

**A Truly Meaningful Use of Electronic
Health Records Freely Available to All:
Automated Anticipation and Resolution of
Clinical Information Needs at the Point of
Care through Infobuttons**

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NIH Clinical Center and the National Library of Medicine**



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> CMS EHR Meaningful Use Overview

EHR Incentive Programs

- » [Overview](#)
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- » [Eligibility](#)
- » [Registration](#)
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CMS EHR Meaningful Use Overview

The Medicare and Medicaid EHR Incentive Programs provide a financial incentive for the "meaningful use" of certified EHR technology to achieve health and efficiency goals. By putting into action and meaningfully using an EHR system, providers will reap

, clinical decision support,

Infobutton Timeline

Covell et al.
Information Needs



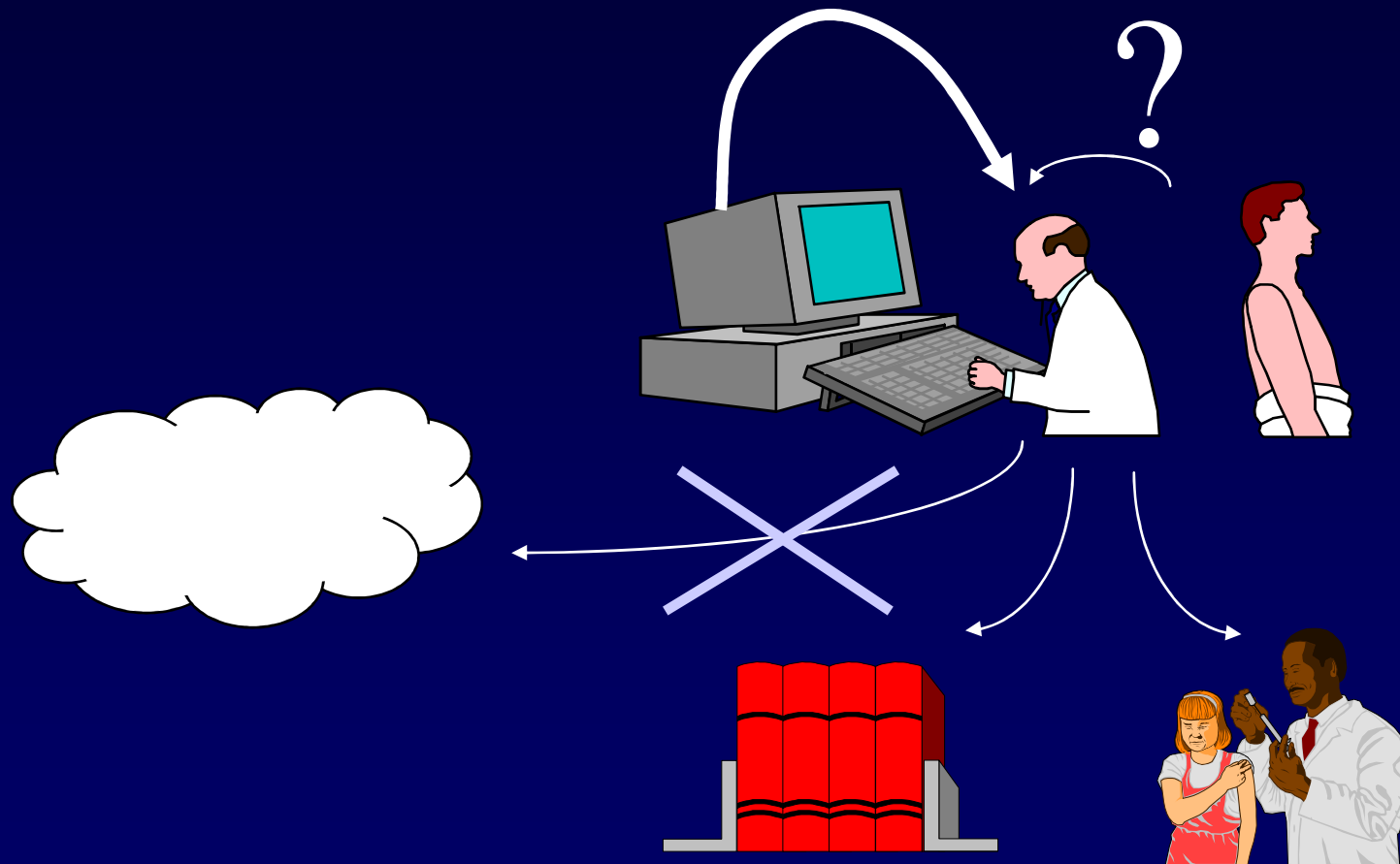
Studying Information Needs

Covell DG, Uman GC, Manning PR. Information needs in office practice: are they being met? *Ann Intern Med.* 1985 Oct;103(4):596-9.

Knowledge Resources in Clinical Care



Knowledge Resources in Clinical Care



WebCIS - 3131313 (user: NYPH Clinical References - Mozilla Firefox

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Notes Mar 28

DOP notes 1999

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Self Rep VS 2003

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Out Pat Meds

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Data Entry Forms

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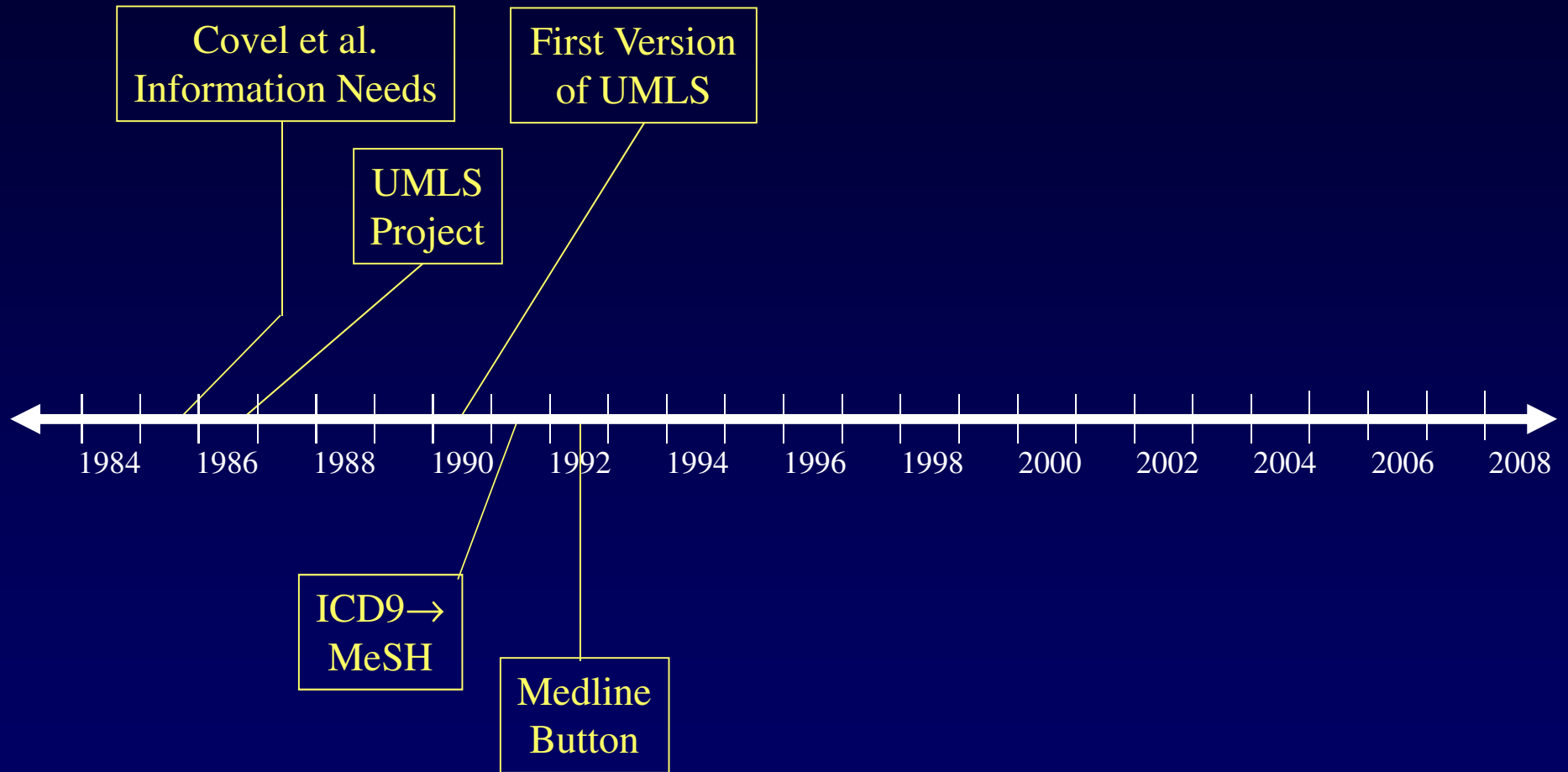
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Department of Health & Human Services
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Information Needs of EHR Users

- Common tasks may have common needs
- System knows:
 - Who the user is
 - Who the patient is
 - What the user is doing
 - What information the user is looking at
- *So we may be able to predict the specific need*
- User is sitting at a computer!
- *So we may be able to automate the answer*

Infobutton Timeline



Admission Profile

Admission Date: 01/03/95 Discharge Date: 02/16/95 Location: M6GS
Doctor: CIMINO, JAMES J Discharge Summary: N
Primary Diagnosis: 410.71 ACUTE MI, SUBENDO INFARC, INITI

Select Terms You Are Interested in:

Diseases:

X	410.71	ACUTE MI, SUBENDO INFARC, INITI
X	780.3	CONVULSIONS
_	507.0	FOOD/VOMIT PNEUMONITIS
	426.0	ATRIOVENT BLOCK COMPLETE
	415.1	PULMON EMBOLISM/INFARCT
	453.8	VENOUS THROMBOSIS NEC
	428.0	CONGESTIVE HEART FAILURE

F8 = for more information

Help=F1

Search MEDLINE=ENTER

MEDLINE Queries from Admission Profile

Select a question: _

1. Does Myocardial Infarction cause Convulsions?
2. Is Myocardial Infarction caused by Convulsions?
3. Does Myocardial Infarction occur with Convulsions?

