"Smart" requesting in the Emergency Department and Acute Medicine
Right Patient, Right Test, Right Time

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Introduction

"Why would an energy company want you to use less energy?"

(EDF Billboard Advertisement, 2010)

Pathology services can be thought of as commodities and as such they have the potential to generate income or be viewed as targets for cost reduction. One of the key priorities in moving pathology from a commodity to an integral part of service provision should be the development of safe and efficient services that improve the quality of patient care.

One of the central mechanisms for delivering efficiency and service improvement will be reducing inappropriate usage of services. This can be achieved by the integration of order communications, decision support and electronic reporting of results to users to produce a seamless end-to-end laboratory medicine service.

The diagnostic process starts by looking at clinical signs and taking a patient history. This leads to one or more possible diagnoses. The diagnosis is then checked by requesting specific tests. By providing the requestor a simplified approach to test requesting based on their diagnosis, an electronic requesting system coupled with decision support has the potential to improve the quality of service provided to patients.

Aims

Overall

- To introduce a system of test requesting that utilises the best available technology to provide efficient requesting in the Emergency department.
- This system should not be proscriptive but still allow the requestor to use their clinical judgement in test selection

Service Users

- To enable medical staff to request profiles on the basis of clinical presentation rather than selecting individual tests
- To allow medical staff security in the testing process in that they have requested the right tests

Laboratory

- To allow laboratory staff to process samples from acute medicine quickly and efficiently

Organisation

- To reduce waste (Inappropriate tests)
- To improve turnaround times of tests
- To improve patient flows in acute areas and allow the trust to meet its 4 hour targets

Patient Care

- Reduced harm from inappropriate testing
- Improve diagnosis and investigation
- Improve waiting times

Proposed Solution

- Utilisation of electronic requesting to provide an end to end solution for requesting and reporting of results in the Emergency department.
- Development of an "expert" system linked to a web based knowledge base to help guide test selection.
- Consultation of a wide group of stakeholders to ensure full participation and success of the proposed service changes.
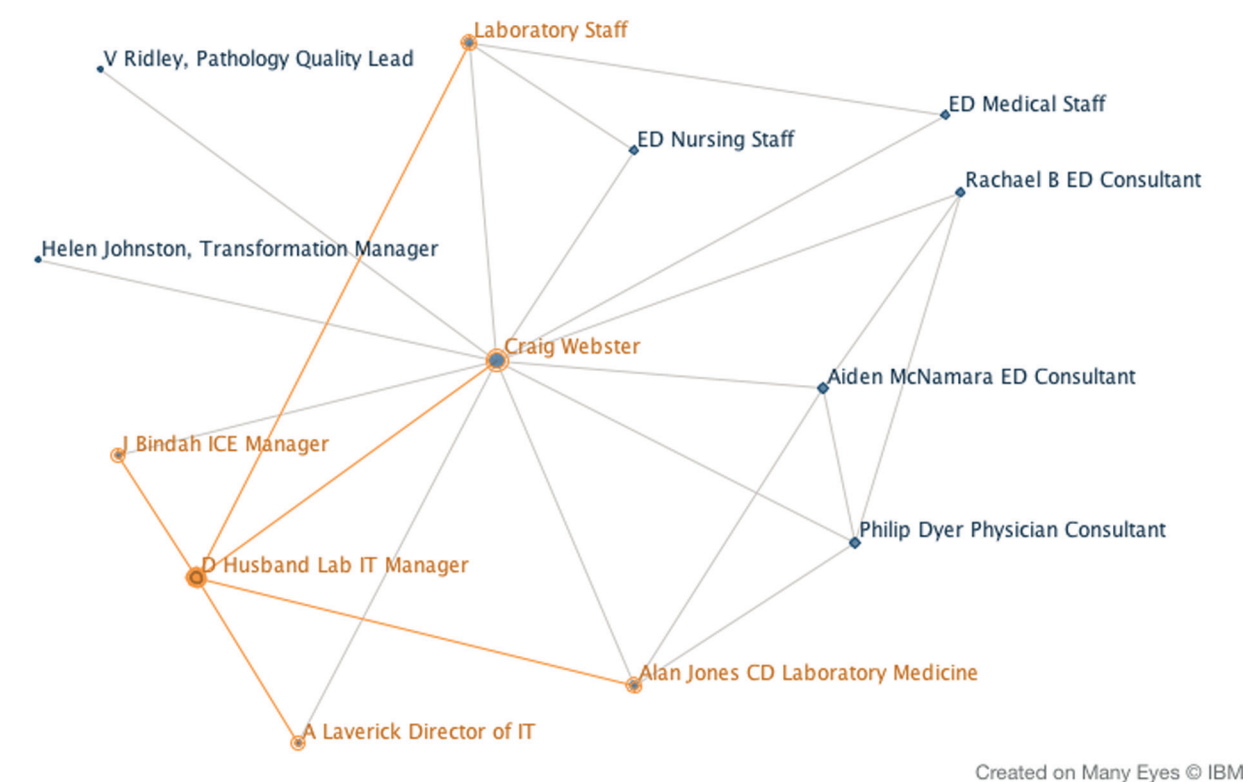

