

Borislav D Dimitrov & Tom Fahey

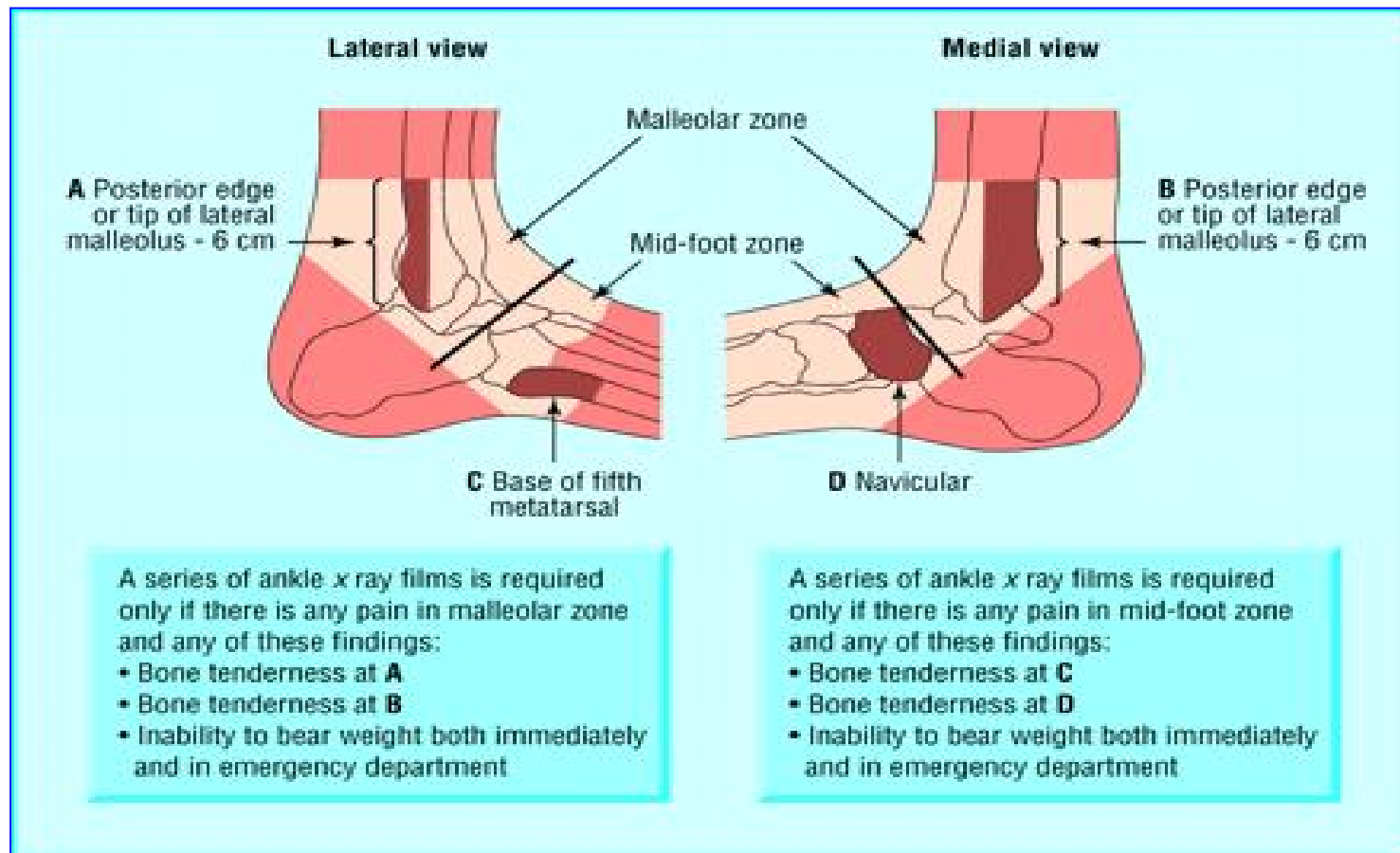
HRB Centre for Primary Care Research (PRIMCARE)

Department of General Practice, RCSI Medical School, Dublin, Ireland

A concept for implementation of Medical Decision Rules in EUrope (MEDEUR)