Help=F1

Search MEDLINE=ENTER

BRS Query from Admission Profile

(Myocardial Infarction WITH (ET OR SC)) AND (Convulsions WITH CO)

Help=F1

MEDLINE Queries=ENTER/F3

Session Edit Commands Options Help

^F File ^E Edit ^A Search ^L Limit ^V View ^T Tools ^O Options ^Y Help

1 Myocardial infarction/et,sc and convulsions/co

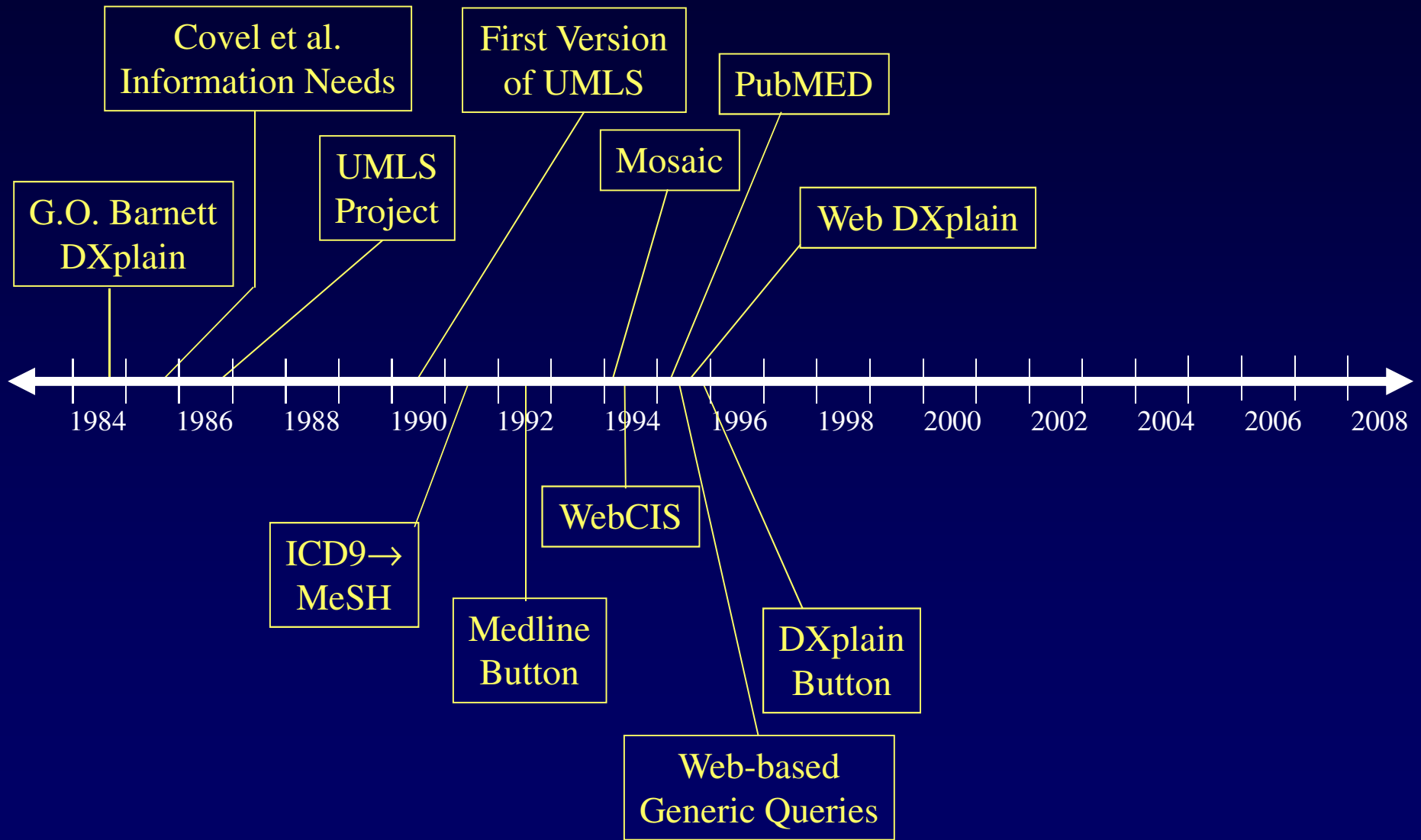
1

_____ ovid - Medline <1973-1983> _____

[To select option hold Ctrl and letter indicated. Press ^Y for Help.]
Enter subject, then press <Enter>

_: _

Infobutton Timeline



Guidelines

DXPLAIN

Differential Diagnosis

Lab test: 1996-02-29

SUMMARY

	NAME	VALUE		RANGE	UNITS	MEDLINE
1. <input type="radio"/>	NA	141		135-146	mM/l	MEDLINE
2. <input type="radio"/>	K	5.2		3.2-4.6	mM/l	MEDLINE
3. <input type="radio"/>	CL	109		96-108	mM/l	MEDLINE
4. <input type="radio"/>	CO2	26		23-29	mM/l	MEDLINE
5. <input type="radio"/>	BUN	26		6-19	mg/dl	MEDLINE

Below is the list of laboratory tests and findings ALREADY included in DXplain's search request:

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> ELDERLY (>65 YRS) | <input checked="" type="checkbox"/> MALE | |
| <input checked="" type="checkbox"/> Hyponatremia | <input checked="" type="checkbox"/> Hyperkalemia | <input checked="" type="checkbox"/> Hyperglycemia |
| <input checked="" type="checkbox"/> Creatinine, Elevated | <input checked="" type="checkbox"/> Hypocalcemia | <input checked="" type="checkbox"/> Hypoalbuminemia |
| <input checked="" type="checkbox"/> Serum Total Bilirubin Elevated | <input checked="" type="checkbox"/> Serum Conjugated Bilirubin Elevated | <input checked="" type="checkbox"/> Alkaline Phosphatase, Elevated |
| <input checked="" type="checkbox"/> Sgot (Ast), Elevated | <input checked="" type="checkbox"/> Sgpt (Alt), Elevated | <input checked="" type="checkbox"/> no Hyperchloremia |
| <input checked="" type="checkbox"/> no Hypochloremia | <input checked="" type="checkbox"/> no Bicarbonate, Increased | <input checked="" type="checkbox"/> no Bicarbonate, Decreased |
| <input checked="" type="checkbox"/> no Blood Urea Nitrogen Decreased | <input checked="" type="checkbox"/> no Blood Urea Nitrogen Elevated | <input checked="" type="checkbox"/> no Serum Phosphate Decreased |
| <input checked="" type="checkbox"/> no Serum Phosphate Elevated | <input checked="" type="checkbox"/> no Hypouricemia | <input checked="" type="checkbox"/> no Hyperuricemia |
| <input checked="" type="checkbox"/> no Serum Lactic Acid Dehydrogenase Elevated | <input checked="" type="checkbox"/> no Serum Creatine Phosphokinase Elevated | |

CHECK OUT the terms you don't want to include in the search.

NOTE - the following labtests were NOT included in the request: CHOLESTEROL

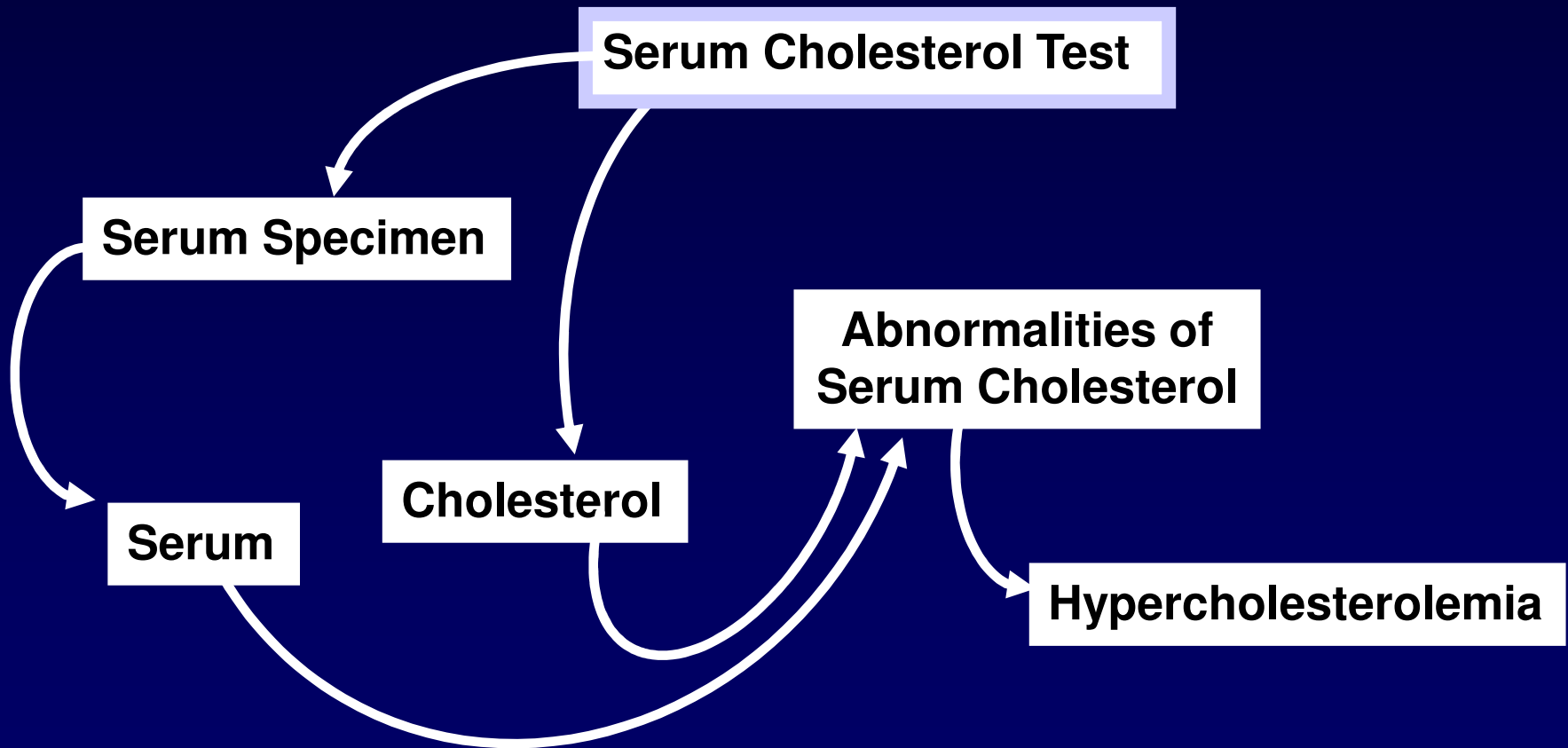
If you wish to add terms to the search - Please type them into the following line (separated by ' + ' !!):