Figure 1: Network of stakeholders consultated

Whats Happening Now?

A wide ranging groups of staff have been involved in the development of this system.

The Emergency Department physicians have been fully involved in the development of the requesting profiles (figure 1) that underpin this type of requesting.

The Hospital IT department have provided the infrastructure and staff and time for the implementation of electronic test requesting.

The laboratory IT department have developed the electronic requesting profiles and have provided time and resources for the training of the medical staff in the emergency department.

The laboratory staff have ensured that the logistical requirements for the project are in place and have provided support and training for the medical staff in the emergency department.

The project will "go-live" on Monday the 19th of July. A review of the system will take place in 3 months

Figure 1: Examples of Test Profiles Built into Electronic Requesting
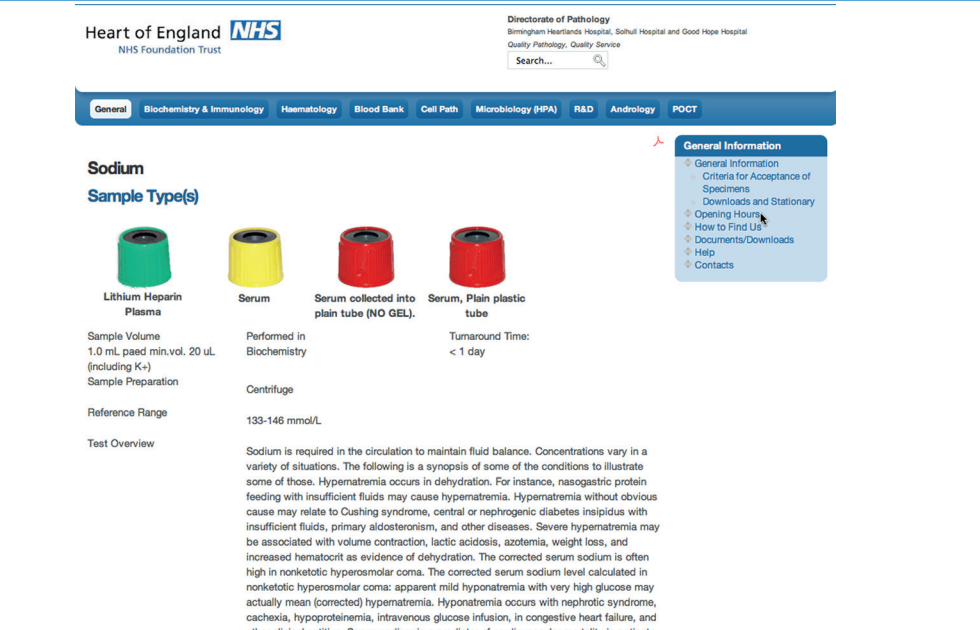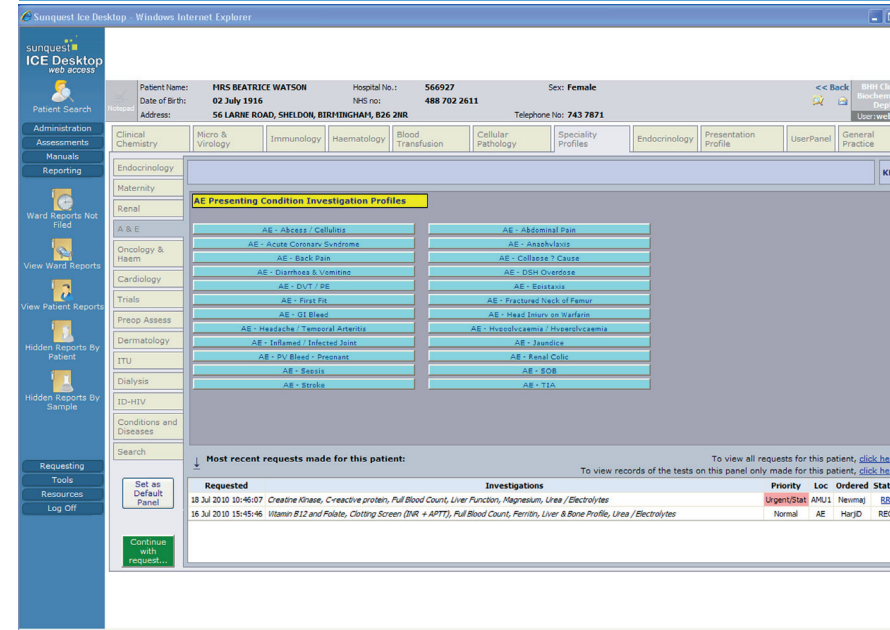

