Make health data more engaging
1856
The Areas of the blue, red, & black wedges are each measured from
the centre as the common vertex.
The blue wedges measured from the centre of the circle represent area
for area, the deaths from Preventible or Mitigable Zymotic diseases, the
red wedges measured from the centre the deaths from wounds, & the
black wedges measured from the centre the deaths from all other causes.
The black line across the red triangle in Nov. 1854 marks the boundary
of the deaths from all other causes during the month.
In October 1854, & April 1855, the black area coincides with the red;
in January & February 1856, the blue coincides with the black.
The entire areas may be compared by following the blue, the red & the
black lines enclosing them.
The start of the information Age
Process and systems
Details
Information
Data
Logic
Numbers
The end of the Information Age
A WHOLE NEW MIND

Why Right-Brainers Will Rule the Future

Daniel H. Pink
The beginning of the Conceptual Age
Process and systems
Details
Information
Data
Logic
Numbers

Holistic
Simplicity
Empathy
Story
Creative
Design
We’re wired for visualisation
1250 MB/s

same bandwidth as a computer network

125 MB/s

USB key

12.5 MB/s

Hard disk
CLINICAL TRIALS EXPLAINED

What is a Clinical Trial?

- Clinical trials are research studies of medicines in humans.
- They assess whether a potential new medicine is safe for patients and effective in treating the target disease.
- A clinical trial study can be funded by academics, government or industry and are conducted by investigators.
- The clinical trial participant eligibility criteria are specifically defined on a trial by trial basis. A research plan called a clinical trials protocol is designed to answer specific research questions and safeguard the health of the participants.

START >>

Getting started

Scientists begin by analysing the disease and investigating a possible treatment. Preclinical trials then establish initial safety and effectiveness before testing on humans. These tests are often done in the laboratory, using ‘in vitro’ (test tube) research.

13 YEARS

CLINICAL TRIALS - A CRUCIAL LINK IN THE RESEARCH AND DEVELOPMENT (R&D) CHAIN

13 YEARS

2 YEARS

6 MONTHS - 2 YEARS

ONGOING

CLINICAL TRIALS

CHECK FOR SAFETY

Phase I: investigate the molecule’s safety and research how it works and behaves in the human body
Population: 20 - 80 healthy volunteers
Timeline: between weeks and months

CHECK FOR EFFICACY, CONTINUE SAFETY EVALUATION

Phase II: investigate efficacy, investigate side effects and risks
Population: several hundred people who have the disease
Timeline: between several months & several years

CONFIRM RESULTS

Phase III: seeks to establish the benefit-risk, the right patients and the best way to manage the risks.
Population: several thousand people who have the disease
Timeline: between several months & several years

REGULATORY APPROVAL

Regulators such as the European Medicines Agency (EMA) review safety, efficacy and quality and authorise a medicine for use.

PRICING AND REIMBURSEMENT PROCESSES

Decide on price and reimbursement of the product, including health technology assessment (HTA) of added value compared with current treatments.

Phase IV (post market launch)

Continued safety surveillance through post market studies, identifying potential new uses for the medicine.

***Timings used are averages and for illustrative purposes only***
Data journalists
Information is Beautiful

David McCandless
### Massive Outgoings
Cost for average British taxpayer per day

<table>
<thead>
<tr>
<th>Governments</th>
<th>ESSENTIALS</th>
<th>TRAVEL</th>
<th>BANKING CHARGES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NHS</td>
<td>Defence</td>
<td>LRT</td>
</tr>
<tr>
<td></td>
<td>£9.05</td>
<td>£3.99</td>
<td>Recapitalisations</td>
</tr>
<tr>
<td></td>
<td>Schools</td>
<td>Roads</td>
<td>The Royal Bank of Scotland</td>
</tr>
<tr>
<td></td>
<td>£2.56</td>
<td>£3.10</td>
<td>Lloyds TSB</td>
</tr>
<tr>
<td></td>
<td>Defence</td>
<td></td>
<td>Bradford &amp; Bingley</td>
</tr>
<tr>
<td></td>
<td>£0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>£2.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>£3.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>£1.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>£5.92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECURITY</th>
<th>GOING OUT</th>
<th>HELPING OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police</td>
<td>Arts</td>
<td>Child support</td>
</tr>
<tr>
<td>£0.53</td>
<td>£0.32</td>
<td>£1.86</td>
</tr>
<tr>
<td>Prisons</td>
<td>Museums</td>
<td>Job Seekers</td>
</tr>
<tr>
<td>£0.19</td>
<td>£0.03</td>
<td>£0.25</td>
</tr>
<tr>
<td>Afghanistan</td>
<td></td>
<td>Housing benefit</td>
</tr>
<tr>
<td>£0.32</td>
<td></td>
<td>£1.52</td>
</tr>
<tr>
<td>Arts</td>
<td></td>
<td>Disability benefit</td>
</tr>
<tr>
<td>£0.04</td>
<td></td>
<td>£1.44</td>
</tr>
<tr>
<td>Museums</td>
<td></td>
<td>Pensions</td>
</tr>
<tr>
<td>£0.03</td>
<td></td>
<td>£5.55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overseas aid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>£0.43</td>
</tr>
</tbody>
</table>
The True Size of Africa

