

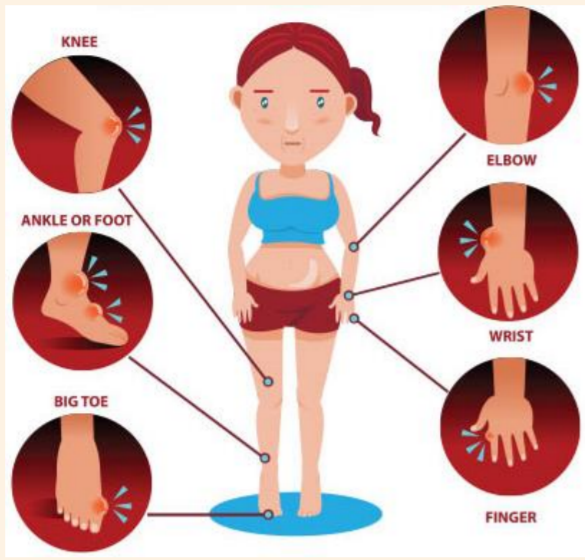
Allopurinol use for gout treatment: a double-edged sword! No more!

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WHAT IS GOUT?

- ✓ A type of arthritis caused by buildup of uric acid in blood.
- ✓ Leads to uric acid crystal deposits in joints.
- ✓ Affects billions of people worldwide!