Free-text search string:

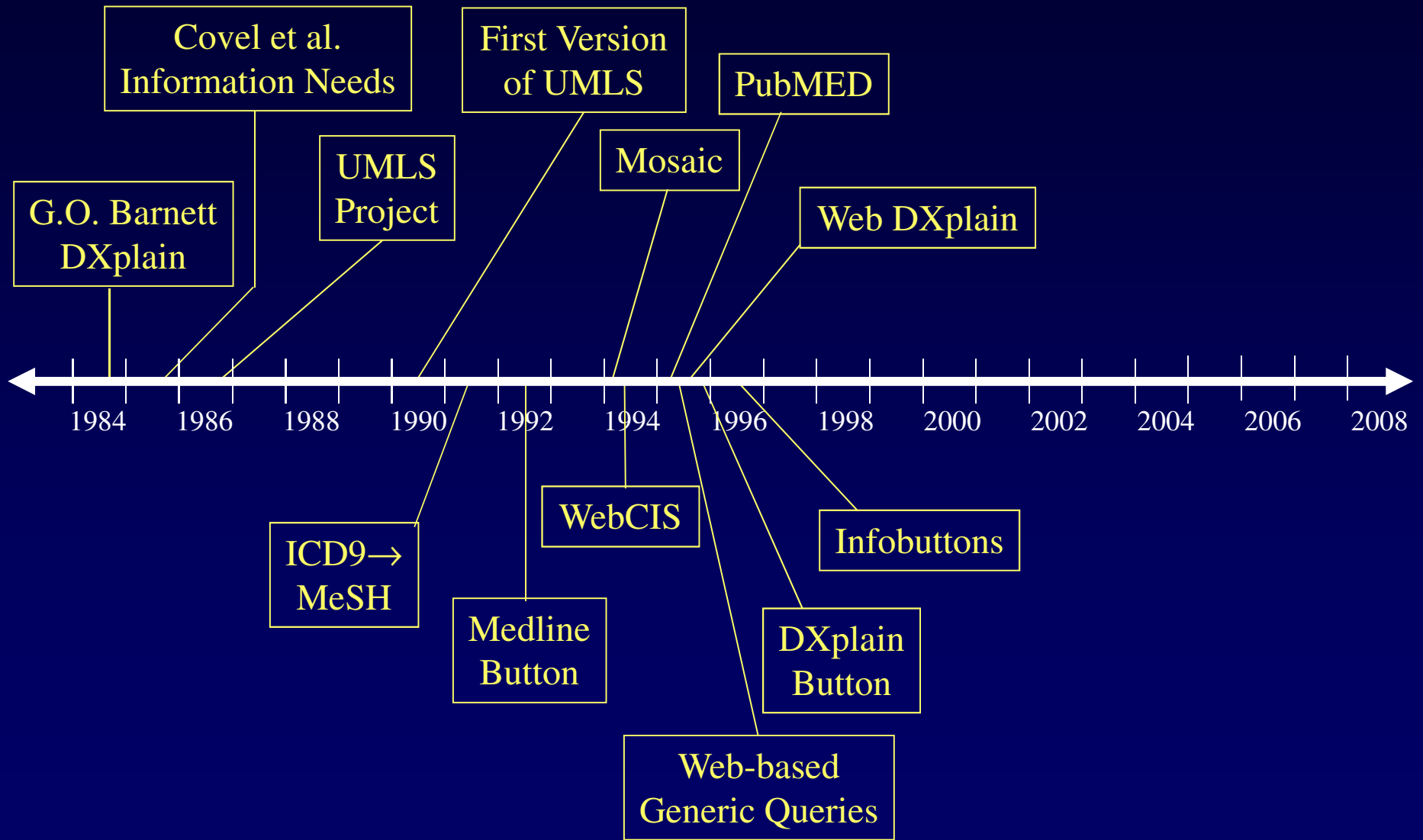
To see the text associated with each diagnosis hit the button on the left, when you are done hit [back]

DXplain's Diagnoses		Interp.
<input checked="" type="radio"/> Disease Information	<input type="radio"/> Explain Disease	
1	ALCOHOLISM	+
2	DIABETES MELLITUS, NON-INSULIN DEPENDENT	+
3	MAGNESIUM DEFICIENCY SYNDROME	+
4	COLITIS, ULCERATIVE	+
5	NON-KETOTIC HYPEROSMOLAR COMA	+
6	RENAL CELL CARCINOMA	+
7	NEPHROTIC SYNDROME	
8	CHOLECYSTITIS, ACUTE	
9	ENTERITIS, REGIONAL (CROHNS DISEASE)	
10	HEART FAILURE, CONGESTIVE	
<input type="radio"/> Disease Information <input type="radio"/> Explain Disease		
11	SPRUE, TROPICAL	
12	POLYMYALGIA RHEUMATICA	
13	SCLERODERMA, RENAL DISEASE	
14	HYPOVOLEMIC SHOCK	
15	CELIAC DISEASE, ADULT	
16	KIDNEY, POLYCYSTIC DISEASE	
17	MALNUTRITION	
18	MYELOMA, MULTIPLE	
19	RECTUM, ADENOCARCINOMA	
20	GLOMERULO NEPHRITIS, MEMBRANO PROLIFERATIVE	

From Data to Findings



Infobutton Timeline



[Logout](#)

[Lab Summary](#)

Lab Update

[12](#) | [36](#) | [72](#) hr

All results

Before date

[Laboratory](#) [May 08](#)

[Radiology](#) [Apr 13](#)

[Pathology](#) [Mar 29](#)

[Disch Sum](#) [1997](#)

[Op/Clinical](#) [1997](#)

[Neurophys](#) [1995](#)

[Ob/Gyn](#) [1997](#)

[GI Endo](#) [1995](#)

[Cardiology](#) [Mar 18](#)

[Pharmacy](#) [Mar 23](#)

[PFT](#) [1997](#)

Non-chart

[Alerts](#) [Apr 19](#)

[Signout](#) [Apr 22](#)

[Notes](#) [Apr 27](#)

[Refresh data](#)

Pharmacy · (1998-12-27 to 1994-05-05) · [Newer](#) · [Older](#)

UD TYLENOL 325 MG TAB	1998-12-27 10:00	D	
ACETAMINOPHEN 120 MG SUPP	1997-06-27 00:00	D	
ACETAMINOPHEN 120 MG SUPP	1997-06-24 00:00	D	
ACETAMINOPHEN 120 MG SUPP	1997-06-24 00:00	D	
UD PRILOSEC 20 MG CAP	1997-04-17 10:00	C	
UD PRILOSEC 20 MG CAP	1997-04-17 10:00	C	
DEXAMETHASONE 0.5 MG/5 ML ELIX	1996-08-30 00:00	D	

UD PRILOSEC 20 MG CAP

Date	1997-04-17 10:00
Status	C
Route	PO
Dose	20.000000 MG
Drug Strength	20.000000 MG
Final Concentration	20.000000 MG
Effective Time	1997-04-16 00:00
Patient Name	SANDIEGO, CARMEN

MDX options menu - Netscape

Back Forward Reload Home Search Netscape Print Security Stop

Micromedex Health-Care Series (HCS)



Search with Trade-name:

- [PRIOSEC](#)

Search by drug component:

- [Omeprazole](#)

MEDLINE (Last 2 Years)

Omeprazole

- [Adverse effects](#)
- [Toxicity](#)
- [Therapy](#)

Notes Apr 27

Document: Done



Name · List · Add to list

Help

Main

Search

Search Results

DrugPoints™ System

OMEPRAZOLE

- [Common Tradenames](#) (*See Complete Tradename Listing*)
 - PRILOSEC
- **Class**
 - antiulcer, proton pump inhibitor
- [Dosage, Adult \(usual\)](#)
 - gastric/duodenal ulcer 20mg/day for 4-8 weeks
 - hypersecretory conditions 60mg QD, up to 120mg TID
 - H pylori 20mg BID or 40mg QD
- [Dosage, Pediatric, \(usual\)](#)
 - limited data; dosage ranges reported: 0.3-3.3mg/kg/day
- **Administration**
 - give before meals
- **How Supplied**
 - 10 MG, 20 MG DELAYED-RELEASE CAPSULE
- [Indications](#)
 - GERD
 - gastric/duodenal ulcer
 - pathological hypersecretory conditions
 - severe erosive esophagitis
 - adjunct to H pylori disease
- [Contraindications](#)
 - hypersensitivity to omeprazole products

Notes

Apr 27


Refresh data

Document: Done

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Micromedex Health-Care Series (HCS)



Search with Trade-name:

- [PRIOSEC](#)

Search by drug component:

- [Omeprazole](#)

MEDLINE (Last 2 Years)

Omeprazole

- [Adverse effects](#)
- [Toxicity](#)
- [Therapy](#)

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Document: Done

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NCBI PubMed PubMed QUERY PubMed ?