A small contribution in the fight against rampant misinformation by Kai Krause

Graphic layout for visualization only (some countries are cut and rotated)
But the conclusions are very accurate: refer to table below for exact data

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>AREA 1,000 km²</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>9,597</td>
<td>30</td>
</tr>
<tr>
<td>USA</td>
<td>9,629</td>
<td>30</td>
</tr>
<tr>
<td>India</td>
<td>3,287</td>
<td>10</td>
</tr>
<tr>
<td>Mexico</td>
<td>1,964</td>
<td>6</td>
</tr>
<tr>
<td>Peru</td>
<td>1.285</td>
<td>0.4</td>
</tr>
<tr>
<td>France</td>
<td>633</td>
<td>0.2</td>
</tr>
<tr>
<td>Spain</td>
<td>506</td>
<td>0.2</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>462</td>
<td>0.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>441</td>
<td>0.2</td>
</tr>
<tr>
<td>Japan</td>
<td>378</td>
<td>0.2</td>
</tr>
<tr>
<td>Germany</td>
<td>357</td>
<td>0.2</td>
</tr>
<tr>
<td>Norway</td>
<td>324</td>
<td>0.1</td>
</tr>
<tr>
<td>Italy</td>
<td>391</td>
<td>0.1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>270</td>
<td>0.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>243</td>
<td>0.1</td>
</tr>
<tr>
<td>Nepal</td>
<td>147</td>
<td>0.1</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>144</td>
<td>0.05</td>
</tr>
<tr>
<td>Greece</td>
<td>132</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>30,102</strong></td>
<td></td>
</tr>
<tr>
<td><strong>AFRICA</strong></td>
<td><strong>30,221</strong></td>
<td></td>
</tr>
</tbody>
</table>

In addition to the well-known social issues of illiteracy and illiteracy, there is also such a concept as “misapparatus”, meaning insufficient geographical knowledge.

A survey with random American schoolkids let them guess the population and land area of their country. Not entirely unexpected, but still rather unsettling, the majority chose “1-2 billion” and “largest in the world”, respectively.

Even with Asian and European college students, geographical estimates were often off by factors of 2-3. This is partly due to the highly distorted nature of the predominantly used mapping projections (such as Mercator).

A particularly extreme example is the worldwide misjudgement of the true size of Africa. This single image tries to embody the massive scale, which is larger than the USA, China, India, Japan and all of Europe combined!
So what about health data?
Conservative

Serious

“life and death”

Evidence-based
Producer

Audience
Producer

clinical

Audience
The report below shows the budget impact for financial years from April 2015 to March 2018:

### Current scenario

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Eligible Patients</th>
<th>Patients Initiated on Product A</th>
<th>Testing Costs</th>
<th>Total (Including Testing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/16 FY</td>
<td>2,223</td>
<td>556</td>
<td>£55,580</td>
<td>£15,561,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>£0</td>
<td>£15,616,580</td>
</tr>
<tr>
<td>2016/17 FY</td>
<td>2,223</td>
<td>1,390</td>
<td>£55,580</td>
<td>£15,561,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>£0</td>
<td>£15,616,580</td>
</tr>
<tr>
<td>2017/18 FY</td>
<td>2,223</td>
<td>1,945</td>
<td>£55,580</td>
<td>£15,561,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>£0</td>
<td>£15,616,580</td>
</tr>
<tr>
<td>Total</td>
<td>6,669</td>
<td>3,891</td>
<td>£166,739</td>
<td>£46,683,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>£0</td>
<td>£46,849,739</td>
</tr>
</tbody>
</table>