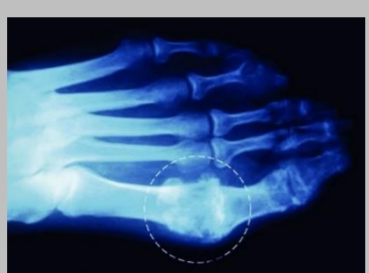
Symptoms



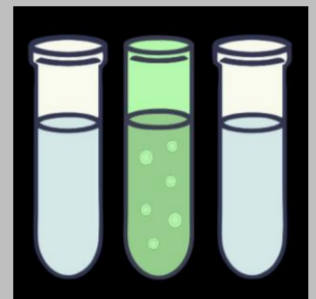
Diagnosis



Consultation



X-Ray

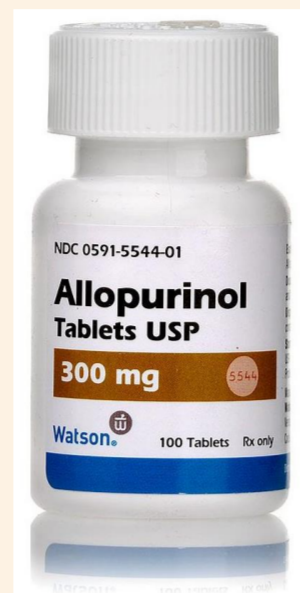


Synovial fluid analysis

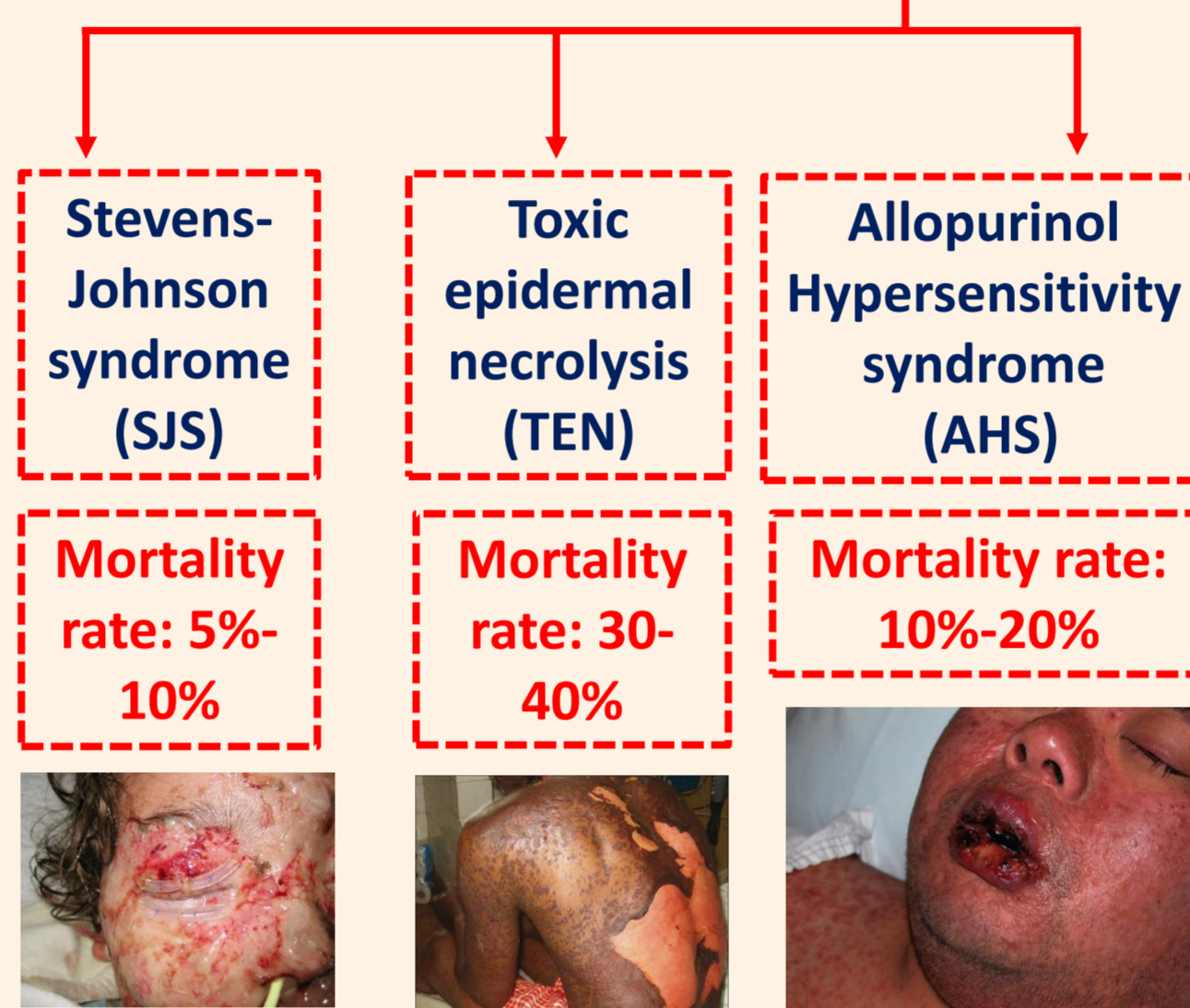
Best Treatment



PROBLEM STATEMENT



Adverse Drug Reactions (ADRs)



THE ANSWER LIES IN OUR GENES!!!

- ✓ Scientists have found out the cause of all these ADRs!
- ✓ Linked to the Human Leucocyte Antigen (HLA) genes. Specifically HLA-B genes.
- ✓ One HLA-B gene will react with one drug to cause ADRs.
- ✓ Gene presence is linked to ethnicity.

Allopurinol reacts with HLA-B*58:01 to cause ADRs!!!

How to stop this?

Screen for HLA-B*58:01 presence!

HLA-B*58:01 present

- Do not prescribe allopurinol.
- Give alternative Drug

HLA-B*58:01 absent

- Safe to prescribe allopurinol
- Efficiency increases

Let's take this one step at a time!

What's wrong?

Eureka section!!!

Innovation time!

It works!!!

Yes, we want this!