(past 2 Years only)

Details Omeprazole[MeSH Terms] AND adverse effect Search Clear

Docs Per Page: 20 Entrez Date limit: No Limit

citations 1-20 displayed (out of 174 found), page 1 of 9

Display Abstract report for the articles selected (default all).

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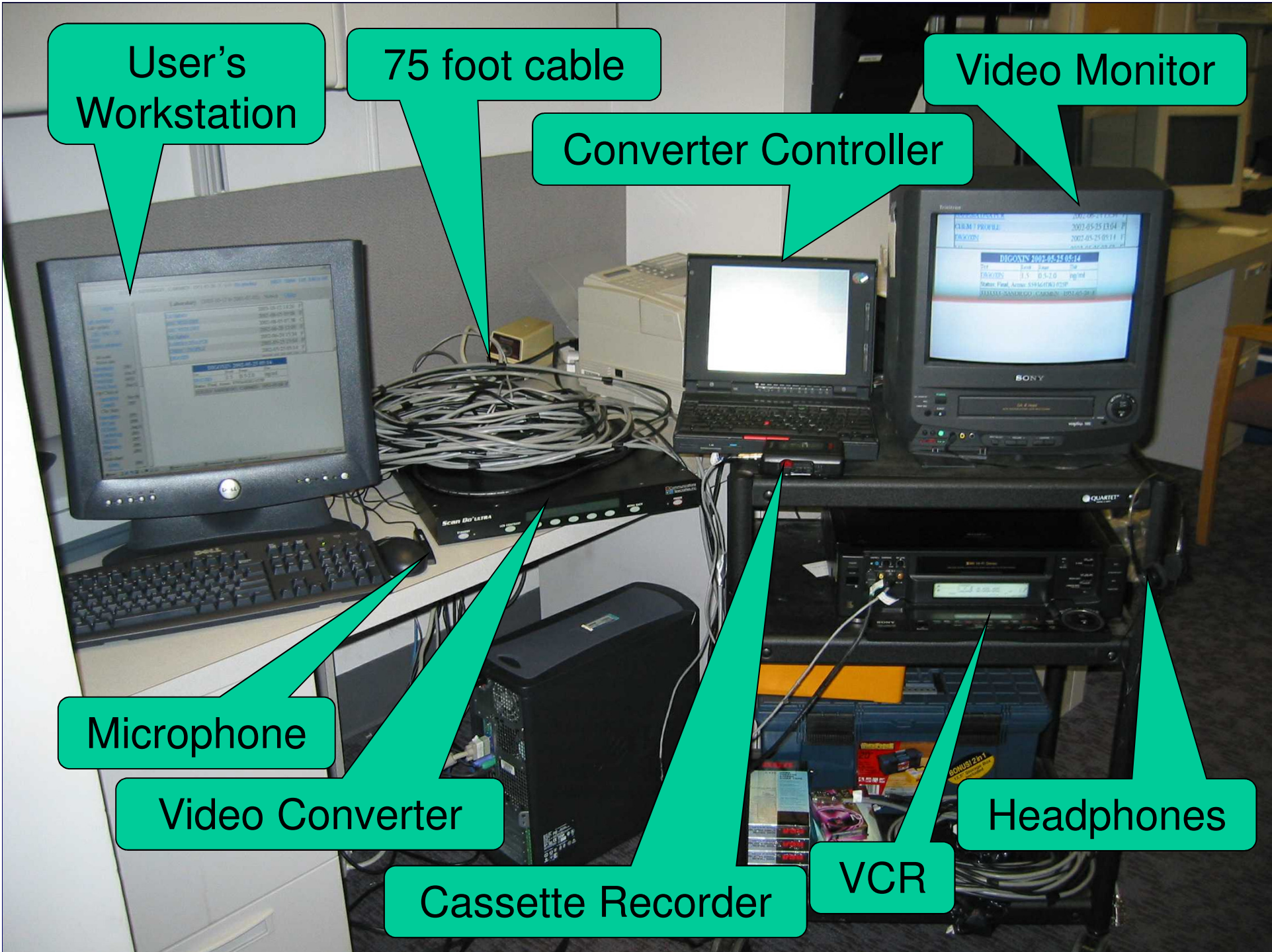
[Jacobson SH, et al](#) [\[See Related Articles\]](#)
[Losec was probably the cause of interstitial nephritis].
Lakartidningen. 1999 Apr 7;96(14):1717-8. Swedish. No abstract available.
PMID: 10222687; UI: 99239193.

[Freeman HJ](#) [\[See Related Articles\]](#)
Therapy for ulcers and erosions associated with nonsteroidal anti-inflammatory drugs.
Can J Gastroenterol. 1998 Nov-Dec;12(8):537-9. Review. No abstract available.
PMID: 10206732; UI: 99217414.

[Romero-Gomez M. et al](#) [\[See Related Articles\]](#)

Notes Apr 27

Document: Done



User's Workstation

75 foot cable

Video Monitor

Converter Controller

Microphone

Video Converter

Cassette Recorder

VCR

Headphones

1131313 SANDIEGO, CARMEN - 1951-05-26 - F - (-) - (No attending) MRS - Name - List - Add to list

Logout Laboratory - (2003-10-12 to 2001-07-02) - Newest - Older

Est Habate	2003-10-12 14:26	F
ABC WITH DIFF	2002-08-05 09:08	F
ABC WITH DIFF	2002-08-05 07:38	C
Est Habate	2002-06-28 12:09	F
BABESIA DNA PCR	2002-06-24 15:34	F
CHEM 7 PROFILE	2002-05-25 13:04	P
DIGOXIN	2002-05-25 05:14	F

DIGOXIN 2002-05-25 05:14

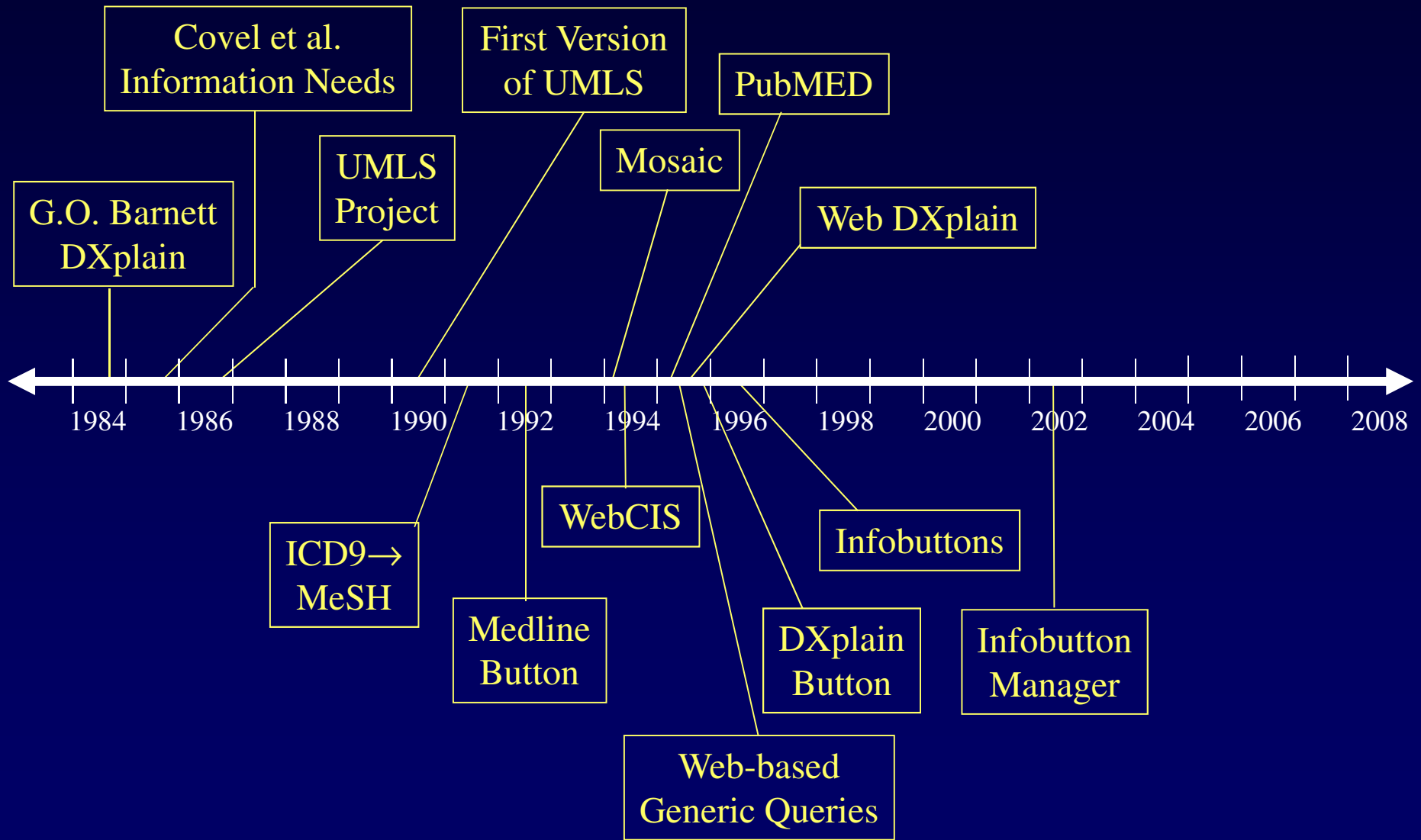
Test	Result	Range	Unit
DIGOXIN	1.5	0.5-2.0	ng/ml