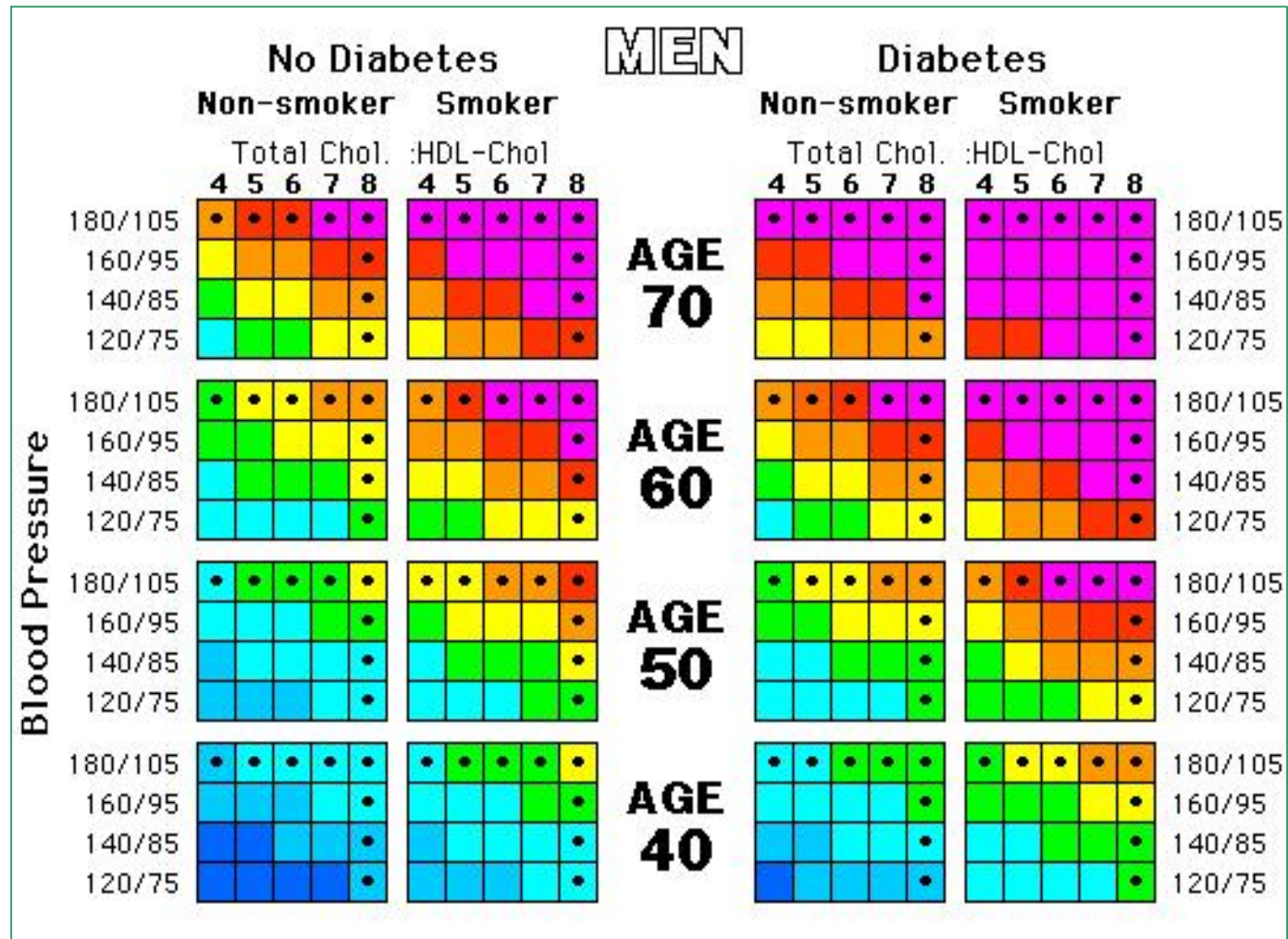


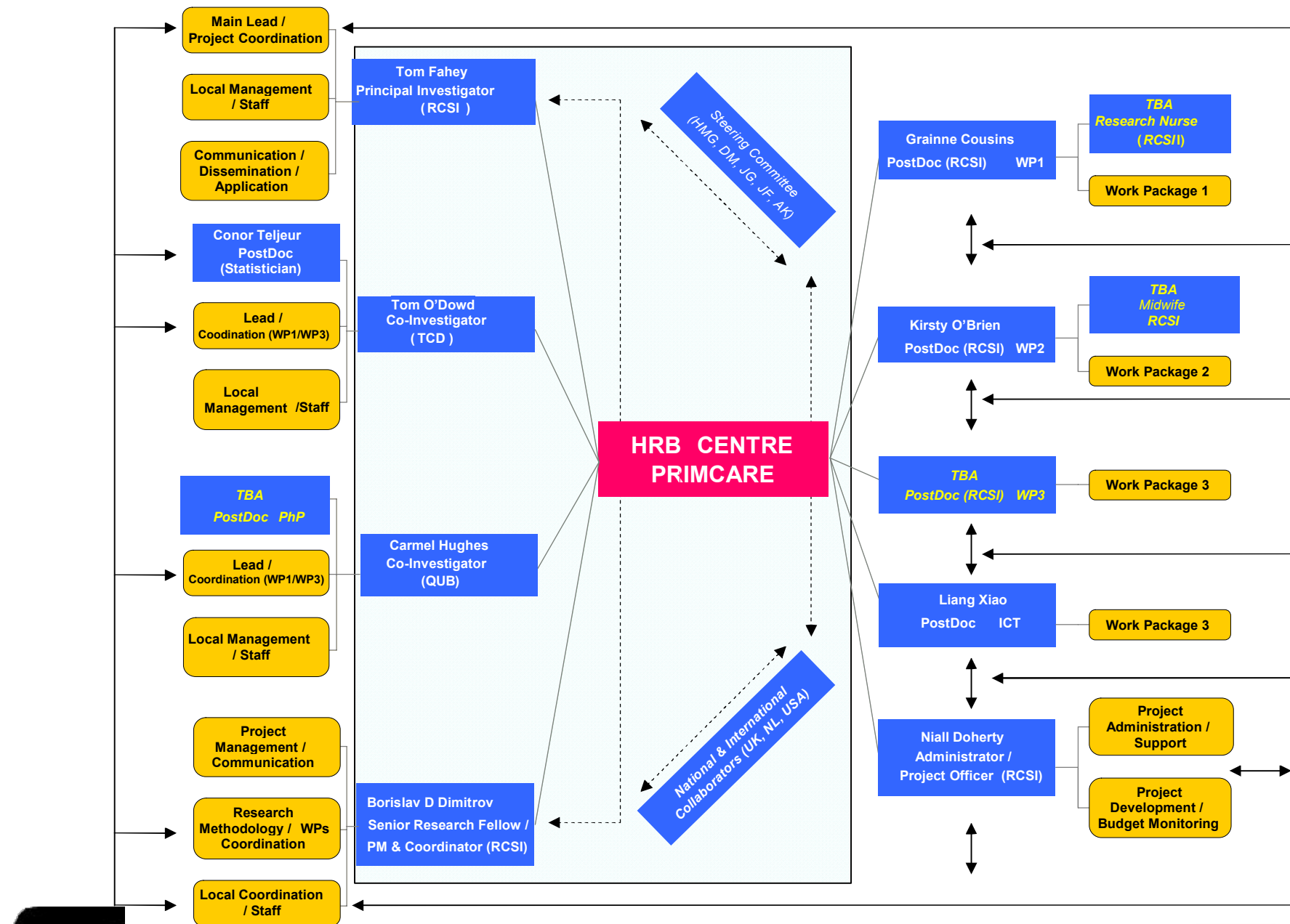
Ottawa Ankle Rule – Diagnostic Clinical Prediction Rule



Clinical (Medical) Prediction Rule is a clinical tool that quantifies contribution of: *History, Examination & Diagnostic Tests*. It stratifies patients according to probability of having a target disorder or condition (outcome). The *outcome* can be in terms of *diagnosis, prognosis, referral or treatment*.

