School for Primary Care Research
Increasing the evidence base for primary care practice

Carl Heneghan
Diagnostic Reasoning for Evidence-Based Practice.
Background

- The strategies clinicians use to arrive at a diagnosis makes only a small contribution to current research and the medical curricula.

- Debate still exists about our understanding of the complex strategies used in diagnostic reasoning.

- Determining diagnostic strategies is particularly pertinent where patients present with an array of conditions and possible diagnoses.

- Our aim was to set out - for a forthcoming series of diagnostic articles - the strategies and methods that are employed in routine clinical consultations.
What we did

1st phase: focus group of GPs and researchers in primary care to identify several strategies - based on consensus opinion and the published literature - used in diagnosis.

Strategies mapped in a consecutive series of 100 patients by 1 GP (CH).

2nd phase: From phase 1 a model incorporating 3 stages used in diagnosis formulated.

Six GPs recorded data using a revised data collection sheets for 50 clinical consultations.

Final focus session using a consensus development approach.
Diagnostic stages & Strategies

Stage

Initiation of the diagnosis

- Spot diagnoses
- Self-labelling
- Presenting complaint
- Pattern recognition

Refinement of the diagnostic causes

- Restricted Rule Outs
- Stepwise refinement
- Probabilistic reasoning
- Pattern recognition fit
- Clinical Prediction Rule

Defining the final diagnosis

- Known Diagnosis
- Further tests ordered
- Test of treatment
- Test of time
- No label
Welcome

Skin in the City!

I offer a unique service, in the centre of Christchurch - a General Practice with a focus on skin conditions and treatment.

How is Spot-Diagnosis GP Dermatology different?
I will generally be able to see patients within 1 to 2 days! So its appointments when you need appointments, not after the event.

Private Dermatologist’s and Public Hospital Dermatology Outpatient appointment delays are frustrating to all concerned. Private Dermatologist’s fees are often beyond the means of patients. I am offering a more affordable service with Spot Diagnosis GP Dermatology.

- Dr Doug Smith MB, BS, FRNZCGP, Dip Practical Dermatology

Education and debate

Lesson of the Week: Who spots the spots? Diagnosis and treatment of early meningococcal disease in children

F Andrea Riordan, research fellow, 2 Allbrit P J Thomson, honorary consultant paediatrician, 2 John A Sils, consultant paediatrician, 2 C Anthony Hart, professor of medical microbiology 1 2
1 Institute of Child Health, University of Liverpool, Liverpool L69 3BX, 2 Department of Medical Microbiology

Correspondence to: Dr F A Riordan, Undergraduate Teaching Centre, Birmingham Heartlands Hospital, Birmingham B9 5SS.
Self-labelling

Tonsillitis – had it before

I have a chest infection

doctor

Groin strain

I have asthma

I have a uti – just like last time
Diagnostic stages & Strategies

Stage

Initiation of the diagnosis

Reinforcement of the diagnostic causes

Defining the final diagnosis

Strategy

- Spot diagnoses
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- Presenting complaint
- Pattern recognition
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Prediction rules: which ones do you use in practice?

A series of ankle x-ray films is required only if there is any pain in malleolar zone and any of these findings:
- Bone tenderness at A
- Bone tenderness at B
- Inability to bear weight both immediately and in emergency department

A series of ankle x-ray films is required only if there is any pain in mid-foot zone and any of these findings:
- Bone tenderness at C
- Bone tenderness at D
- Inability to bear weight both immediately and in emergency department
Clinical prediction guides project

Balla J, Glasziou P, Heneghan C.

Would be useful to have them all in easily accessible format.

I find the pictures very helpful, they help me remember where to look for tenderness.

If you have a prediction rule, the way you take the history changes... you go for the 3-4 things.

I would like to use them as guidelines for teaching students.
49 yr old with severe flare up of Ulcerative colitis

Intravenous hydrocortisone, aminosalicylates, and ciclosporin treatment was started, and after seven days oral prednisolone was introduced.
Is the use of a specific but probably imperfect symptom, sign or diagnostic test to rule in or out a diagnosis.

Used in less than 10% of cases. One possible reason for this is that a certain amount of informal probabilistic reasoning was not recognized during the clinical consultation.

(informal refers to reasoning not based on numerical understanding, but relies on decision making based on qualitative information, e.g. the disease is more or less likely).
Refinement strategies

% strategy used by GPs (mean)
Diagnostic stages & Strategies

Stage

- Initiation of the diagnosis
- Refinement of the diagnostic causes
- Defining the final diagnosis

Strategy

- Spot diagnoses
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- Presenting complaint
- Patten recognition
- Restricted Rule Outs
- Stepwise refinement
- Probabilistic reasoning
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- Known Diagnosis
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- Test of treatment
- Test of time
- No label
Strategies employed at the final diagnostic stage,

- known diagnosis
- ordering of further tests
- test of treatment
- test of time

In some cases the final diagnosis cannot be given a label
The subsequent evolution of clinical features over time is reviewed to see if the clinical features resolve or a particular diagnosis later becomes more obvious.

**MENINGOCOCCAL DISEASE: WARNING SIGNS**

- **Severe headache**
- **Dislike of bright lights**
- **Fever/vomiting**
- **Stiff neck**
- **Rapid breathing**
- **Drowsy and less responsive**
- **Stomach/joint/muscle pain**
- **Rash - at later stages of disease**
- **Skin very pale, blue or dusky around lips**
- **Severe leg pain**
- **Cold hands or feet with high temperature**

Source: Lancet/Meningitis Research Foundation

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**Test of Time**


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**Time**

- **Zero**
- **Symptoms present**
- **Signs present**
- **Indeterminate Investigations**
- **Classical symptoms and signs present**
- **Investigations positive**

Restricted Rule Out: Thompson M, Harnden A and Del Mar C

Test of Treatment: Glasziou P, Rose P, Heneghan C, Balla J.

Clinical Prediction Rules: Fahey T and Dan Mayer D

Test of Time: Nick Summerton.

Probabilistic Reasoning: Doust J.

Self diagnosis:

Spot” Diagnosis: a rapid but unreliable process: Glasziou P, Heneghan C, Del Mar CB.