Elements of Proposed System

Figure 2: Smart Electronic Requesting and Knowledge Base

Sunquest ICE electronic requesting and reporting is utilised to provided an end-to-end IT solution for requesting and reporting of results to the Emergency Department. All tests on the system are linked to the laboratory tests database which access as a knowledge base for the investigations required

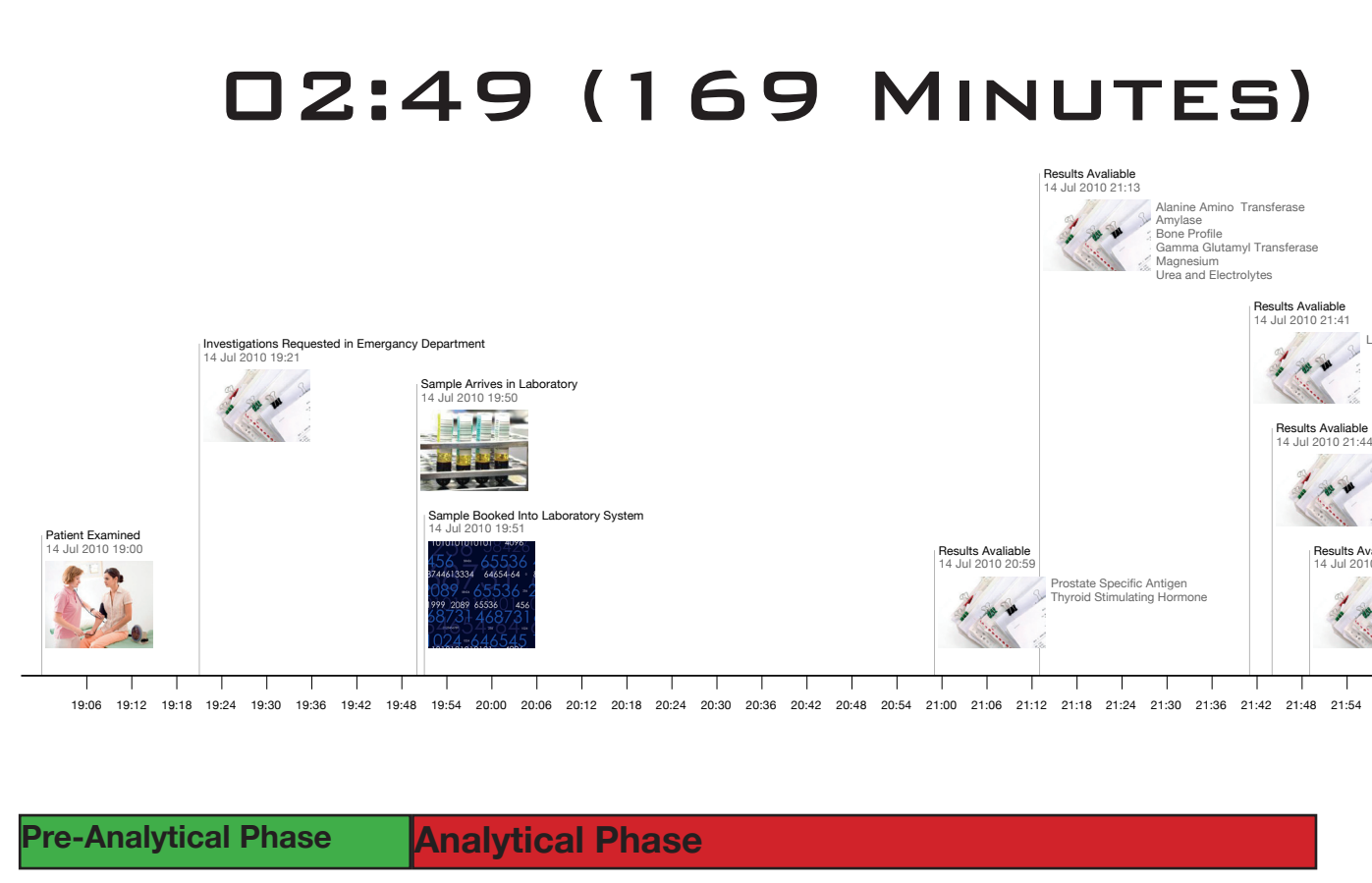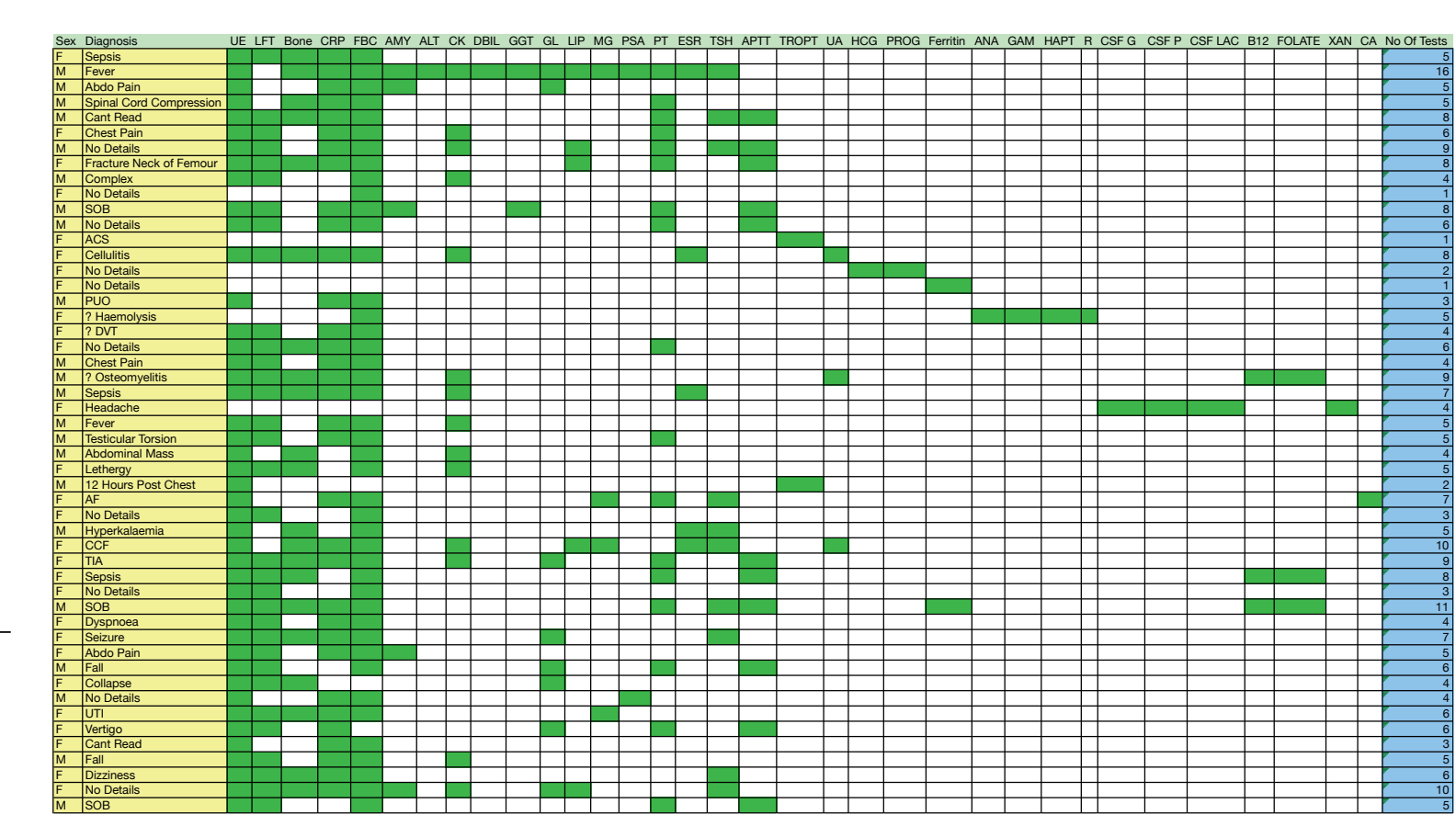**Figure 3: Effect of inappropriate testing on turnaround times**