Primary Prevention Cardiovascular Disease - *Prognostic Clinical Prediction Rule*





Activities of the HRB Centre PRIMCARE

- **Management and coordination of care of vulnerable patients at the primary/secondary interface**
 - Elderly (TILDA), children (GUI), pregnant women, drug users (Methadone)
- **Evidence-Based Diagnosis in Primary Care**
 - Clinical prediction rules (CPRs) / [International Register of Clinical Prediction Rules](#)
 - Systematic reviews
- **Information & Communication Technology (ICT) in Primary Care**
 - eCPRs / Computerized clinical decision support systems (CDSSs)
 - Comparative clinical data

General Practice Computers' Usage in Ireland
> 1992 - 27% > 2005 - 89%

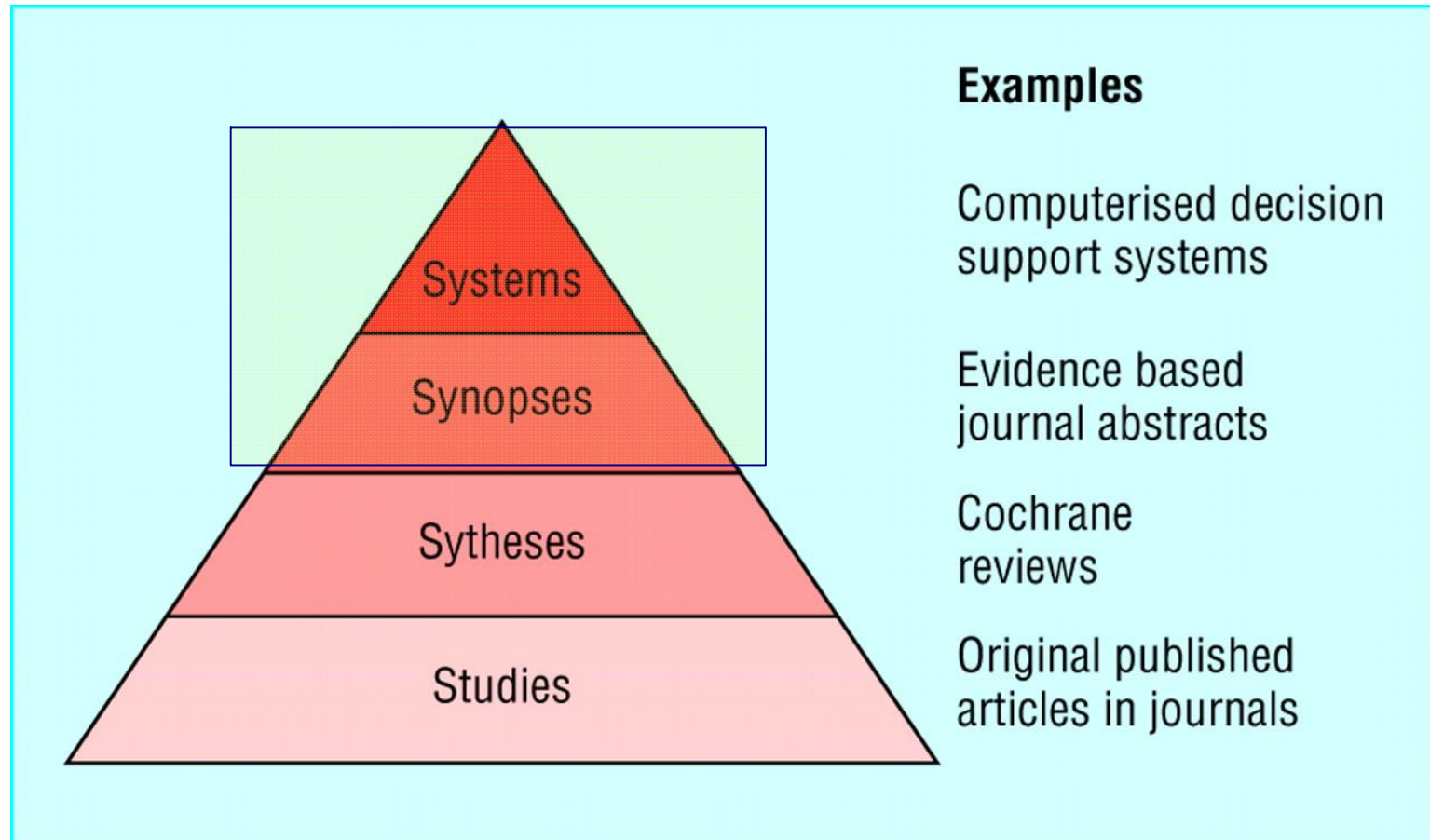


HRB Centre for Primary Care Research (PRIMCARE)



Implementation & Dissemination of Research Evidence

(scope: translation of evidence into practice)



Electronic Clinical Prediction Rule (eCPRs)

Electronic CPR for patients presenting with possible symptoms of *deep venous thrombosis* (DVT) in primary care

ECLINDA- Clinical Prediction Rule DVT

Consultation

Consultation Details

Find Patient...
Patient Summary...
Begin Consultation
Edit Consultation
Finish Consultation
Open Consultation...

