

# Predicting ICU Death

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**Why?**

# Why?

- Communicating risk to patient/family
- Adjusting risk for research purposes
- Comparing quality of care across sites

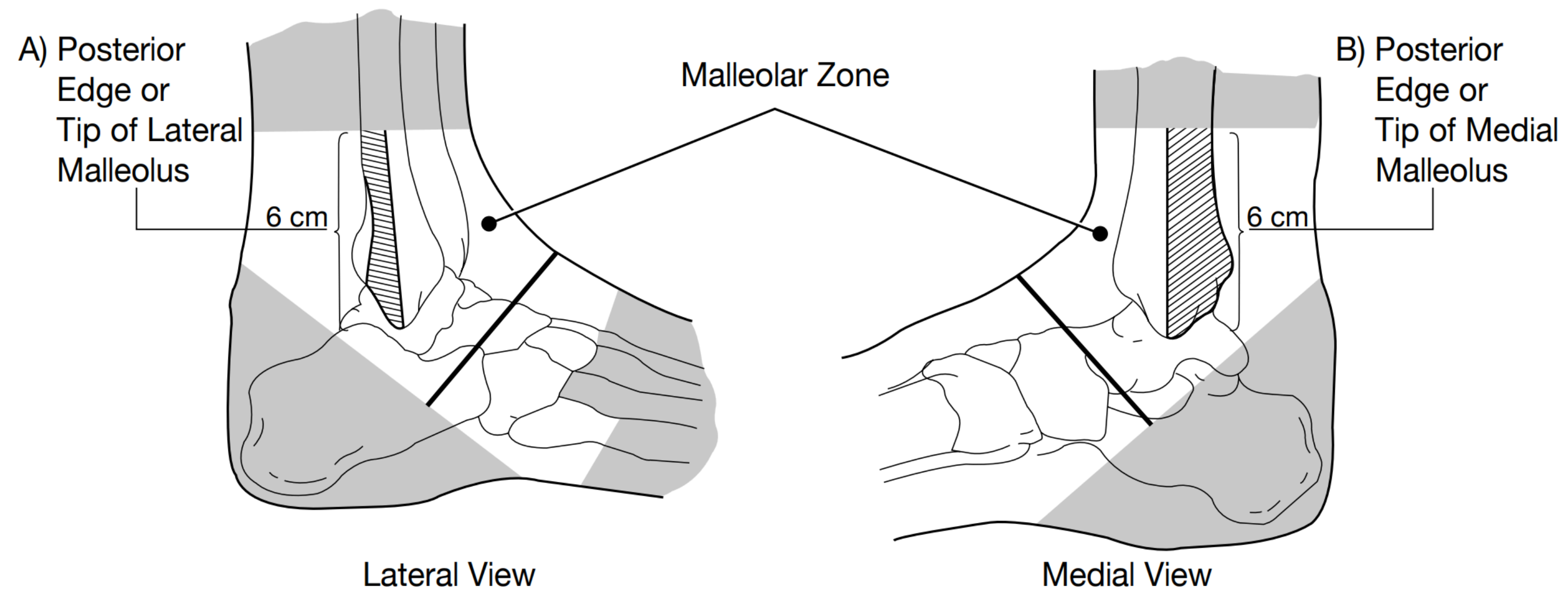
**How is it normally done?**

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# **How is it normally done?**

## **Clinical Prediction Rules**

**Figure 1.** Ottawa Ankle Rules

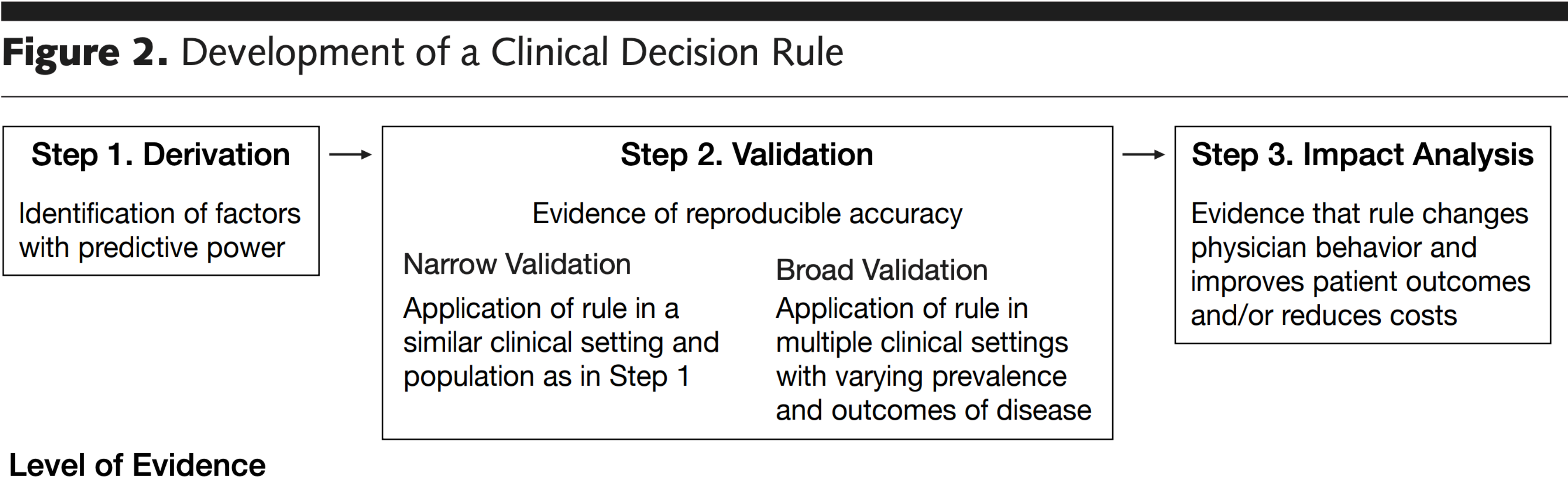


An ankle x-ray series is required only if there is any pain in the malleolar zone and any of these findings:

1. Bone tenderness at A  
or
2. Bone tenderness at B  
or
3. Inability to bear weight both immediately and in emergency department

# Severity Scores

(a type of clinical prediction rule)





# Critical Care Severity Scores

- Designed to predict mortality and length of stay (some)
- APACHE
- SAPS
- MPM0
- SOFA

# **APACHE**

**A**cute **P**hysiologic and **C**hronic **H**ealth **E**valuation

- Developed in the USA
  - Four versions, from I to IV
  - Worst variables in first 24 hours
  - Can estimate both mortality and LOS
  - 129 variables
- 
- Disadvantages: data entry burden, only US patients

# SAPS

## Simplified Acute Physiologic Score

- Developed in USA and Europe
- Several versions, SAPS 1 to SAPS 3
- Worst values in 24 hours of admission
- 20 variables
- eSAPS 3 using EMR data
- Does not calculate LOS

# **MPM0**

## **Mortality Predictor Model**

- Also several versions MPM0-I to MPM0-III
- Derived from multiple locations but majority in the USA
- Has been externally validated in other populations
- Lowest burden since it does not use laboratory data, only clinical variables
- Can be measured seriall

# **SOFA**

## **Sequential (sepsis-related) Organ Failure Assessment**

- Originally created to measure and follow organ failure in sepsis patients
- Measured at 24 hours and then every 48 hours
- Together with the presence of suspected/confirmed infection it is used to diagnose sepsis (Sepsis-3 criteria)

**Today we will try to build our  
own predictions**