



Pathway Navigator

From a static clinical pathway to a specific patient management tool

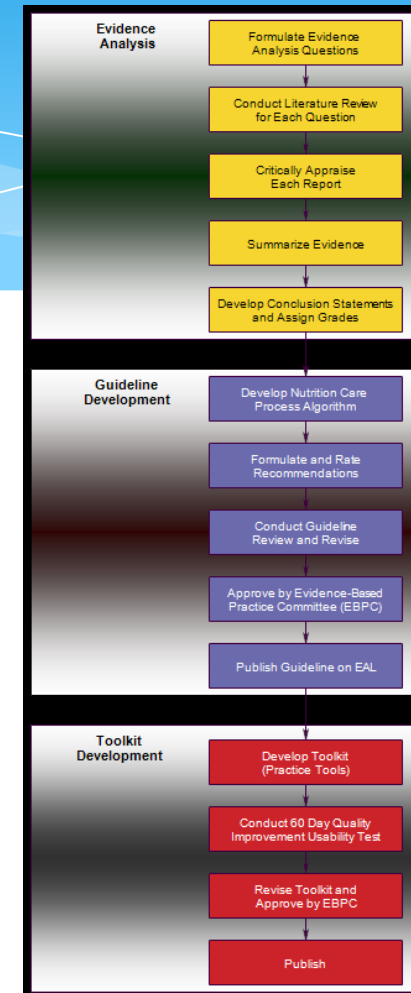
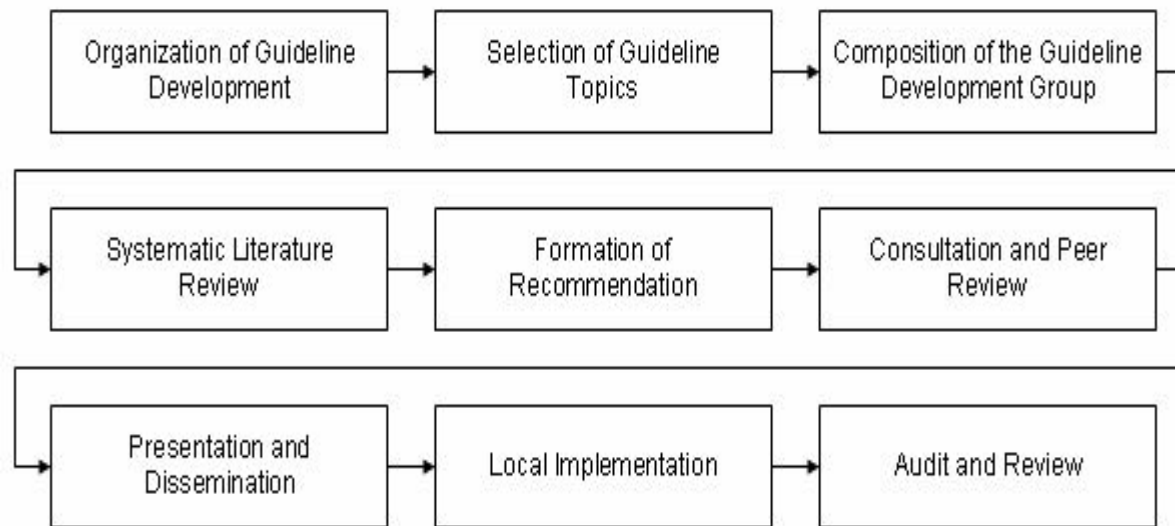
Dr Ashwin Patel
John Anthony Williams
June 2012

A Pathway Navigator will improve compliance with best practice

- **Multitude of guidelines** and pathways available
- Limited improvement in variation and cost reduction
- Success **limited by implementation**
- Published guidelines and algorithms are inadequate
- We need a **Pathway Navigator** at the point of care