Notes
Immunisations
Prescriptions
Investigations
Documents
Care Protocols

Appointments
Waiting Room
Patient Maintenance
Consultation
Reports
Communication
My Control Panel

Profile

Patient Name
DOB
Sex

Import Details: [ALL] **import** **4 Previous Searches for this patient**

Clinical Findings Today

☐ Active Cancer (Treatment Ongoing or within previous 6 months or palliative).

☐ Paralysis, Paresis, or recent plaster immobilization of lower limb

☐ Localized tenderness along distribution of deep venous system

☐ Entire leg swollen

☐ Calf swelling >3cm than asymptomatic side (measured 10cm below tibial tuberosity)

☐ Pitting edema in symptomatic leg only

☐ Collateral superficial venis (non-varicose)

☐ Alternative diagnosis at least as likely as DVT

Pre-Test Probability of DVT %

95% CI: -

Suggested Treatment

References

Baseline Details

Date	BP	Chol	Ht	Wt	BMI	Cig	Alc	Wst
20/06/2006	134 / 76	5.65	173.0	45	14.04	0	0	0

Current Medications

ROXILLIN (AMOXICYCLIN) CAPS 250MG (AMOXICYCLIN) Acute

Active Diagnosis

29/03/2006 Low Blood Pressure

Past Medical History

Family Diabetes

Results

MEdical Decision Rules in EUrope (MEDEUR) – Current Initiative

Main Deliverables:

- **Europe-wide Clinical Prediction Rules (CPRs) Network “MEDEUR”** of collaborators (institutions, individual researchers and GPs) that are involved in the review, development and validation of CPRs by means of web-based communication and recruitment strategy.
- **MEDEUR ICT Platform** that enables collection, classification (categorisation) and implementation of CPRs through a PC and/or web-based technology.

Project Phases:

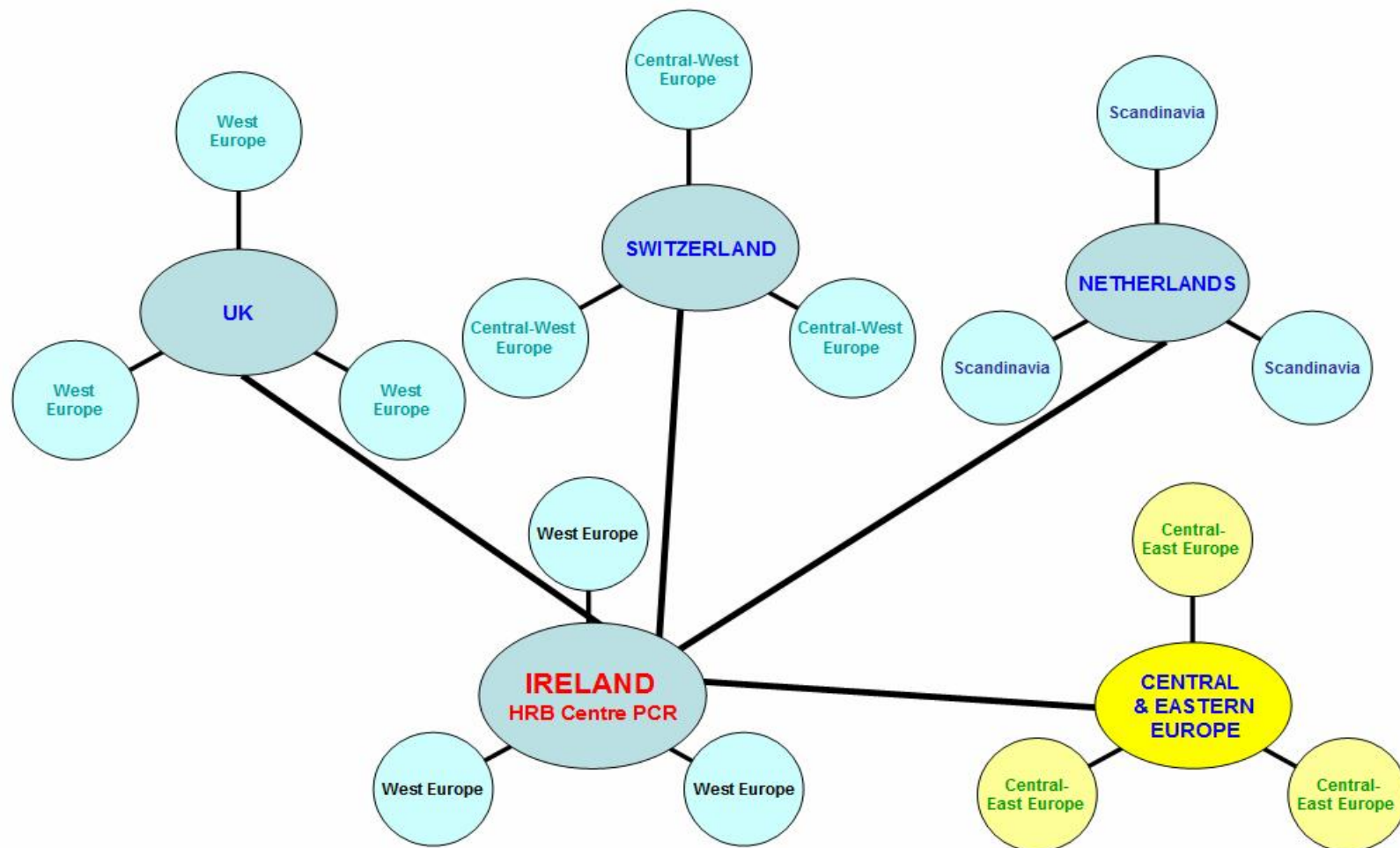
- **Phase 1)** Development and launch of web-based ICT platform and establishment of MEDEUR (CPRs) Network of collaborators/participants to enable recruitment of CPR studies and practices – *Year 1*
- **Phase 2)** Mapping (matching) of MEDEUR CPRs Register (review & collection of CPRs) with other similar registers and expanding the implementation and utilisation of the Register through the Network – *Year 2*
- **Phase 3)** Development and validation of new CPRs through the MEDEUR Network; implementation of CPRs in European-wide primary/community care field – *Year 3*.