### Future scenario

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Therapy Drug</th>
<th>Delivery</th>
<th>Total药费</th>
<th>Product A Drug</th>
<th>Delivery</th>
<th>Existing therapy Drug</th>
<th>Delivery</th>
<th>Total药费</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/16 FY</td>
<td>£2,432,500</td>
<td>£0</td>
<td>£16,557,205</td>
<td>£14,069,125</td>
<td>£0</td>
<td>£19,760,134</td>
<td>£0</td>
<td>£15,672,588</td>
</tr>
<tr>
<td>2016/17 FY</td>
<td>£12,218,229</td>
<td>£0</td>
<td>£21,289,167</td>
<td>£7,486,325</td>
<td>£0</td>
<td>£17,628,654</td>
<td>£0</td>
<td>£15,672,588</td>
</tr>
<tr>
<td>2017/18 FY</td>
<td>£17,828,438</td>
<td>£0</td>
<td>£21,289,167</td>
<td>£9,405,150</td>
<td>£0</td>
<td>£28,234,588</td>
<td>£0</td>
<td>£15,672,588</td>
</tr>
<tr>
<td>Total</td>
<td>£53,479,167</td>
<td>£0</td>
<td>£57,606,506</td>
<td>£24,960,600</td>
<td>£0</td>
<td>£81,529,167</td>
<td>£0</td>
<td>£10,756,767</td>
</tr>
</tbody>
</table>

### Budget impact comparison over 3 years

- **Current scenario**: £46,849,739
- **Future scenario**: £57,606,506
- **Budget impact**: £10,756,767

### Budget impact by financial year

- **Financial Year 2015/16**: £940,625
- **Financial Year 2016/17**: £4,143,554
- **Financial Year 2017/18**: £5,672,588
Performance Comparison of Running Clinical Rules in Drools and Plain Java Implementation

Jian Shi, MD; Erik Smith; Thomas J. Van Gilder, MD, JD, MPH
Transcend Insights

Abstract

JBoos Drools is an open source rule engine and has been used by health care systems to process clinical rules. This study compares the performance between running the same set of clinical rules with certain complexity in Drools and by hard coding them in Java. The performance of Drools is impressive yet not as good as the plain Java implementation and may be a concern if performance is the critical factor for a successful implementation.

Methods

Drools version 6 was installed and two other services were implemented to feed the patient data and value set codes to the Drools rule engine. The childhood immunization measure (10 different vaccines which are listed in the table below) from HEDIS was then written in Drools. The eligibility was written in one rule, and the compliance and optional exclusion for each vaccine were written in separate rules. The same rule logic was also hard coded directly in Java. The rules were grouped by each vaccine. The run time was then measured against the number of vaccines that were analyzed on each run. The plain Java implementation shares the same architecture except that the engine component is implemented in plain Java, and reuses the patient data and value set services. Both implementations were run against the same ~10,000 patient claims database with about 300,000 records. The output was then compared.

![Performance Comparison Graph]

Introduction

Drools is an open source, Apache Foundation, community-based project that provides an integration platform for the development of knowledge-based systems. It is developed in Java and has a modular architecture which is based on an object oriented implementation of the PHREAK—a lazy rule matching algorithm to enable Drools to handle a larger number of rules and facts. Drools has the following major advantages: Declarative Programming, Logic and Data Separation, Speed and Scalability, Centralization of Knowledge and Understandable Rules. It can also be easily integrated with other open source frameworks such as Spring and Apache Camel, among others. Because of those advantages, Drools has been used in healthcare systems to process clinical rules. It is the core component of OpenCDS, which has numerous collaborators like Intermountain Healthcare, Wolters Kluwer Health and others. Compared to rules in other industries, clinical rules tend to have more complicated logic, especially to implement health care quality measures. No study has been found regarding the performance of Drools to process clinical rules.

