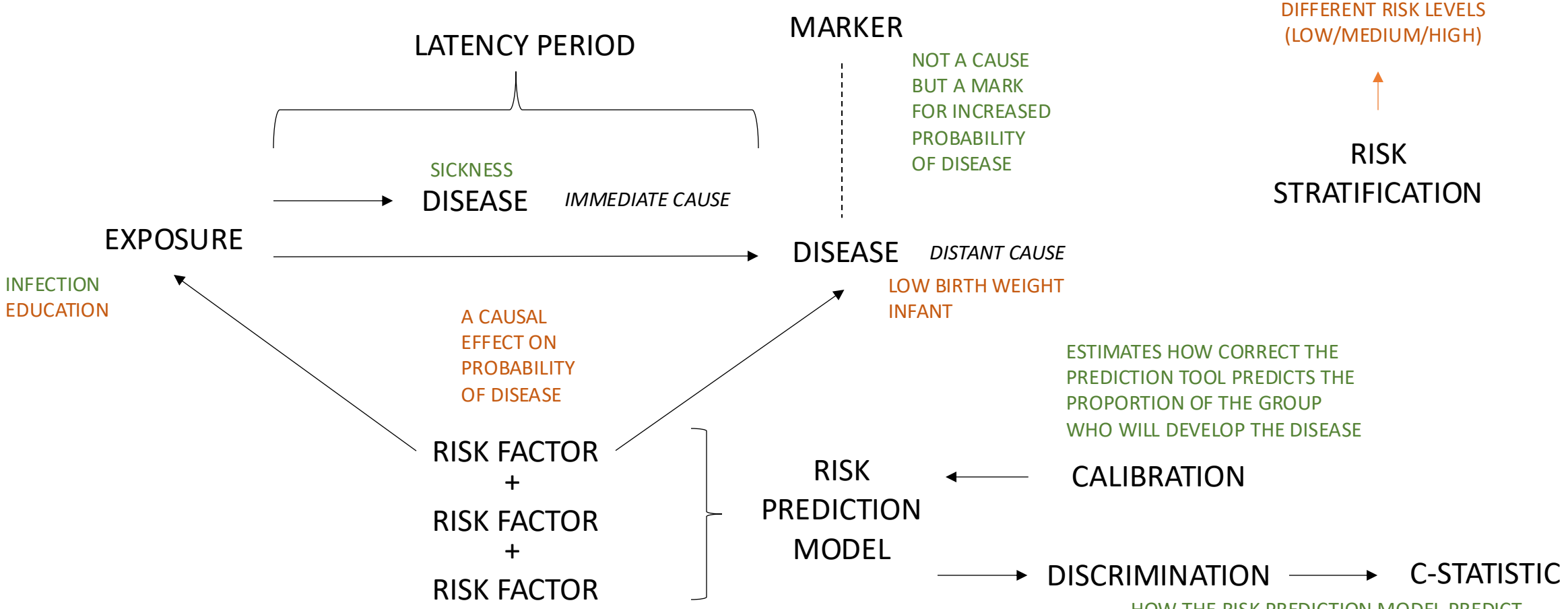
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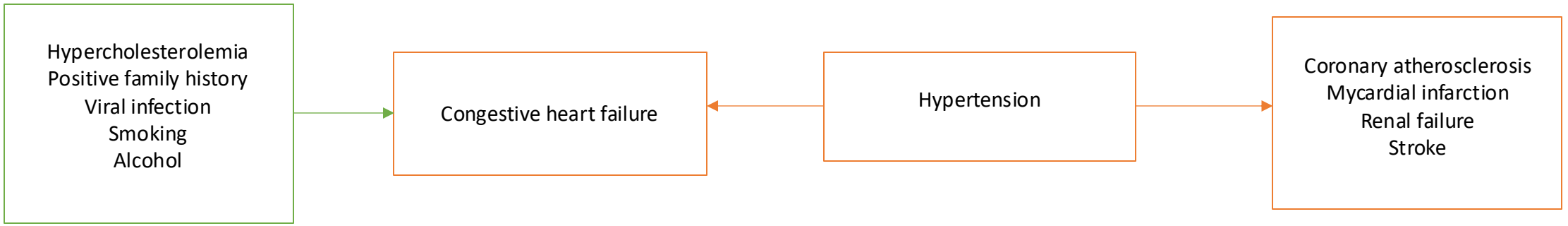
RISK

- Is identified through observation of exposed and unexposed persons
- Small risk requires a large number of observed people
- Common with multiple causes and multiple effects, usually not a close, one-to-one relationship between a risk factor and a disease



PREDICTING RISK

- Risk prediction model / tool
  Used to predict future risks for a group of people exposed to several risk factors