HRB Centre for Primary Care Research (PRIMCARE)



MEDEUR Partners & Collaborators Network in Western Europe (CEE sub-network in yellow is provisional)



We are looking for industrial /commercial partner(s)!



HRB Centre for Primary Care Research (PRIMCARE)



Conclusions of MEDEUR

MEDEUR Research Network, Register & ICT Platform will:

- Generate evidence and build capacity in healthcare
- Decrease medical error & increase patient safety
- Ensure continuity of care (primary/secondary interface)
- Improve quality of care (in particular, at individual level)
- Increase cost-effectiveness in healthcare delivery
- Provide basis for academic & commercial collaboration
- International dimension of Irish knowledge & leadership

***Improve quality and standards of
healthcare for the Irish patients***



HRB Centre for Primary Care Research (PRIMCARE)



Recommended Literature (chronologically):

1. Falk G, **Fahey T**. C-Reactive Protein and Community Acquired Pneumonia in Primary Care: Systematic Review of Diagnostic Accuracy Studies. *Family Practice* 2009 (in press)
2. Falk G, **Fahey T**. Clinical prediction rules. *British Medical Journal* 2009 (in press)
3. **Fahey T**, Van der Lei J. Producing and using clinical predictions rules. In: *Evidence Base of Clinical Diagnosis*. Editors Andre Knottnerus, Frank Buntinx. Blackwell Publishing Ltd., London, 2009, pp.213-236.
4. Madhok V, Falk G, Rogers A, Struthers AD, Sullivan FM, Fahey T. Accuracy of symptoms, signs and diagnostics test for left ventricular systolic dysfunction in primary care: systematic review of diagnostic accuracy studies. *BMC Family Practice* 2008, 9:56.
5. Montgomery A, Emmet C, Fahey T, Patel R, Jones C, Ricketts I, Peters T, Murphy DJ. Two decision aids for mode of delivery among women with previous caesarean section: randomised controlled trial. *British Medical Journal* 2007; 334: 1305-1308.
6. Guthrie B, Inkster M, **Fahey T**. Tackling therapeutic inertia: role of treatment data in quality indicators. *British Medical Journal* 2007; 335: 542-544
7. Protheroe J, Bower P, Chew-Graham C, Peters T, **Fahey T**. Effectiveness of a computerized decision aid in primary care on decision making and quality of life in menorrhagia: results of the MENTIP randomized controlled trial. *Medical Decision Making* 2007; 27: 575-584.
8. Montgomery A, **Fahey T**, Peters T. Decision analysis and information video plus leaflet for newly diagnosed hypertensive patients: a factorial randomised controlled trial. *British Journal of General Practice* 2003; 53: 446-453
9. **Dimitrov BD**, Ruggerenti P, Stefanov R, Perna A, Remuzzi G. Integrated use of prediction models: individual risk for progression of chronic nephropathies to end stage disease. *Nephron Clinical Practice* 2003; 95: c47-c59.
10. **Dimitrov BD**, Perna A, Ruggerenti P, Remuzzi G. Predicting end-stage renal disease: Bayesian perspective of information transfer in clinical decision-making at individual level. *Kidney International* 2003; 63: 1924-1933.
11. **Dimitrov BD**, Remuzzi G. Combination therapy for renal diseases. *Hospital Prescriber Europe* 2002; (3): 21-23.
12. Montgomery A, **Fahey T**, Peters T, MacKintosh C, Sharp D. Evaluation of a computer-based clinical decision support for the management of hypertension in primary care: a randomised controlled trial. *British Medical Journal* 2000; 320: 686-690.



HRB Centre for Primary Care Research (PRIMCARE)



APPENDICES (1-11)



HRB Centre for Primary Care Research (PRIMCARE)