**Table 1**

<table>
<thead>
<tr>
<th>Name of the vaccine</th>
<th>Number of Vaccines prior to 2&lt;sup&gt;nd&lt;/sup&gt; delay for compliance</th>
<th>Compliance rate (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTaP</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>IPV</td>
<td>3</td>
<td>68</td>
</tr>
<tr>
<td>MMR</td>
<td>1</td>
<td>89</td>
</tr>
<tr>
<td>Hib</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>HepB</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>VZV</td>
<td>1</td>
<td>89</td>
</tr>
<tr>
<td>PCV</td>
<td>4</td>
<td>61</td>
</tr>
<tr>
<td>HepA</td>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>RV</td>
<td>2 or 3</td>
<td>57</td>
</tr>
<tr>
<td>flu</td>
<td>2</td>
<td>58</td>
</tr>
</tbody>
</table>

Conclusions

Simple requirements like age range or a look back window can be easily implemented in the Drools DRL file. Any update to those requirements can be done within the rule grammar without making any changes to the engine coding. The rule execution time on clinical rules with certain complexity is impressive, yet it is still longer than the plain Java implementation. For a use case in which continuous updates occur, Drools is a good option to consider. However, if performance (as measured by execution time) is the main metric, it may be worth researching other implementation options.

Reference

1. JBoss Drools documentation [https://docs.jboss.org/drools/release/6.0.0.Final/drools-quickstart.html](https://docs.jboss.org/drools/release/6.0.0.Final/drools-quickstart.html)
3. OpenCDS key component [http://www.opencds.org/Features/KeyComponents.aspx](http://www.opencds.org/Features/KeyComponents.aspx)
Researchers
Analysts

Designers
Integer libero lorem, sollicitudin sed aliquet id, pellentesque in libero. Suspendisse lacinia elementum arcu sed tempus.
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec nisi augue, viverra pretium dui non, semper pharetra nulla.

<table>
<thead>
<tr>
<th>Attributes ranked by importance</th>
<th>Top 2 box %</th>
<th>Performance (top 2 box score)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-10</td>
<td>10-19</td>
</tr>
<tr>
<td>1 Attribute 1</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>2 Attribute 2</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>3 Attribute 3</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>4 Attribute 4</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>5 Attribute 5</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>6 Attribute 6</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>7 Attribute 7</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>8 Attribute 8</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>9 Attribute 9</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>10 Attribute 10</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>11 Attribute 11</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec nisi augue, viverra pretium dui non, semper pharetra nulla..

Category 1  | Category 2  | Category 3  | Category 4  | Category 5  | Category 6
---|---|---|---|---|---
70 | 50 | 30 | 20 | 10 | 7

Category 1  | Category 2  | Category 3  | Category 4  | Category 5  | Category 6
---|---|---|---|---|---
90 | 80 | 78 | 44 | 32 | 60

Category 1  | Category 2  | Category 3  | Category 4  | Category 5  | Category 6
---|---|---|---|---|---
90 | 60 | 45 | 40 | 30 | 70
Integer libero lorem, sollicitudin sed aliquet id, pellentesque in libero. Suspendisse lacinia elementum arcu sed tempus.
Prevalence of pain

USA

34% prevalence = 77 million

Or put another way...

77 million is…….

The number of Playstation network breaches reported by Sony in May 2011
The predicted UK population in 2040
The number of people who's mother tongue is French

Urban China

16% prevalence = 38 million

38 million is…….

The population of California
The WHO estimated number of people currently living with HIV
The number of people who watched Obama's presidential acceptance speech in 2008
Plagued by accidental diagnosis and lack of patient compliance, the diabetes epidemic rages on in India.

India vies with China and the US for diabetes capital of the world (2030 population)¹

In India, lack of awareness of type 2 diabetes is commonplace...

...and patient education still has a long way to go to stem the epidemic...

- 93% are not aware of their BMI
- 59% of patients ranked "high stress" as a primary cause
- Only 1 in 3 knew the type of diabetes they have
- 130m
- 101m
- 30m
- 67%
- 60%
- 3 in 4 patients have never had an HbA1c test
- 67% of treated patients regularly miss a dose
- 60% do not take medication because of their attitude²

...and traditional communications methods would do little to change their attitude and behavior.

However, when segmenting patients on the basis of their digital engagement levels, over 75% showed high engagement levels.³

- "The internet is an integral part of my life"
- "I’m looking to create a personal space online"

Is digital communication the key to type 2 diabetes compliance in India?
General statistics
- Gross national income per capita (Int$ 1, 2010): 10,920
- Life expectancy at birth male/female (years): 69/76
- Total expenditure on health per capita (Int$, 2009): 934
- Total expenditure on health as % of GDP (2009): 9.0%
- Internet penetration: Total population: 39.3%

Lifestyle statistics
- Total % of adult population that smokes: 20%
- Total % of adult population that exercises: 52%
- Total % of adult population that drinks alcohol: 53%
- Total % of adult population that is obese (BMI ≥ 30): 17%