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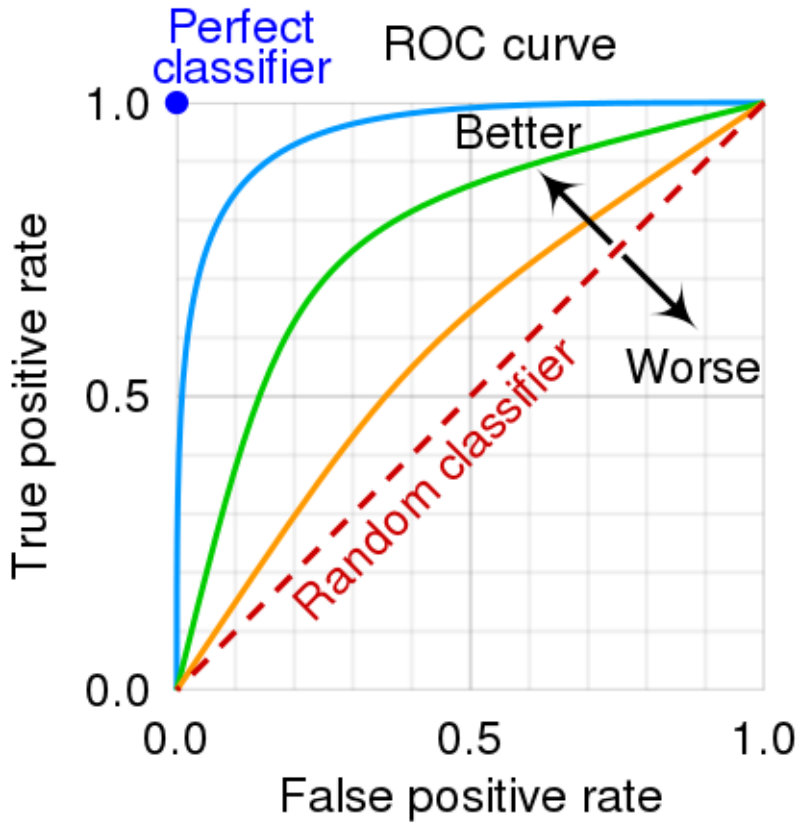


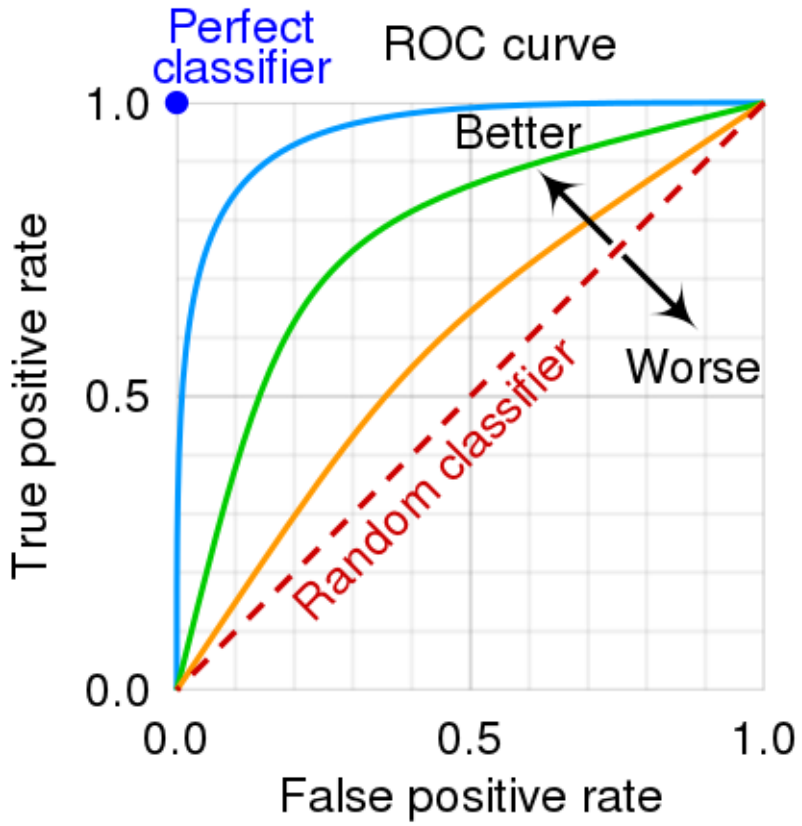
ROC CURVE --> A graphical plot illustrating the diagnostic ability

SENSITIVITY VS SPECIFICITY

- Sensitivity: the ability of a test to correctly identify patients with a disease.
- True positive: the person has the disease and the test is positive
- True negative: the person does not have the disease and the test is negative.

- Specificity: the ability of a test to correctly identify people without the disease
- False positive: the person does not have the disease and the test is positive
- False negative: the person has the disease and the test is negative

PREDICTING RISK



ROC CURVE --> A graphical plot illustrating the diagnostic ability

The true positive rate is plotted againsted the false positive rate

True positive rate is also known as probability of detection
The false positive rate is also known as probability of false alarm

PREDICTING RISK

- Risk prediction model / tool
  Used to predict future risks for a group of people exposed to several risk factors

- The risk prediction tool has more difficult to predict risk for an individual patient compared to groups
  - Cannot apply probabilities of future events in a group of people to a specific individual
  - Risk factors do not necessarily imply disease in every individual
  - Discrimination requires a strong risk factor
  - Risk factors are wide spread

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→ Risk prediction is important as it combines individual risk factors to a graded risk

→ Enables stratifications of riskgroups

→ Poorly application on individual cases, most people destined to develop a disease are not high risks