WE PROPOSE A NEW METHOD FOR SCREENING

The High Resolution Melt (HRM) method



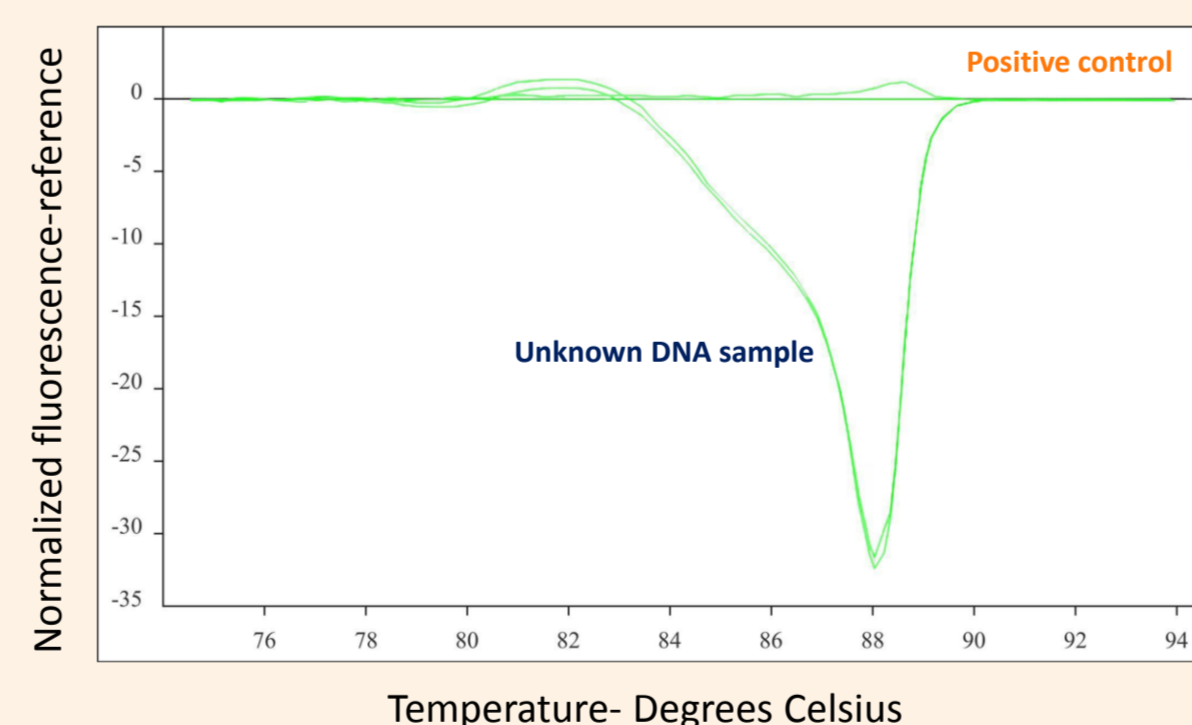
- ✓ A type of real time PCR method
- ✓ Amplifies DNA
- ✓ Generates Melt curves unique to one DNA sample
- ✓ Compares melt curves to a positive control

Why use it?

Criteria	Current screening methods	The HRM method
Result generation	In 2-3 days	In 1.5hrs
Cost/sample	~RM100-1000	~ RM5
Efficiency	High	High
Interpretation of results	Only by experts	Can be done by anyone