Guideline Process



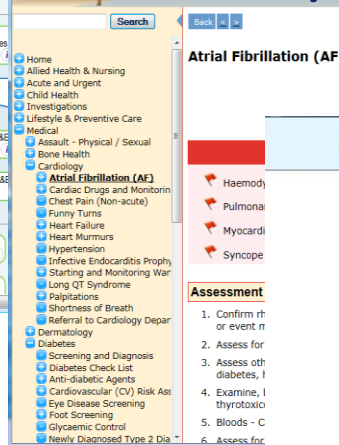
Published and localised



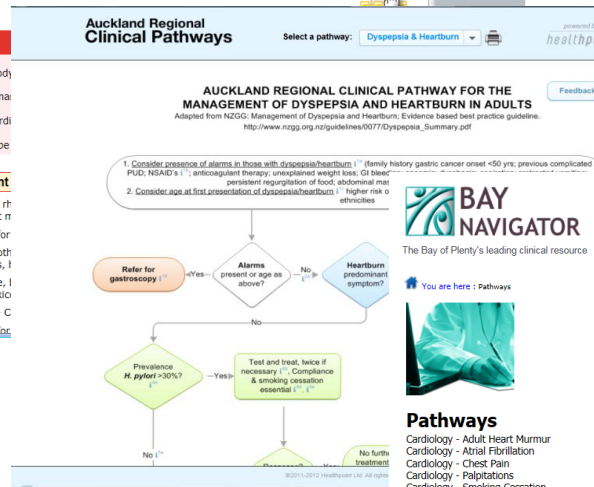
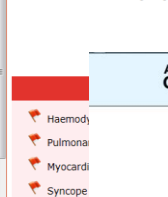
Diabetes - suspected in adults



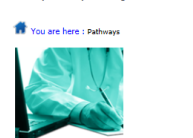
HealthPathways



Atrial Fibrillation (AF)

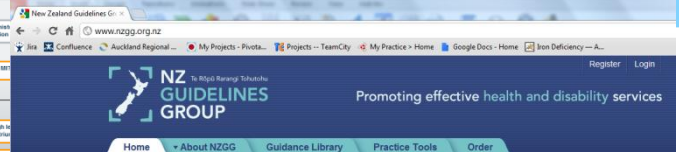
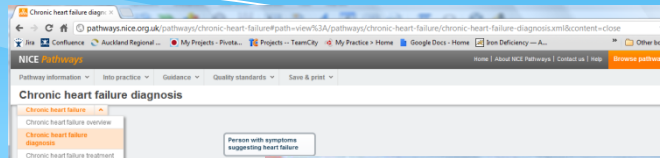


BAY NAVIGATOR

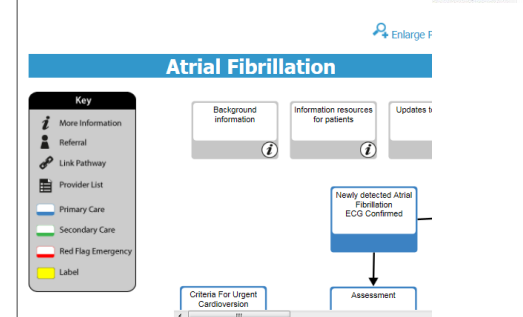
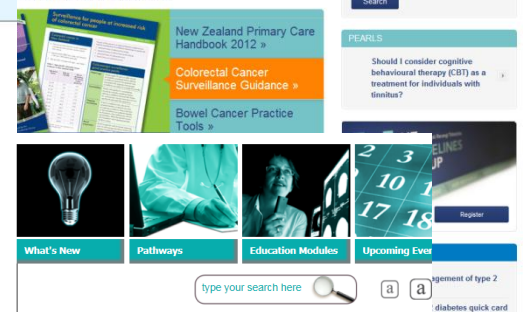


Pathways

- Cardiology - Adult Heart Murmur
- Cardiology - Atrial Fibrillation
- Cardiology - Chest Pain
- Cardiology - Palpitations
- Cardiology - Smoking Cessation
- Cardiology - Suspected Cardiac Syncope
- Cardiology - Suspected Heart Failure
- Child Health - Childhood Eczema
- Child Health - Childhood Gastroenteritis
- Child Health - Childhood OME
- Child Health - Childhood Skin Sepsis
- Child Health - Childhood UTI
- Child Health - Smoking Cessation
- Childhood Asthma
- Diabetes - Management of Type 2 Diabetes
- Diabetes - Smoking Cessation
- Respiratory - COPD
- Respiratory - Smoking Cessation



Welcome to the New Zealand Guidelines Group, the health and disability sector in driving the use of reliable evidence.



Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

Utilisation Gap



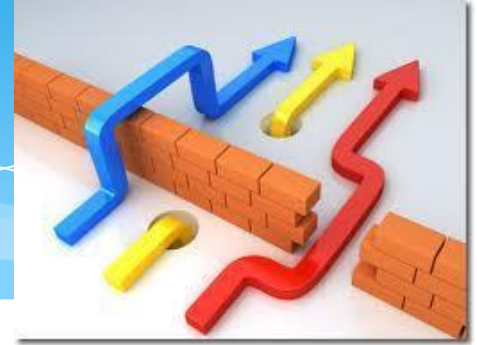
- **Gap exists** between guideline development and utilisation
 - Recommendations from guidelines are **not followed**
 - Improved outcomes (reduced variation and cost) **not achieved**
- Falls short because **inability to implement effectively**

Guideline dissemination



- Publication alone with/without educational program is **ineffective**
- Locating and looking up guidelines is **time-consuming**
- Enhanced by using computers at the **point of care**
- Simply displaying guidelines does not increase adherence

Barriers to adoption



- Guidelines of variable quality
- Conflicting recommendations, clinician disagreement
- Inertia associated with traditional practice behaviours
- Lack of incentives to change
- Patient-specific and community-wide factors

Making change happen

- In order for clinicians to follow recommendations, they must agree with the guidelines
 - Balance of positive and negative **incentives**
 - “it is in my best interests to do this”
 - **Capability**
 - “I have the ability to do this”
 - **Understanding**
 - “I understand what I need to do”



Agreement with the guidelines

- Lobach's **Model for Consensus Building**
 - PRESENTATION (specialist)
 - SURVEY (all clinicians)
 - ADAPTATION (opinion leader and specialist)
 - REPEAT SURVEY (all clinicians)
 - FURTHER ADAPTATION (opinion leader and specialist)
 - DISTRIBUTION (opinion leader and specialist)
 - GROUP DISCUSSION (all clinicians)
 - CONSENSUS.

Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012



© Ron Leishman * www.ClipartOf.com/442695

Map to GPS Navigation



Disclaimer: Please note this software `Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

What should I do next ?

- Next **specific action**
 - **Patient**
 - Current phase of care (initial presentation, therapy, follow up)
 - History, examination and investigations
 - Previous treatment and outcome
 - Actions taken by other providers
 - **Resources** available (localised)
 - **Judgement** of provider