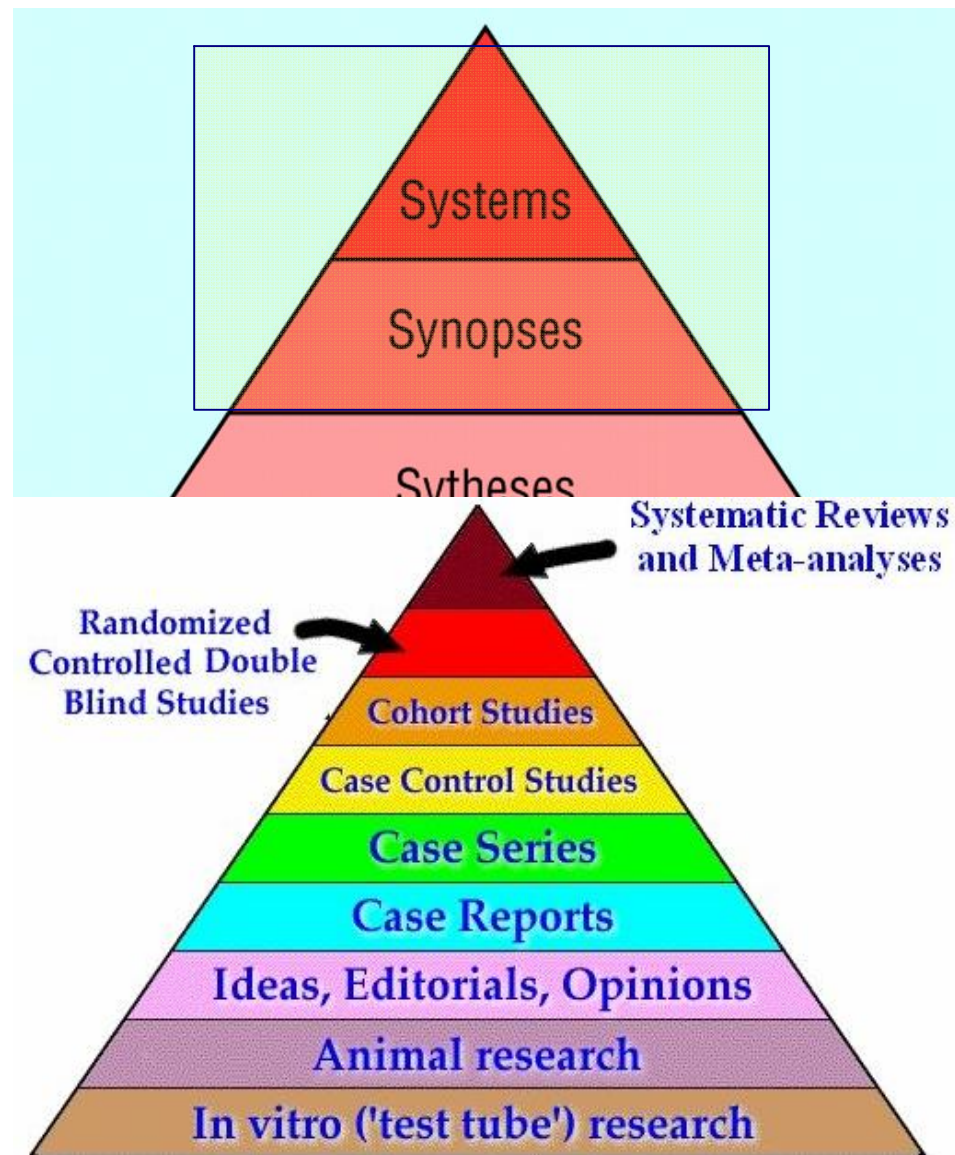


CLINICAL EVIDENCE PYRAMID



Guide to Research Methods. State University of New York, USA (2006)

CLINICAL PYRAMIDS

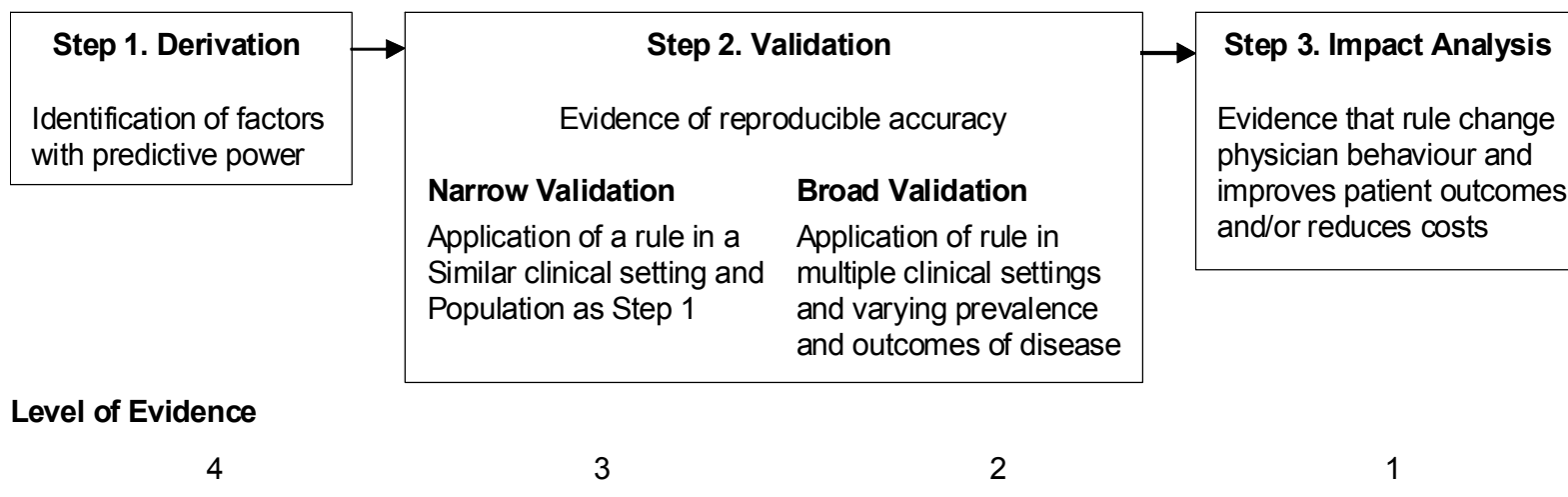


Clinical Prediction Rule (CPR): Definition

***Clinical Prediction Rule (CPR)** is a clinical tool that quantifies the individual contributions that various components of the history, physical examination and basic laboratory results make towards the diagnosis, prognosis, or likely response to treatment in a patient. CPRs attempt to formally test, simplify, and increase the accuracy of clinicians' diagnostic and prognostic assessments.” (also known as: **scorecards, clinical decision rules, clinical prediction models, clinical decision models, decision support techniques, predictive model, clinical prompts**).*

Clinical Prediction Rules

Levels of Evidence: 4 levels (4=Lowest, 1=Highest)



EXAMPLE of e-CPRs:

- Electronic CPR for patients presenting with possible symptoms of **deep venous thrombosis (DVT)** in primary care (*see slide no.7 above*)



HRB Centre for Primary Care Research (PRIMCARE)



HRB Centre PRIMCARE

International Register of Clinical Prediction Rules (CPRs)

EndNote X1 - [Clinical Prediction Rules16.09]