RESULTS & VALIDATION

Results Interpretation

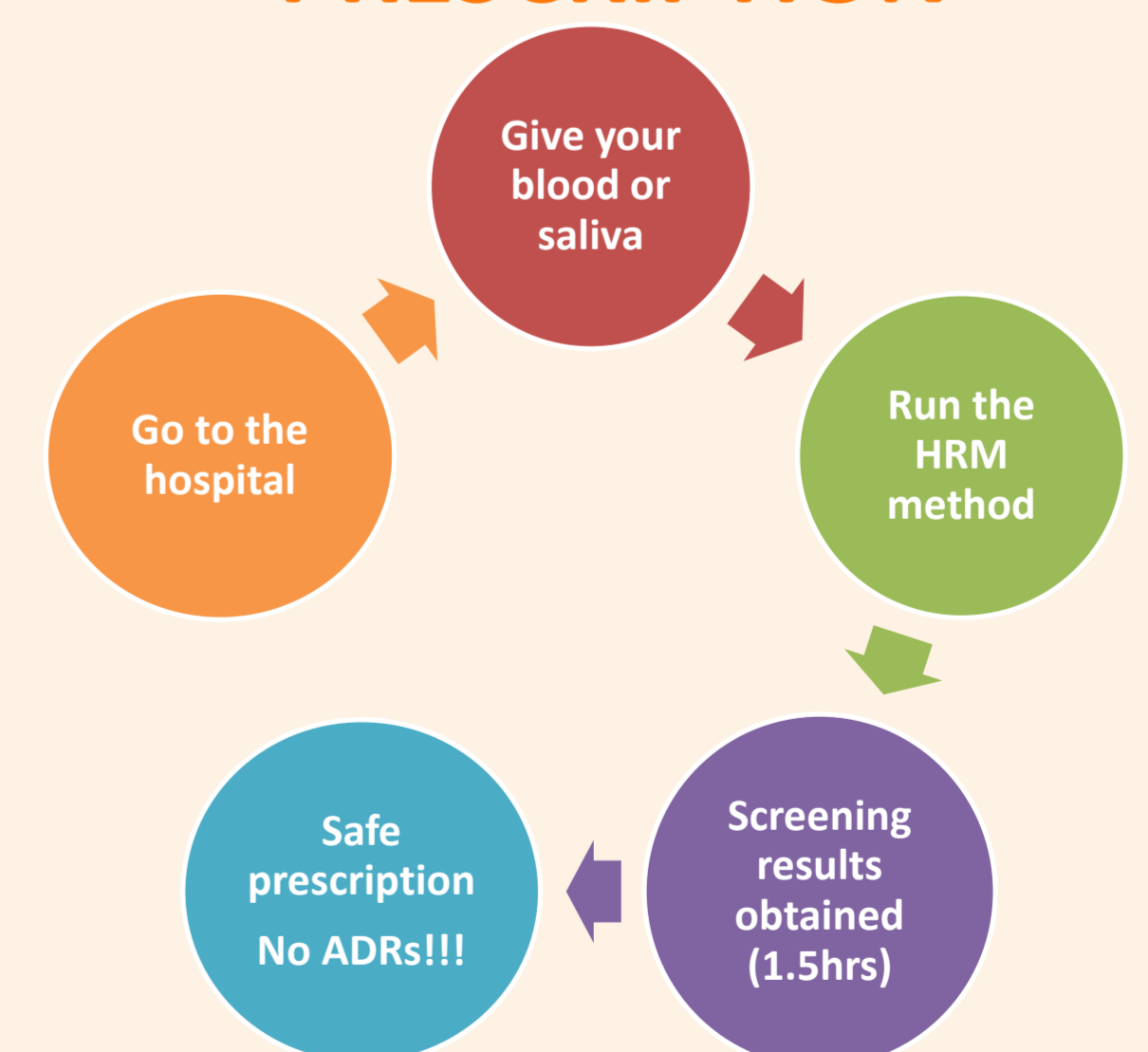


Difference Melt curve showing the melt curves for the positive control (horizontal line) and the unknown sample.

Method Validation

- ✓ HRM method done on 205 DNA samples up to date.
- ✓ Samples of gout patients collected from 2 different hospitals.
- ✓ Validated against the best screening method available currently, Next Generation Sequencing (NGS).
- ✓ High efficiency and accuracy reported.
- ✓ Shows great potential as a screening method for hospitals

THE FUTURE OF DRUG PRESCRIPTION



Coming up soon

- Development of a screening kit in collaboration with biomedical engineers.
- This HRM method will be incorporated in a smaller, mobile screening kit.
- Easy implementation in all hospitals.
- Can be used for numerous HLA-B genes screening.