Demographics
- Total population: 203,429,773
- Area size: 8,514,877 Km²
- Total number of doctors: 349,899
- Total number of beds: 430,231

<table>
<thead>
<tr>
<th>Rank</th>
<th>City</th>
<th>% Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sao Paulo</td>
<td>5.6%</td>
</tr>
<tr>
<td>2</td>
<td>Rio de Janeiro</td>
<td>3.1%</td>
</tr>
<tr>
<td>3</td>
<td>Salvador</td>
<td>1.3%</td>
</tr>
<tr>
<td>4</td>
<td>Brasilia</td>
<td>1.3%</td>
</tr>
<tr>
<td>5</td>
<td>Fortaleza</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

1 The International $ is a currency unit that is calculated using purchasing power parities (PPP), which are rates of currency conversion constructed to account for differences in price level between countries.

4 At least one day per month of vigorous exercise lasting 20 minutes or more.
General statistics

Gross national income per capita ($, 2010) 10,920

Life expectancy at birth 69 76

Total expenditure on health 934 9% 9% of GDP

Internet penetration: Total population 39.3%

Lifestyle statistics

Total % of adult population that...

- smokes 20%
- exercises 52%
- drinks alcohol 53%
- is obese (BMI >= 30) 17%

*At least one day per month of vigorous exercise lasting 20 minutes or more

Top 5 city population %

- Fortaleza (11.1%)
- Salvador (10.3%)
- Brasilia (9.7%)
- Rio de Janeiro (3.1%)
- Sao Paulo (5.6%)

Demographics

Population per km² 23.9

- People = 10 people

Population per

- GP 581.4
- Hospital 1.2m
- Bed 416.7

www.KantarHealth.com

DRAFT
Target: Increasing diagnosis of Hypertension

Hypertension is both preventable and treatable. Because hypertension is largely asymptomatic many people around the world with hypertension are not aware of their condition and therefore remain undiagnosed.

Many of those undiagnosed have a family history and lifestyles that put them at risk.

Driving the diagnosis of at-risk patients reduces the risk of heart attacks, strokes, kidney failure and blindness.
Hepatitis C: The ticking time bomb

130-170 million people are chronically infected with hepatitis C globally.

3-4 million infected each year.

60-70% will develop chronic liver disease.

5-20% will develop cirrhosis.

1-5% will die from cirrhosis or liver cancer.

Despite the effects of hepatitis C on their health, few patients are treated:

- Treated
  - 353,000 (18%) treated in SEU
  - 232,000 (11%) treated in US

- Previously treated
  - 667,000 (33%) previously treated in SEU
  - 711,000 (34%) previously treated in US

- Never treated
  - 985,000 (46%) never treated in SEU
  - 1.2 million (57%) never treated in US

The burden placed on hepatitis C patients is enormous, and they are generally in poorer health overall compared with non-sufferers. The side effects caused by current treatments place an even larger burden on these patients. Hepatitis C patients:

- Have high levels of depression
  - EU: 33%
  - US: 42%
- Sufferers Treated
  - 23%
  - 46%
- Sufferers Untreated
  - 12%
  - 21%
- No Hep C
  - 21%

- Are more likely to have been diagnosed with anxiety
  - EU: 47%
  - US: 36%
- Sufferers Treated
  - 24%
  - 30%
- Sufferers Untreated
  - 16%
  - 10%
- No Hep C
  - 16%
  - 10%

- Have more work productivity loss
  - EU: 46%
  - US: 45%
- Sufferers Treated
  - 27%
  - 27%
- Sufferers Untreated
  - 20%
  - 15%
- No Hep C
  - 15%
  - 10%

- Have more activity impairment
  - EU: 46%
  - US: 42%
- Sufferers Treated
  - 20%
  - 24%
- Sufferers Untreated
  - 20%
  - 23%
- No Hep C
  - 23%
  - 22%

New hepatitis C treatments with fewer side effects are needed to improve patients’ quality of life.
USA Diabetes Alert Day - A wake up call asking Americans to take the diabetes risk test

- 25.8 million people or 8.3% of the US population have diabetes
- 66% of those diagnosed with diabetes are under 65 years of age
- 63% of diabetic patients in the US have concomittant high cholesterol
- 61% of diabetic patients in the US have concomittant high blood pressure
- 80% of diabetic patients in the US are treated with prescription medicine
- 79 million, or one in three American adults, have prediabetes

Total costs of diagnosed diabetes in the US in 2007: $174 Billion
A Periodic Table of Customer Satisfaction

<table>
<thead>
<tr>
<th>Representatives</th>
<th>Patient Materials</th>
<th>Medical Science</th>
<th>HCP Materials</th>
<th>National Education</th>
<th>Local Education</th>
<th>Company Ethics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt.</td>
<td>Ut enim ad minim veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu.</td>
<td>Sed ut perspiciatis unde omnis iste natus error sit voluptatem.</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Symbol Key:**
- Colour of square denotes attribute importance.
- Colour of circle denotes performance relative to competitors.