Status: Final, Accno: 8593641010 025P
1131313 SANDIEGO, CARMEN - 1951-05-26 - F

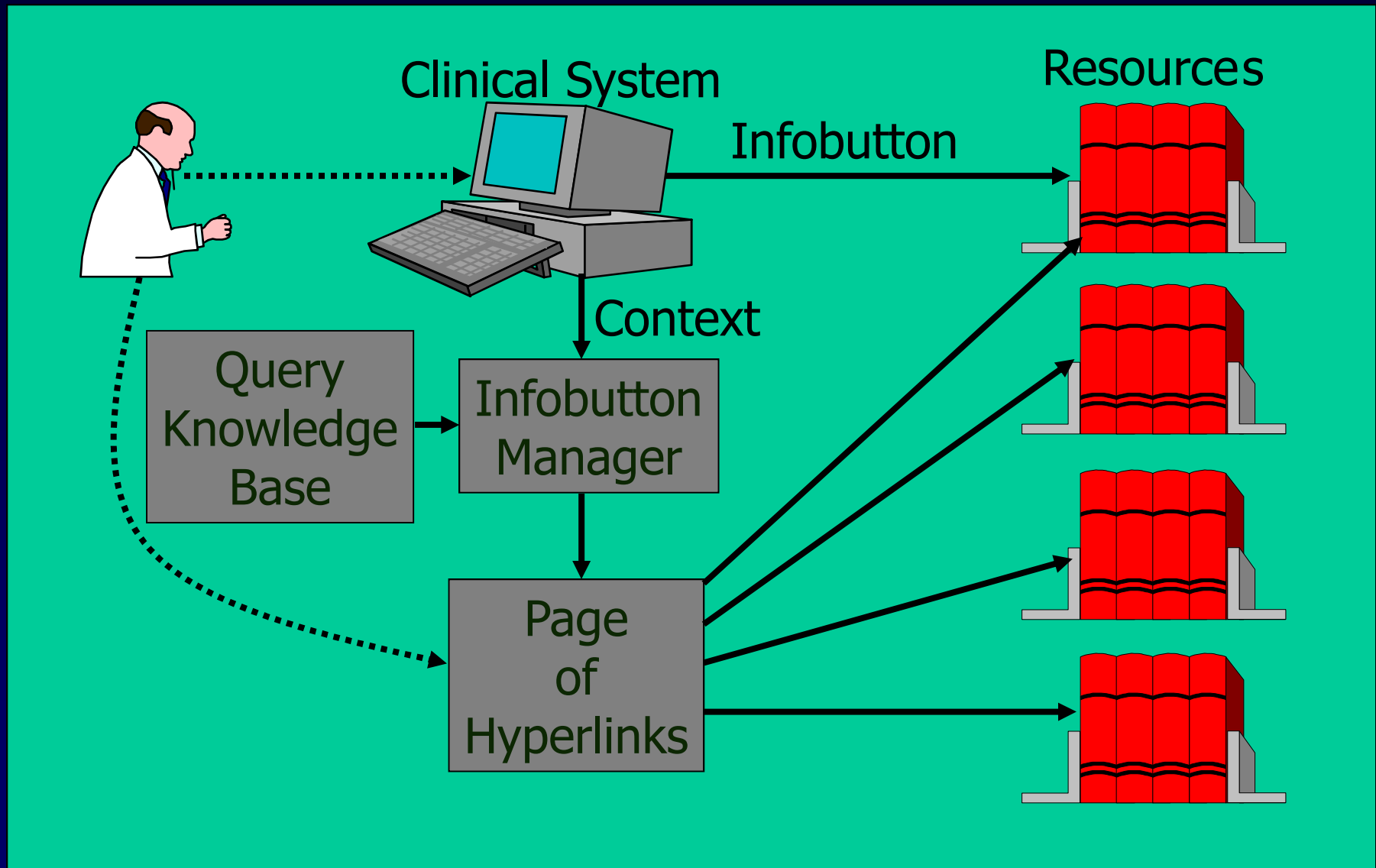
- Laboratory 2003
- Radiology Aug 29
- Pathology Jul 01
- Erosch Sum Aug 02
- Op/Clinical
- Operative Nov 06
- Consult 1997
- Clin Sum
- Neurophys 1995
- Ob/Gyn 2000
- GI Endo Aug 01
- Cardiology 2001
- HEENT 1997
- Pharmacy 2001
- PET 2001
- Non-chart
- Alerts 2001
- Support Nov 27



Infobutton Timeline



Infobuttons vs. Infobutton Manager



[Logout](#)

[Lab summary](#)

Lab update

[12h](#) | [36h](#) | [72h](#) | [Days](#)

[Admin summary](#)

All results

Before date

[Laboratory](#) Jul 29

[Radiology](#) 2003

[Pathology](#) May 20

[Disch Sum](#) 2002

Op/Clinical

[Operative](#) Aug 16

[Consult](#) 1997

Clin Sum

[Eclipsys](#) Apr 07

[Neurophys](#) 1995

[Ob/Gyn](#) 2003

[GI Endo](#) 2002

Laboratory

[ABC](#)

[COAG PT](#)

[BASIC M](#)

[LH](#)

[DIGOXIN](#)

[CORTISO](#)

BAS

Test

[NA](#) ⓘ

[K](#) ⓘ

[CL](#) ⓘ

[CO2](#) ⓘ

[BUN](#) ⓘ

[GLUCOS](#)

[CREATI](#)

[CALCIU](#)

Collectio

Questions of Interest



From the Columbia University [Infobutton Manager](#) ⓘ



Concept of Interest: K

Preferred Name for Searching: POTASSIUM

Date of Patient Data: 2004-08-19 11:44

Frequently Asked Questions:

[What are the NYPH Guidelines for potassium replacement in adults?](#)

[What does the CPMC Lab Manual say about this test?](#)

[What is its toxicity?](#)

[How does the CPMC Lab Manual say I should collect a specimen for this test?](#)

[What is the anion gap for this \(and other related results\)?](#)

[What are the adverse reactions according to Micromedex?](#)

Other Common Questions:

[What is the differential diagnosis when it is abnormal?](#)

Search Other Resources:

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105%

NEW YORK-PRESBYTERIAN HOSPITAL

Adult Potassium Replacement Policy

AVAILABLE PRODUCTS on NYPH FORMULARY

Intravenous		
Small volume parenterals (for intermittent piggyback infusion) 10 mEq in 50 mL Sterile Water for Injection 10 mEq in 100 mL Sterile Water for Injection 20 mEq in 50 mL Sterile Water for Injection 20 mEq in 100 mL Sterile Water for Injection	Large volume parenterals (for continuous maintenance infusion) 20 mEq in 0.9 % NaCl 1000 mL 40 mEq in Dextrose 5%, 1000 mL 20 mEq in Dextrose 5% and Sodium Chloride 0.45%, 1000 mL 40 mEq in 0.9% NaCl 1000 mL 40 mEq in Dextrose 5% and Sodium Chloride 0.45%, 1000 mL	
Oral		
20 mEq/15 mL unit dose	40 mEq/30 mL unit dose	Tablet, extended release 10 mEq/tablet
30 mEq/22.5 mL unit dose	6.7 mEq/5 mL, Sugar Free (bulk bottle)	Tablet, extended release 20 mEq/tablet

DOSING RECOMMENDATIONS

- Deviations from dosing parameters outlined in this policy **MUST** be approved by an ICU attending or fellow
- Replacement by oral or enteral route is preferred for non-critical potassium replacement. Use intravenous intermittent piggyback infusion only when rapid correction is necessary or the patient is unable to take oral medication.
- **Standing orders of intermittent intravenous infusions on general care areas are not acceptable (eg. KCl 20mEq IV BID)**

Serum K ⁺	Total Replacement Dose (consider lower dose for renal insufficiency)
≤ 3 mEq/L	40 - 80 mEq
3.1 - 3.4 mEq/L	40 - 60 mEq
3.5 - 3.9 mEq/L	20 - 40 mEq
4 - 4.2 mEq/L cardiac patient	10 mEq

- To accomplish an appropriate intermittent piggyback infusion dose utilizing the potassium chloride small volume parenterals available, "runs" are acceptable, providing the order adheres to administration rate and concentration parameters for the unit and IV access respectively. (e.g. KCl 20 mEq/50 ml over 1 hour x3)
- Generally, serum potassium rises 0.1 mEq/L for every 10 mEq of potassium administered.
- Patients taking digitalis should be maintained at a serum potassium > 4.0 mEq/L.