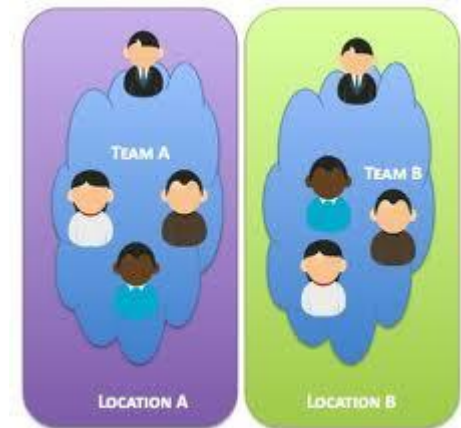
Spans time and place



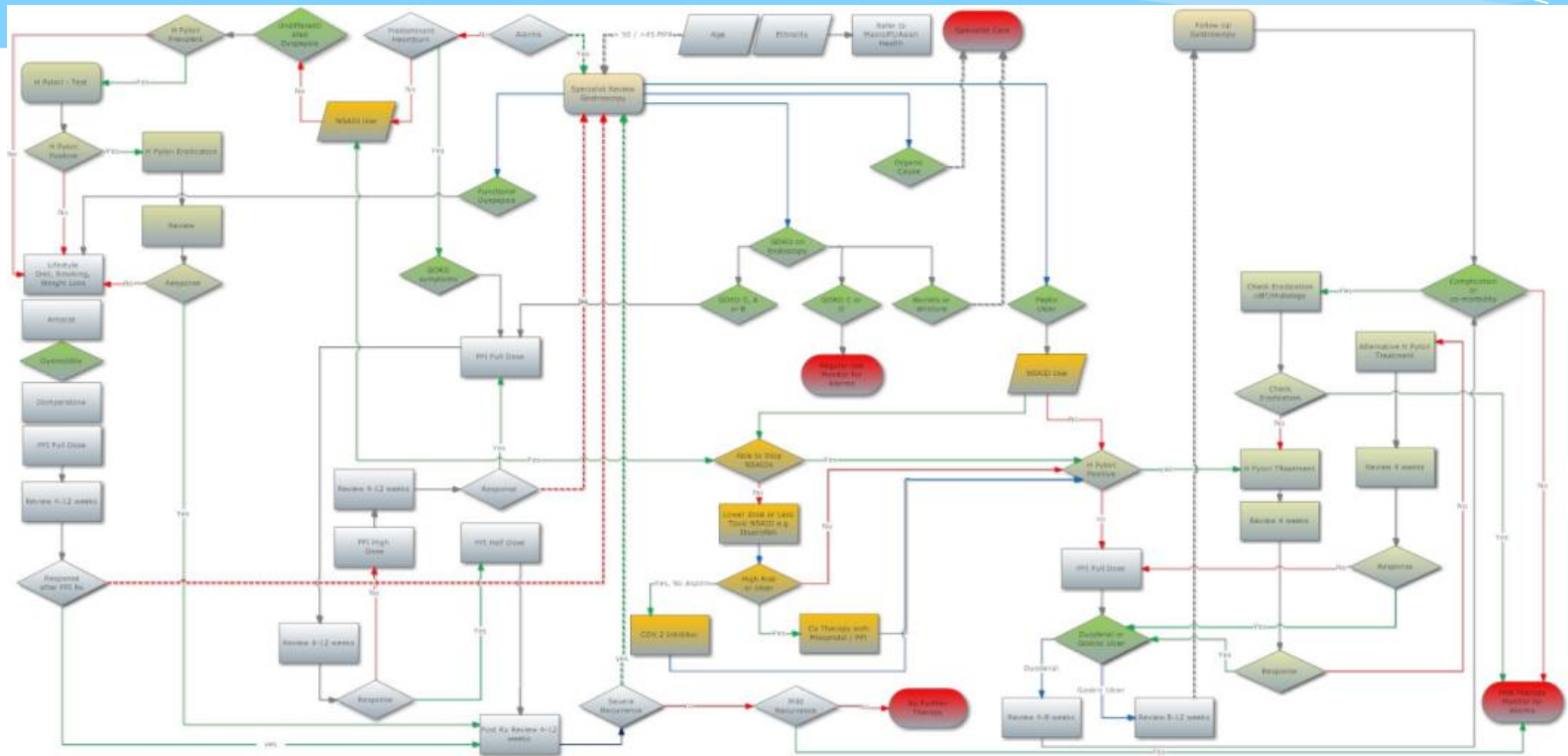
Multiple Visits



Multiple Sites

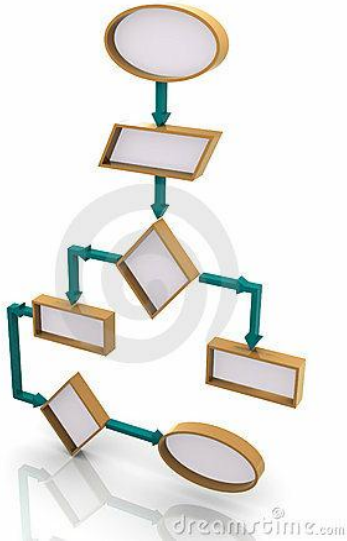


Multiple providers



Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

Multi dimensional , Concurrent

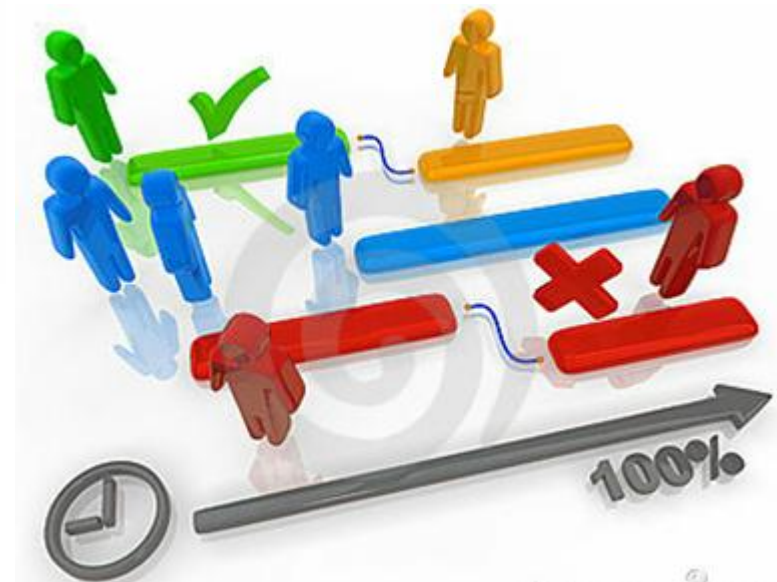


Not restricted to
one dimensional
flow



Many options,
variable
sequence

Concurrent streams

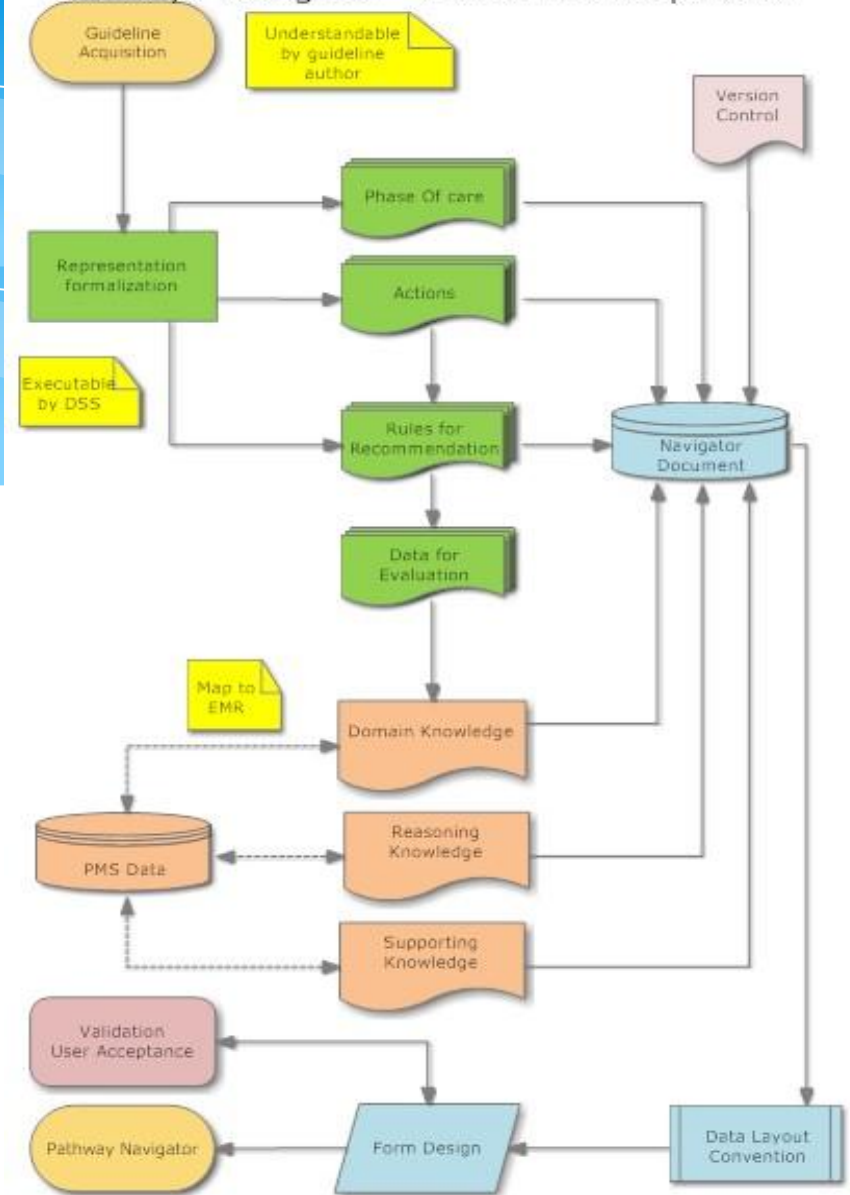


Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

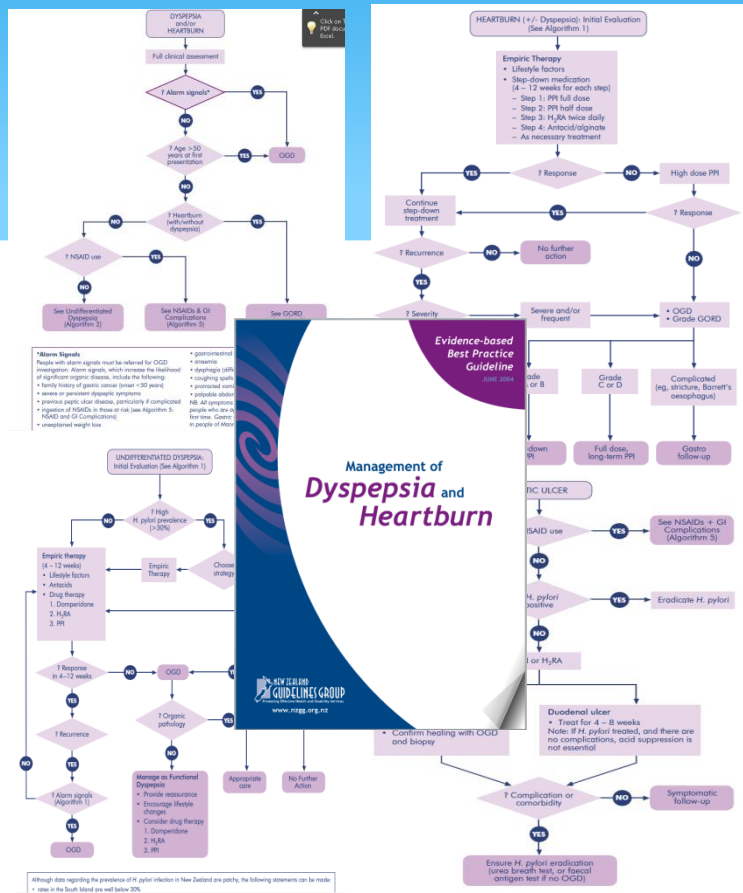
Pathway Navigator Process ©