File Edit References Tools Window Help

Plain Font Plain Size B I U P A¹ A₁ Σ

Vancouver ? Quick Search

Groups	CPR Title	Level of Evidence...	ICPC 2	Title	Author	Year
All References				Does this patient have influenza?	Call	2005
				Validation of a predictive rule for the ...	Capelastegui	2006
				Development of a clinical prediction r...	Casanova	2005
				The body-mass index, airflow obstruc...	Celli	2004
				The diagnosis of strep throat in adult...	Centor	1981
				Comparison of two clinical prediction...	Chagnon	2002
				Accuracy of clinical pallor in the diag...	Chalco	2005
				Can a clinical decision rule decrease...	Chitkara	2002
				A clinical prediction rule for early disc...	Christenson	2006
				Psychometric properties of the PTS...	Cook	2005
				Clinical prediction of deep venous thr...	Cornuz	2002
				Validation of the Framingham corona...	D'Agostino	2001
				The rational clinical examination. Do...	D'Arcy	2000
				Derivation of clinical prediction rules ...	Dayan	2004
				A combination of tests for the diagno...	De Lepeleire	2005
				Does this patient with headache hav...	Detsky	2006
				Prediction of fracture in patients with ...	Diehr	1988
				A clinical return-to-work rule for patie...	Dionne	2005
				A scoring system for predicting grou...	Dobbs	1996
				Derivation of the children's head injur...	Dunning	2006
				The rational clinical examination. Do...	Ebell	2000
				Factors identifying higher risk rectal ...	Ellis	2005
				Development and validation of a clini...	Espana	2006
				Comparative validation of prognostic...	Ewig	1999
				Clinical management of urinary tract i...	Fahey	2003
				Predictive value of signs and sympto...	Fijtten	1995
				Linking Surveillance to Action: Incorp...	Fine	2007
				A prediction rule to identify low-risk p...	Fine	1997
				Use of simple heuristics to target ma...	Fischer	2002
						2002
Custom						
Streptococcal Pharyngitis	Centor Score	4	R21, R72			
	Pulmonary Embolism, Wells Rule & ...	2/3	K93			
	Anaemia in Children	2/3	B82, B81...			
	Vancouver Chest Pain Rule	4	K03			
	PTSD checklist	2/3	P82			
	DVT using Wells Score	2/3	K94			
	Framingham Risk score, CHD Risk	2/3	K22			
	Carpel Tunnel Syndrome	2/3	N93			
	Dementia diagnosis	2/3/4	P70			
	Migraine/Headache	4	N81, N01			
	Back	3/4	L02			
	Predicting Streptococcal Pharyngitis	4	R21, R72			
	Chalice room for head trauma with c...	4	N80			
	Strep throat	4	R21, R72			
	Rectal Bleeding	4	D75, D16			
	CPR for community aquired pneumo...	2/3/4	R81			
	Pneumonia - community acquired	2/3	R81			
	Clinical Management of urinary tract i...	4	U71			
	Predicting colorectal cancer in patien...	4	D75, D16			
	Fine's Rule for identifying Low Risk p...	3/4	R81			

Showing 278 of 278 references.
Ready

1. Fischer JE, Steiner F, Zucol F, Berger C, Martignon L, Bossart W, et al. Use of simple heuristics to target macrolide prescription in children with community-acquired pneumonia. Arch Pediatr Adolesc Med. 2002 Oct;156(10):1005-8.

Clinical Decision Support Systems (CDSSs)

CDSSs are information/communication technology (ICT) tools designed to improve clinical decision-making by integrated Electronic Patient Record (EPR), computerised knowledge base, engineering and/or software algorithm and provision of patient-specific information.



HRB Centre for Primary Care Research (PRIMCARE)



Types of Decision Support Systems

- A **model-driven DSS** emphasizes access to and manipulation of a statistical, financial, optimization, or simulation model. Model-driven DSS use data and parameters provided by users to assist decision makers in analyzing a situation; they are not necessarily data intensive. Dicodess is an example of an open source model-driven DSS generator
- A **communication-driven DSS** supports more than one person working on a shared task; examples include integrated tools like Microsoft's NetMeeting or Groove.
- A **data-driven DSS** or data-oriented DSS emphasizes access to and manipulation of a time series of internal company data and, sometimes, external data.
- A **document-driven DSS** manages, retrieves and manipulates unstructured information in a variety of electronic formats.
- A **knowledge-driven DSS** provides specialized problem solving expertise stored as facts, rules, procedures, or in similar structures.

Computerized Clinical Decision Support Systems (CDSSs)

- Information systems designed to improve clinical decision-making:
 - > *Integration in Electronic Patient Record (EPR)*
 - > *Computerised knowledge base*
 - > *Software algorithm*
 - > *Provide patient-specific information (individual level)*

ECLINDA- CDSS

Consultation

- Consultation Details
- Find Patient...
- Patient Summary...
- Begin Consultation
- Edit Consultation
- Finish Consultation
- Open Consultation...
- Notes
- Immunisations
- Prescriptions
- Investigations
- Documents
- Care Protocols
- Appointments
- Waiting Room
- Patient Maintenance
- Consultation**
- Reports
- Communication
- My Control Panel