1 of 2 8.5 x 11 in

WebCIS Potassium, Serum - Netscape

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31313 Bookmarks Location: [tp://cpmclabinfo.cpmc.columbia.edu/chapter/mono/ci001900.htm#Container](http://cpmclabinfo.cpmc.columbia.edu/chapter/mono/ci001900.htm#Container) What's Related

Specimen Blood

Volume 4 mL

Minimum Volume 1 mL serum

Container Gold top tube or gold top Microtainer™


Collection Avoid very small needles if possible. Avoid stasis, use of tourniquet, hand-clenching, if possible, and potassium-containing tubes such as potassium oxalate.

Reference Range Adults: 3.6-5.0 mmol/L

Critical Values High: >6.0 mmol/L; low: <2.9 mmol/L

Use Evaluate electrolyte balance; potassium level should be followed especially in elderly patients, those on intravenous hyperalimentation, in patients on diuretic therapy, and in cases of renal disease, particularly renal failure, patients on hemodialysis, and those with interstitial nephritis or nephropathy; evaluate hypertension; potassium should be monitored during treatment of acidosis, including ketoacidosis in diabetes mellitus; evaluate muscular weakness and irritability, mental confusion, weakness; manage leukemia, diseases of gastrointestinal tract; evaluate and prevent cardiac arrhythmias; evaluate alcoholism with delirium tremens; detect, diagnose, and manage mineralocorticoid excess (primary aldosteronism, Cushing's syndrome, tumor with ectopic ACTH production, some cases of congenital adrenal hyperplasia)

Methodology Ion-selective electrode (ISE)

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Lab sum
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Laborato
Radiolog
Patholog
Disch Su
Op/Clini
Operati
Consul
Clin Su
Eclipsy
Neuroph
Ob/Gyn
GI Endo

test?

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Prudent diet

[Graham A Colditz, MD, DrPH](#)

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INTRODUCTION — The clinical encounter often includes questions from patients about the proper diet. Much of the advice has historically been disease-specific or ephemeral, with little basis in sound research. Early dietary guidelines were based upon clinical deficiencies; these have more recently been extended to include concerns regarding over-nutrition and recommendations to reduce the intake of fat and cholesterol.

An explosion of prospective epidemiologic studies of diet and chronic diseases has facilitated major advances in our understanding of the contribution of diet to the pathogenesis of disease [1]. These studies are complemented by randomized trials and studies of nutrient action in animal models. Building on international correlation studies and retrospective case-control studies, the prospective cohorts offer the potential to evaluate diet-disease relationships using validated measures of diet; they are free from recall bias and allow investigators to correct for measurement error. Advances have been observed in cancer, cardiovascular disease, and a range of other major chronic conditions.

Adult Medicine

Most Relevant

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- [Pathophysiology of Hypertension](#)
- [Potassium and Blood Pressure](#)
- [Potassium and Blood Pressure](#)
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ANTIOXIDANT VITAMINS

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- [Cardiovascular disease](#)

SUMMARY

- [Patient instructions](#)

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- [TABLES](#)
- [Glycemic index of foods](#)
- [Sources and effects of fat](#)

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- [Overview of the risk factors for](#)

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Display Summary Show: 20 Sort Send to Text

Items 1-20 of 1210 Page 1 of 61 Next

1: [Corona JC, Tapia R.](#) Related Articles, Links
AMPA receptor activation, but not the accumulation of endogenous extracellular glutamate, induces paralysis and motor neuron death in rat spinal cord in vivo. J Neurochem. 2004 May;89(4):988-97. PMID: 15140197 [PubMed - indexed for MEDLINE]

2: [Garcia Dopico J, Perdomo Diaz J, Alonso TJ, Gonzalez Hernandez T, Castro Fuentes R, Rodriguez Diaz M.](#) Related Articles, Links
Extracellular taurine in the substantia nigra: taurine-glutamate interaction. J Neurosci Res. 2004 May 15;76(4):528-38. PMID: 15114625 [PubMed - indexed for MEDLINE]

3: [Miyoshi K, Nishio T, Yasuhara A, Morita M, Shibamoto T.](#) Related Articles, Links
Detoxification of hexachlorobenzene by dechlorination with potassium-sodium alloy. Chemosphere. 2004 Jun;55(11):1439-46. PMID: 15099723 [PubMed - indexed for MEDLINE]

4: [Lang PA, Kaiser S, Myssina S, Birka C, Weinstock C, Northoff H, Wieder T, Lang F, Huber SM.](#) Related Articles, Links

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- What are the adverse reactions to oral potassium salts?
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ADVERSE REACTIONS

One of the most severe adverse effects is hyperkalemia (see [CONTRAINDICATIONS](#) , [WARNINGS](#) , and [OVERDOSAGE](#)). There also have been reports of upper and lower gastrointestinal conditions including obstruction, bleeding, ulceration, and perforation (see [CONTRAINDICATIONS](#) and [WARNINGS](#)).

The most common adverse reactions to oral potassium salts are nausea, vomiting, flatulence, abdominal pain/discomfort, and diarrhea. These symptoms are due to irritation of the gastrointestinal tract and are best managed by taking the dose with meals, or reducing the amount taken at one time.

Skin rash has been reported rarely.

OVERDOSAGE

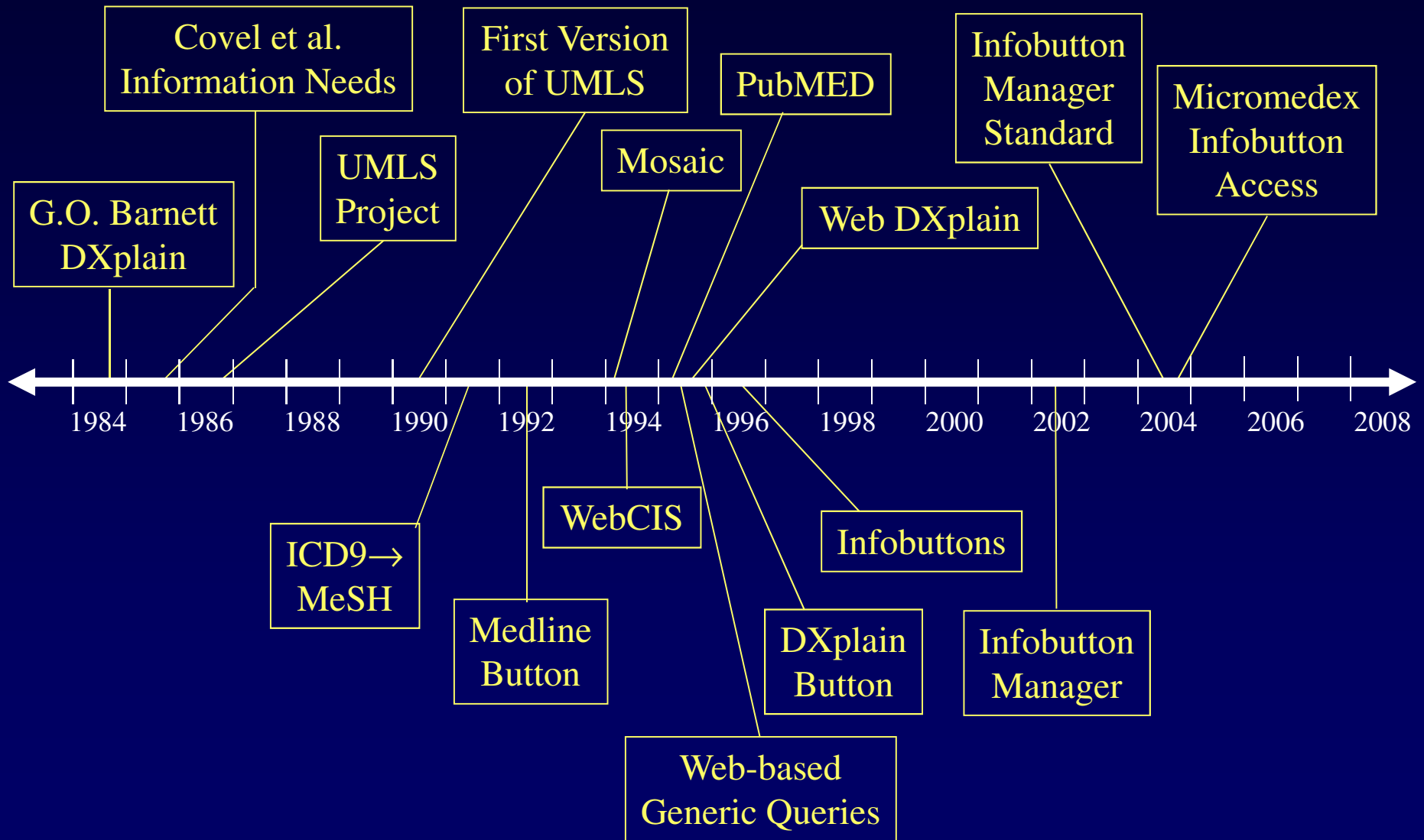
The administration of oral potassium salts to persons with normal excretory mechanisms for potassium rarely causes serious hyperkalemia. However, if excretory mechanisms are impaired or if intravenous administration is too rapid, potentially fatal hyperkalemia can result (see [CONTRAINDICATIONS](#) and [WARNINGS](#)). It is important to recognize that hyperkalemia is usually asymptomatic and may be manifested only by an increased serum potassium concentration (6.5-8.0 mEq/L) and characteristic electrocardiographic changes (peaking of T-waves, loss P-waves, depression of S-T segments, and prolongation of QT intervals). Late manifestations include muscle paralysis and cardiovascular collapse from cardiac arrest (9-12 mEq/L).