The effect of inappropriate tests on turnaround times can be substantial. In this example turnaround times can be reduced by 31% by targeting the tests requested to the presenting complaint

Figure 4: Modelled Effect on Requesting

A random sample of requests from the Emergency department were analysed and the change in the request pattern was modelled using the proposed requesting profiles based on presenting complaint or diagnosis. The changes are illustrated below, where a red box indicates a test that would no longer be requested
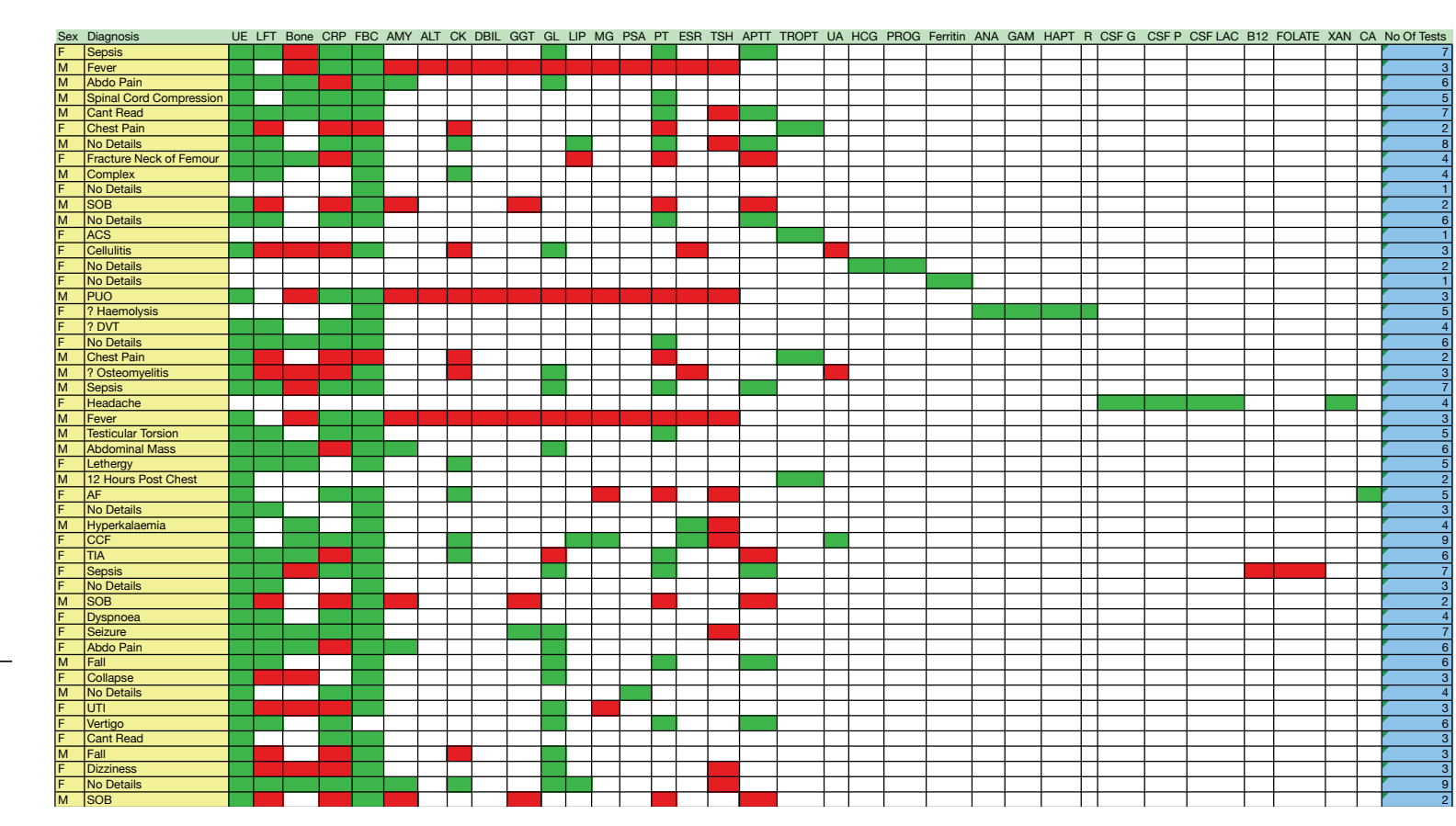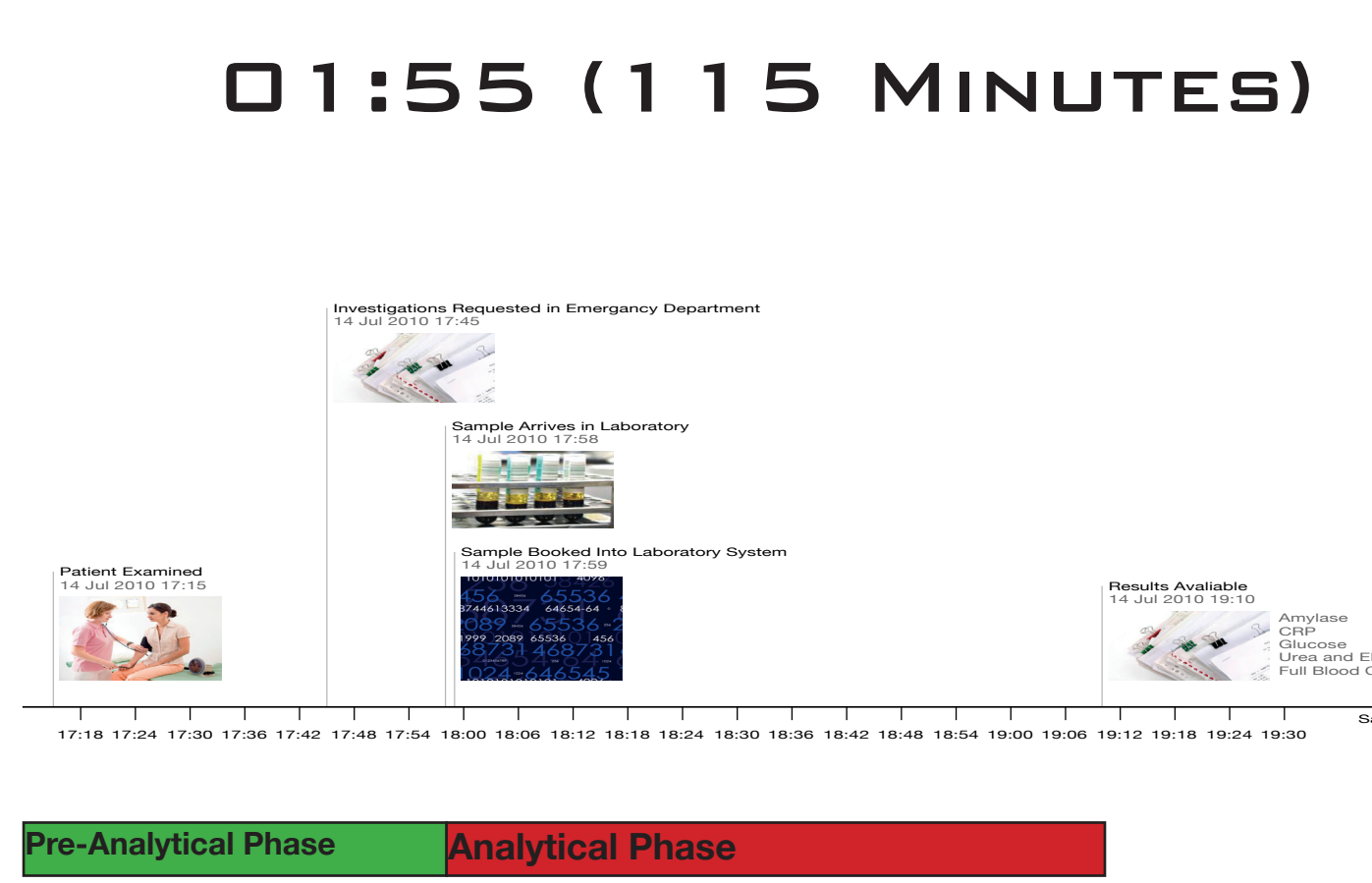
Effect of "Smart" Requesting

- Total Reduction in Turnaround Time = 31%
- Total Reduction in number of tests requested = 24%
- Total Reduction in Laboratory Costs = %36

Electronic requesting coupled with decision support has the potential to make a substantial improvement on both service quality and service cost whilst also improving the service provided to patients. The reduction of waste and a reduction in the potential harm to patients from inappropriate testing are the key benefits of introduction of this development.