Profile

Patient Name
DOB
Sex

Import Details: [ALL]
4 Previous Searches for this patient

Clinical Findings Today

Vitals

Cardiovascular

Respiratory

Gastro

Muscular

Neurological

Urology

Other

CDSS RESULTS

Disease Control Rating

Suggested Treatment

New Research

Links

Baseline Details

Date	BP	Chol	Ht	Wt	BMI	Cig	A1c	Wst
20/06/2006	134 / 76	5.65	173.0	45	14.04	0	0	0

Current Medications

ROXILLIN (AMOXICYCLIN) CAPS 250MG (AMOXICYCLIN) Acute

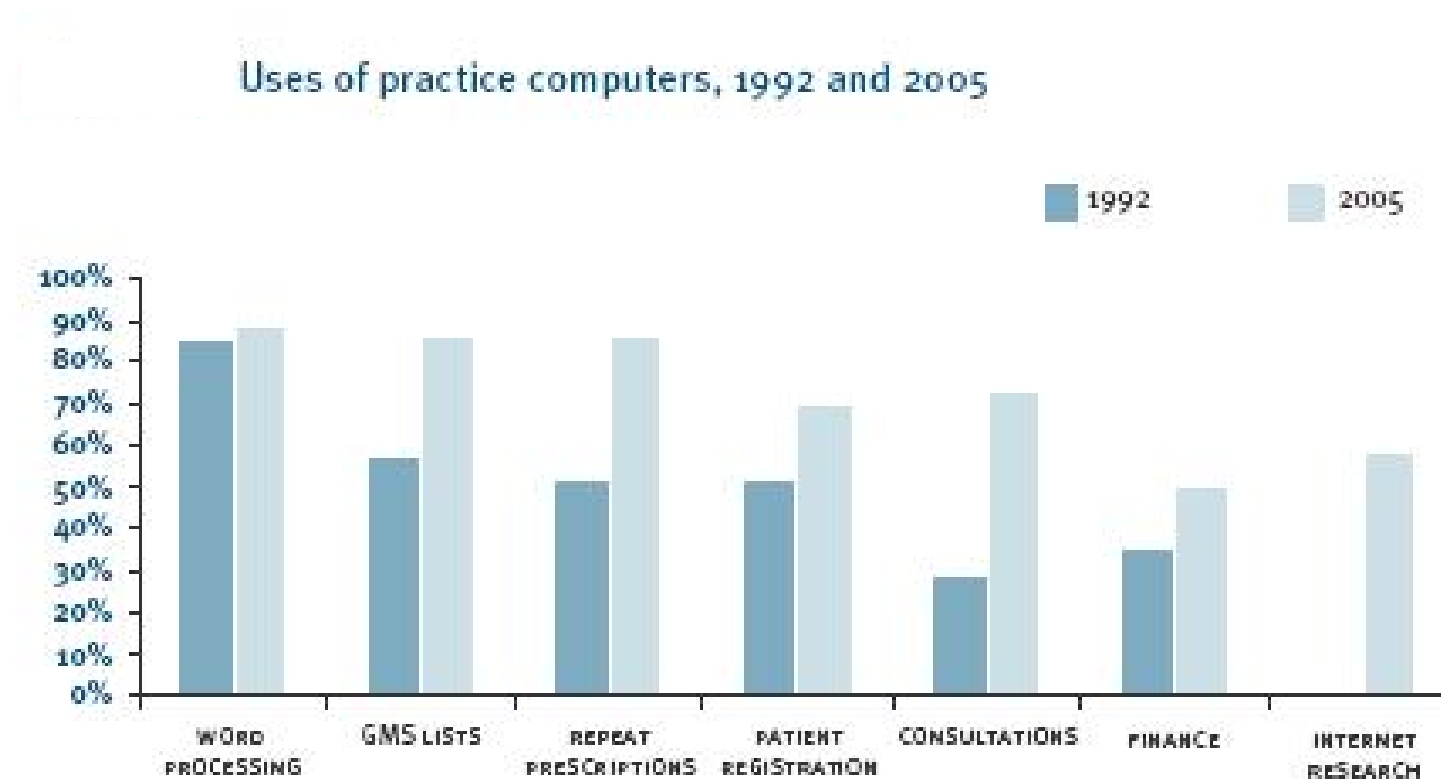
Active Diagnosis

29/03/2006 Low Blood Pressure

Past Medical History

Family Diabetes

General Practice Computers' Usage in Ireland



> 1992 - 27%

> 2005 - 89%

National Guideline Clearinghouse (USA)

Address <http://www.guideline.gov/compare/synthesis.aspx>

National Guideline Clearinghouse
www.guideline.gov

Guideline Syntheses Submit Guidelines What's New Contact Us About Site Map Help

Search

Search
Browse
Compare
Resources

20 Results Search

[Search Help](#)
[Detailed Search](#)
[Frequent Searches](#)

Browse

- » [Disease / Condition](#)
- » [Treatment / Intervention](#)
- » [Measures](#)
- » [Organization](#)
- » [Guideline Index](#)
- » [Guidelines In Progress](#)
- » [Guideline Archive](#)

Compare

- » [View My Collection](#)
- » [Guideline Syntheses](#)

NGC Guideline Syntheses

The National Guideline Clearinghouse™ (NGC) contains syntheses of selected guidelines that cover similar topic areas. Key elements each synthesis include the scope of the guidelines, the interventions and practices considered, the major recommendations and corresponding rating schemes and strength of the evidence, the areas of agreement, and the areas of disagreement.

The following **Guideline Syntheses** are available on the NGC Web Site:

- [Acute Otitis Media](#)
- [Alzheimer's Disease and Related Dementias. Part I. Screening](#)
- [Alzheimer's Disease and Related Dementias. Part II. Assessment and Diagnosis](#)
- [Alzheimer's Disease and Related Dementias. Part III. Management](#)
- [Assessment and Treatment of Obesity and Overweight in Adults](#)
- [Chronic Obstructive Pulmonary Disease \(COPD\) Part I. Diagnosis and Management of Stable COPD](#)
- [Chronic Obstructive Pulmonary Disease \(COPD\) Part II. Diagnosis and Management of Acute Exacerbations](#)
- [Chronic Obstructive Pulmonary Disease \(COPD\) Part III. Pulmonary Rehabilitation](#)
- [Diagnosis and Management of Celiac Disease](#)
- [Diagnosis and Management of Urinary Tract Infection](#)

**NGC
(USA)**



HRB Centre for Primary Care Research (PRIMCARE)

The **National Guideline Clearinghouse™** (NGC) is a comprehensive database of evidence-based clinical practice guidelines and related documents. NGC is an initiative of the **Agency for Healthcare Research and Quality [AHRQ]**, U.S. Department of Health and Human Services. NGC was originally created by AHRQ in partnership with the **American Medical Association [AMA]** and the American Association of Health Plans (now **America's Health Insurance Plans [AHIP]**).

<http://www.guideline.gov/about/mission.aspx>



NATIONAL / INTERNATIONAL BODIES AND ORGANISATIONS FOR CLINICAL GUIDELINES & RECOMMENDATIONS