Treatment measures for hyperkalemia include the following:

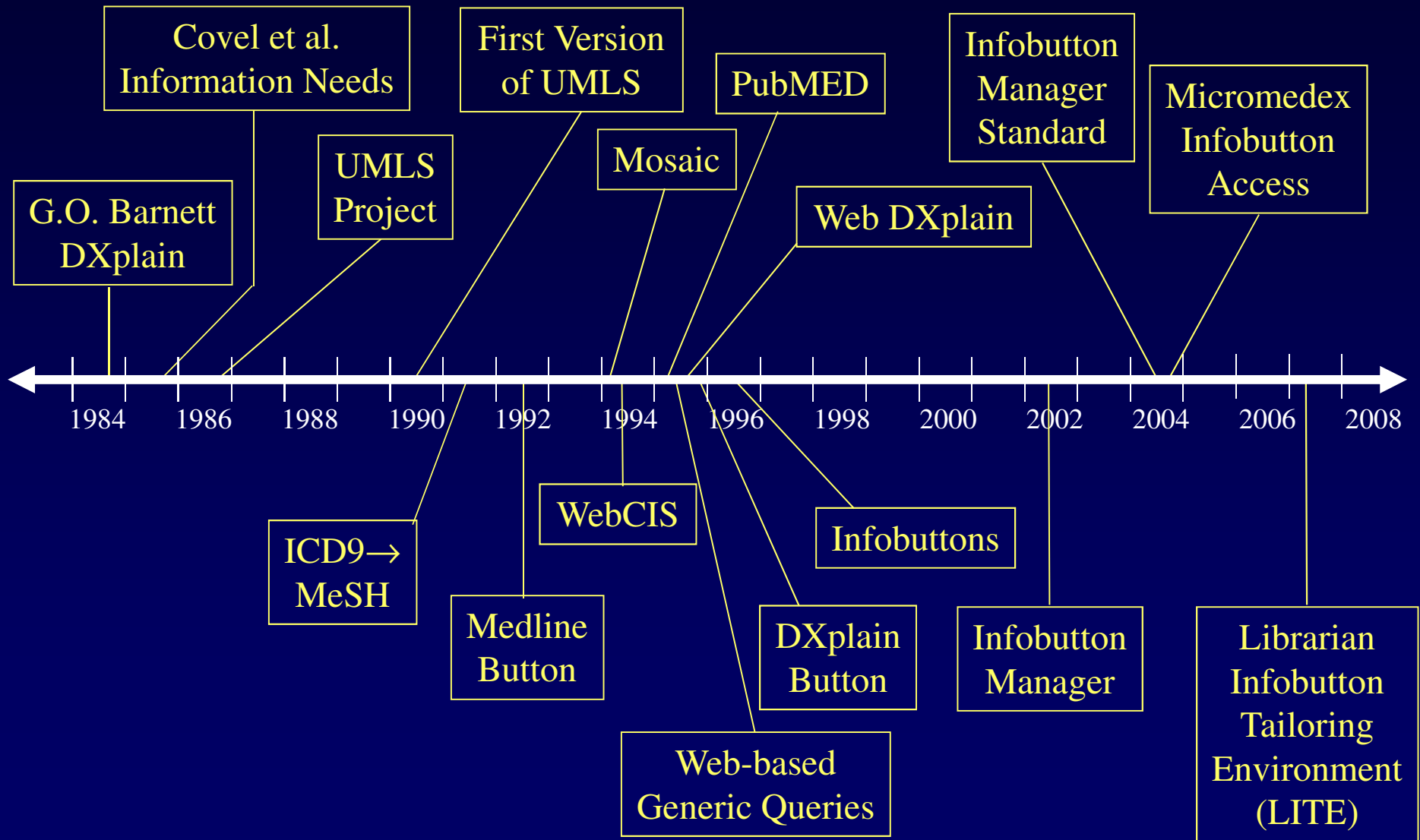
1. Elimination of foods and medications containing potassium and of any agents with potassium-sparing properties;

[test?](#)