**TRIM Grid Key:**
- Hygiene: H
- Market: M
- Scores: S
- Opportunities: O

**Competitor performance Key:**
- Company performing better than competitor: Green
- Company performing worse than competitor: Red
- Competitor performance close to or worse than competitor: Grey
Explanatory
Show the story

Exploratory
Find the story
Immunotherapy continues to be a growing category in oncology treatment, and treatments are being tested in all major tumor types.
People like to play with things!
Producer

clinical

Audience
Producer

Audience
### Lab data from 30-Mar-2001 through 29-Jun-2001

**User-Selected Subset Of Lab Tests**

**View Graph (wait until page has fully loaded)**

Go to the full panel/test listing using same date range

<table>
<thead>
<tr>
<th>Test Name</th>
<th>24-May-2001 08:41</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol (Total)</td>
<td>166 mg/dL</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>155 mg/dL</td>
</tr>
<tr>
<td>Cholesterol (HDL)</td>
<td>48 mg/dL</td>
</tr>
<tr>
<td>Cholesterol (LDL)</td>
<td>62 mg/dL</td>
</tr>
<tr>
<td>Cholesterol/HDL Ratio</td>
<td></td>
</tr>
<tr>
<td>Patient Fasting Status</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* means outside reference range
**About this test**
This report evaluates your potential risk of heart disease, heart attack, and stroke.

**Your results**

**CRP level test**
- **3.3** your level of a specific protein in the blood linked to inflammation of blood vessels
- Low risk ≤ 0.5 mg/L
- Average 1 - 3
- High risk of cardiovascular disease 3 - 10 mg/L

**Total cholesterol level**
- **265**
- Desirable 120 - 200 mg/dL
- Borderline 200 - 239 mg/dL
- High ≥ 240 mg/dL

**LDL “bad” cholesterol**
- **233**
- Optimal ≤ 100 mg/dL
- Near optimal 100 - 129 mg/dL
- Borderline high 130 - 159 mg/dL
- High 160 - 189 mg/dL
- Very high ≥ 190 mg/dL

**HDL “good” cholesterol**
- **32**
- Low ≤ 40 mg/dL
- Normal 40 - 59 mg/dL
- High ≥ 60 mg/dL
CLINICAL TRIALS EXPLAINED

What is a Clinical Trial?
- Clinical trials are research studies of medicines in humans.
- They assess whether a potential new medicine is safe for patients and effective in treating the target disease.
- A clinical trial study can be funded by academics, government or industry and are conducted by investigators.
- The clinical trial participant eligibility criteria are specifically defined on a trial by trial basis. A research plan called a clinical trials protocol is designed to answer specific research questions and safeguard the health of the participants.

Getting started
Scientists begin by analysing the disease and investigating a possible treatment. Preclinical trials then establish initial safety and effectiveness before testing on humans. These tests are often done in the laboratory, using ‘in vitro’ (test tube) research.

CLINICAL TRIALS
CHECK FOR SAFETY
Phase I: investigate the molecule’s safety and research how it works and behaves in the human body
Population: 20 - 80 healthy volunteers
Timeline: between weeks and months

CHECK FOR EFFICACY; CONTINUE SAFETY EVALUATION
Phase II: investigate efficacy, investigate side effects and risks
Population: several hundred people who have the disease
Timeline: between several months & several years

CONFIRM RESULTS
Phase III: seeks to establish the benefit-risk, the right patients and the best way to manage the risks.
Population: several thousand people who have the disease
Timeline: between several months & several years

Regulatory approval
Regulators such as the European Medicines Agency (EMA) review safety, efficacy and quality and authorise a medicine for use.

Pricing and reimbursement processes
Decide on price and reimbursement of the product, including health technology assessment (HTA) of added value compared with current treatments.

Phase IV (post market launch)
Continued safety surveillance through post market studies, identifying potential new uses for the medicine.