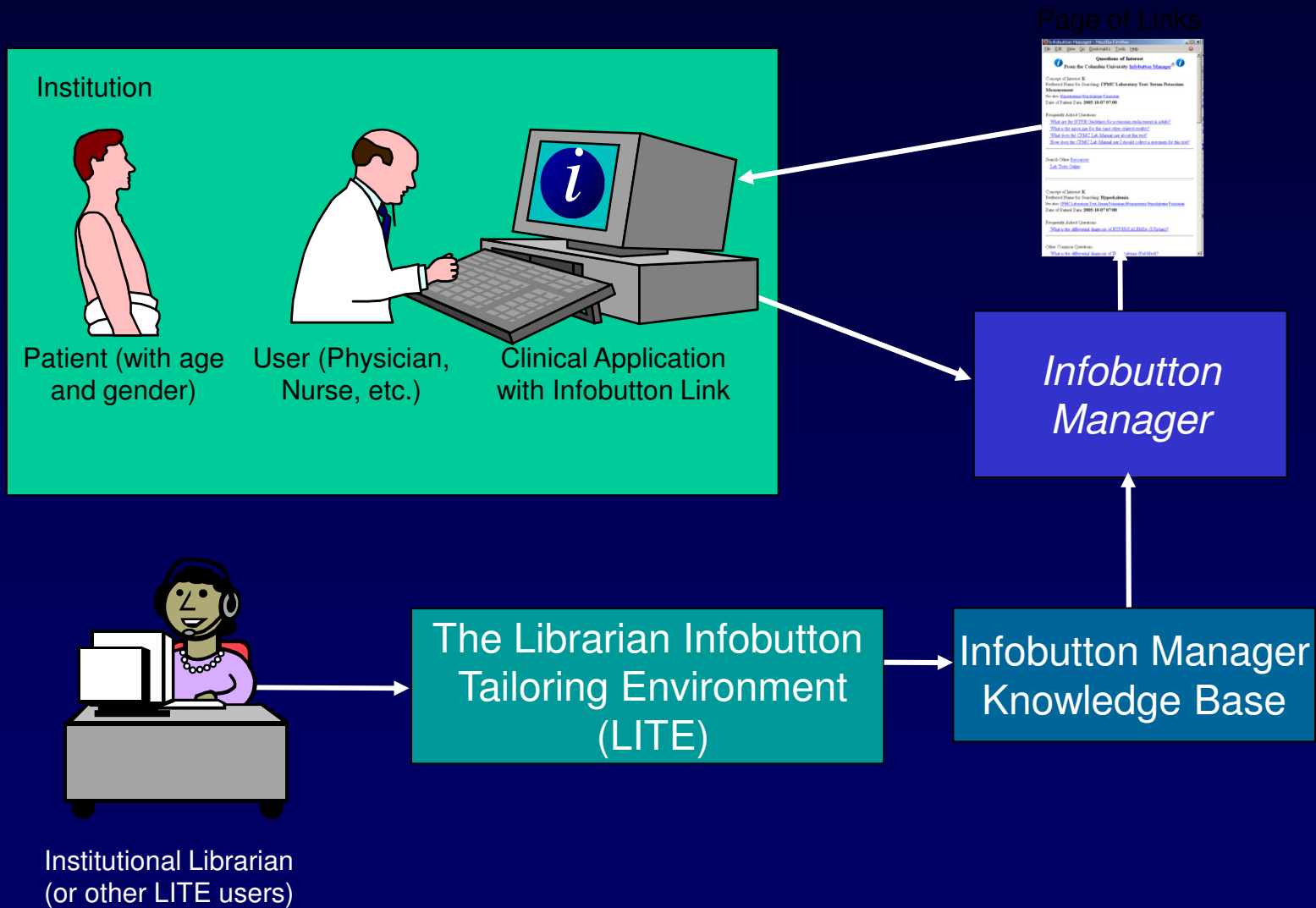
Infobutton Timeline



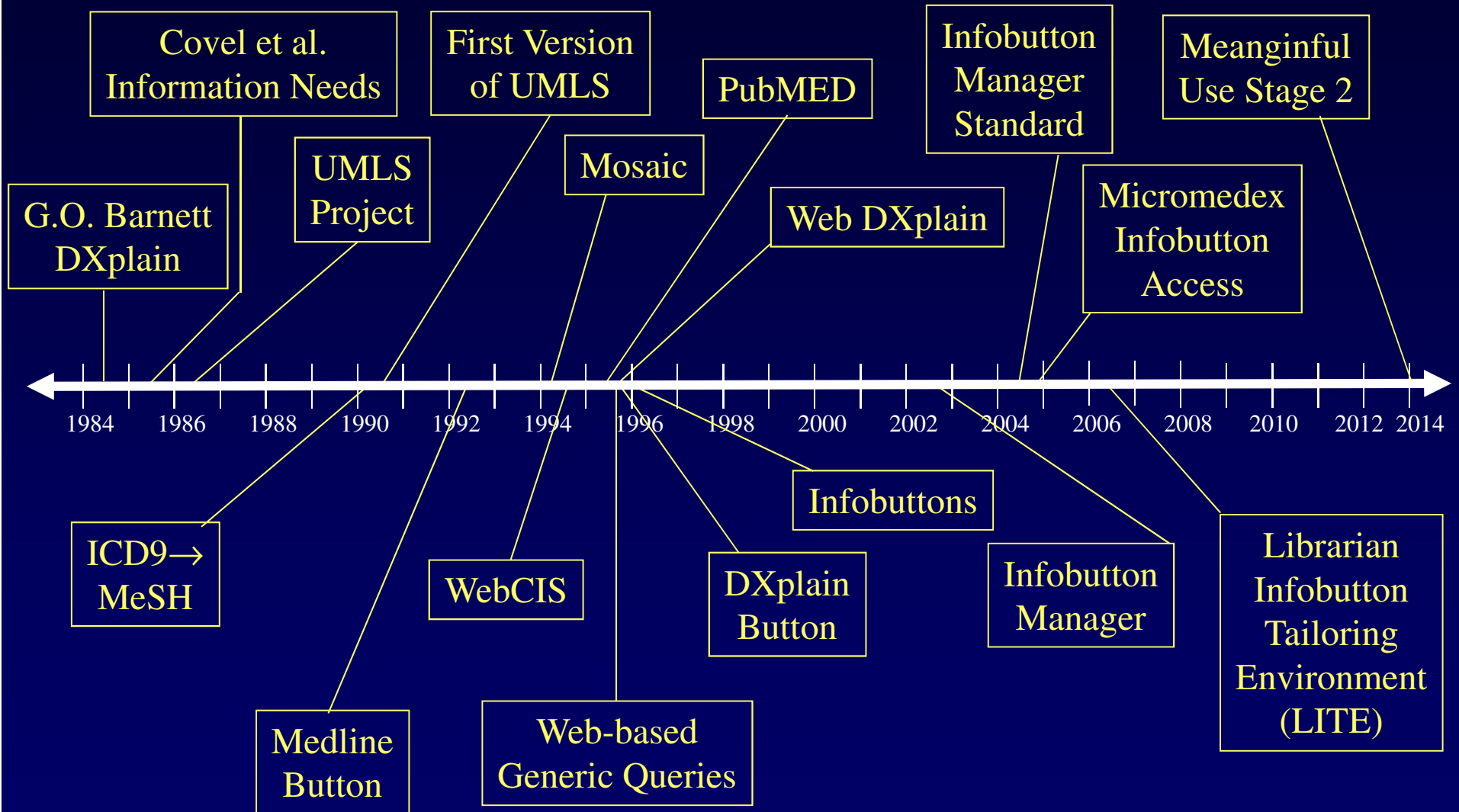
Infobutton Timeline



Institution Customization Tasks



Infobutton Timeline



Conclusions

- Infobuttons improve patient care
- The World Wide Web makes resources available and makes integration feasible, even easy
- The HL7 standard is driving adoption by clinical system vendors and knowledge vendors
- EHRs achieve meaningful use with infobuttons
- OpenInfobutton and LITE allow everyone to play



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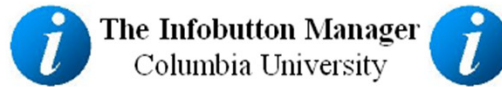
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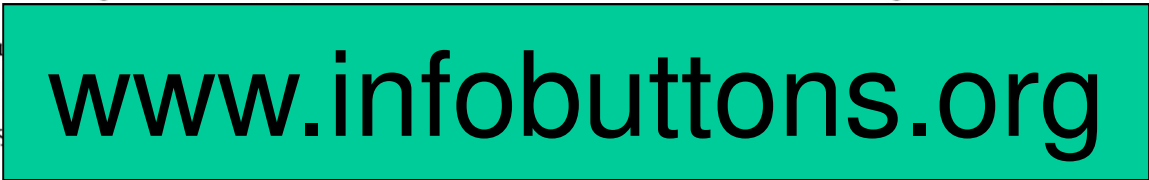


“Infobuttons” are context-specific links from one information system (usually a clinical information systems such as an electronic health record) to some other resource that provides information that might be relevant to the initial context. Infobuttons are used to anticipate users’ information needs and provide them with easy ways to obtain answers to resolve those needs. For example, a nurse reviewing a patient’s laboratory results may wish to know the implications of a particular result. Click [here](#) to learn more about infobuttons.

In many cases, the number of possible information needs may be large, and they might differ, based on the situation. For example, if the laboratory result being reviewed is a potassium test, then the user might want to know the implications of an abnormality, whereas if it is a syphilis test, the user might want to look up the latest treatment guidelines. If, however, the test is a drug level, then questions might arise about the dose and side effects of the drug, while the user might want to know about special contraindications if the patient is of child-bearing age. The information need may even vary depending on the user (e.g., student, nurse, or physician) and the resource used to resolve the need may vary with the user’s setting (ICU, ER or clinic) and may depend on the specific guidelines or software licenses of the user’s institution.

In order to address these complexities, we have developed an “Infobutton Manager” that can match the user’s contextual information against a knowledge base of information needs in order to propose a select list of topics that may be most likely of interest. Each topic is, in turn, a customized link to a resource, intended to obtain topic-specific information. For example, if a user is reviewing a patient’s prothrombin time (a test of blood coagulation), the Infobutton Manager will provide links to various references about drugs that affect prothrombin time (such as warfarin sodium). If the patient is an adolescent or adult female, some of the links will be specifically related to pregnancy and breastfeeding recommendations. If the patient is a patient at New York Presbyterian Hospital, a link will be provided to the relevant age-specific hospital guidelines for the use of warfarin sodium. More information about the Infobutton Manager is available [here](#); information about the HL7 standard for infobutton managers is available [here](#).

The Columbia University Infobutton Manager page that you get is real. See



learn more about the technology behind the Infobutton Manager and clinical information system is [here](#). The Infobutton looks and acts like in a more realistic. The Infobutton

However, the customization of the Infobutton Manager is not a simple task. In order to properly use the Infobutton manager, you will need to have a clear understanding of your users’ information needs, know what resources are available to your institution for resolving those needs, understand how to automatically link to those resources, and identify the terminologies used in your system that can help with automating information retrieval. The customization of the Infobutton Manager for all interested institutions, therefore, goes beyond the resources that any one person or small group can provide.

In order to help those interested in customizing the Infobutton Manager for their own use, we are developing a Librarian Infobutton Tailoring Environment (LITE). We are building LITE with the help of a community of volunteers who are potential future LITE users (for example, medical librarians). If you are interested in learning more about LITE and how you can participate, click [here](#).

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LITE

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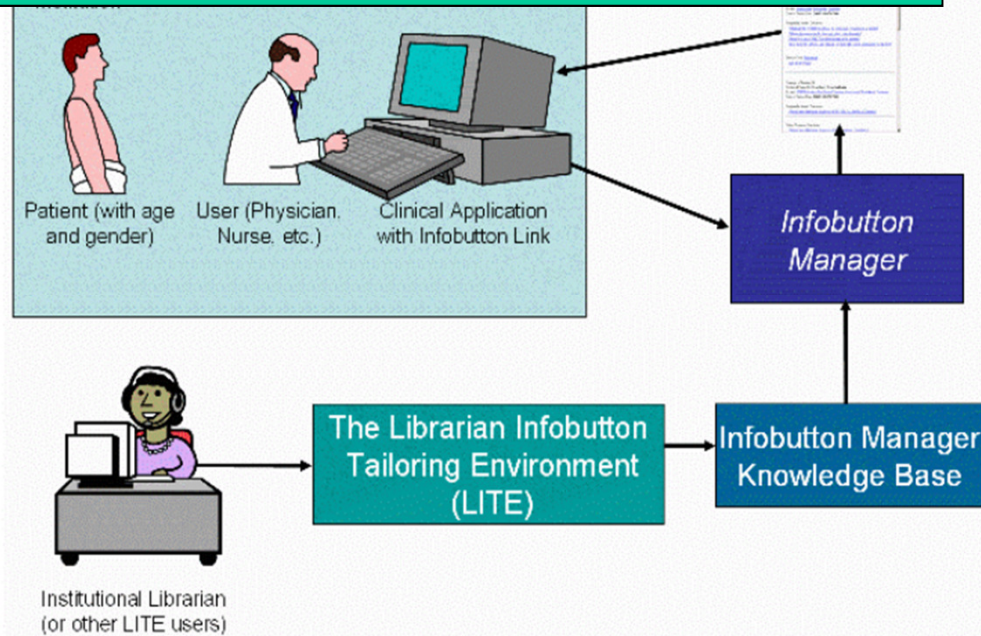
Welcome to LITE

View Edit Outline Track

Welcome to the LITE (Librarian Infobutton Tailoring Environment) website

LITE is a tool that will help you manage the way that the Infobutton Manager provides information resource links to clinical systems users at your institution. Users at your institution can access the Infobutton Manager through links called infobuttons that are inserted into their clinical information systems, such as electronic medical records. When a user clicks on an infobutton, information (such the application the users is using, the type of user, and the patient age and gender) is passed to the Infobutton Manager. The Infobutton Manager uses this informaition to provide the user with a list of links to relevant online health information resources, such as textbooks and knowledge bases. The diagram below shows how all the pieces fit together.

lite.bmi.utah.edu



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Open infobutton

VHA CHIO Innovation project for "CPRS Decision Support enhanced by Context-Sensitive Infobuttons"

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Task List (Please use 'view more' to see the entire list)

Owner	Description	Due Date	Status
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Showing 0 items from page To-Dos sorted by Status, Due Date, Owner. [View more](#) »

Project updates

OpenInfobutton at the AMIA Summit 2011 The OpenInfobutton project will be presented at the AMIA CRI Summit 2011 on March 11th. The presentation will be part of a panel entitled "Meaningful Use and Personalized Patient Education"
Posted Mar 1, 2011 2:22 PM by Guilherme Del Fiol

OpenInfobutton demo A live demonstration of OpenInfobutton using a mock-up EHR is now available.
Posted Oct 26, 2011 5:06 PM by Guilherme Del Fiol

Known issues to address

- Adding some form of discussion / forum capability (maybe - core team will decide)
- Fleshing out "The Team" page with developer information
- Features apparently not available on Google Sites (per the "vote for it" page) in rough order of importance to this project
 - Viewer subscription to updates
 - Page level permissions
 - RSS feed