- Complex process
- Models and tools for extracting and organizing knowledge
- Gaps and inconsistencies need to be addressed
- Rules validated against original guidelines
- Limited published experience with automating EMR-integrated complex algorithms
 - Arden, GEM, Protégé, GLIF, EON, Prodigy

Pathways Navigator - Guidelines Acquisition



Guideline to patient centric view



Dyspepsia | Ryan Maxwell

Signed in as:

Initial Presentation NSAID H.pylori Treatment Review Post Review

Initial Presentation

Demographics

Gender: ☒ Male ☐ Female

☒ ☒ Maori/Pacific/Asian Ethnicity

☒ ☒ In a population with >30% H. pylori

South Auckland, Porirua, East Cape, Pacific Islands, Asia including India, South Africa have infection rates all >30% - other places of origin in New Zealand generally have infection rates < 30%. Maori, Pacific and Asian peoples have > 30% prevalence - up to 70% in some groups

History

Presenting

Initial Date 31/05/2012

Complaint

Age at first onset 47

Predominant Symptom: ☐ Dyspepsia ☐ Heartburn

☒ ☒ Unexplained Weight Loss

Select Action

RECOMMENDED

[Refer Gastroscopy](#)

[Offer referral to Maori Health, Pacific Health or Asian Health](#)

INSUFFICIENT DATA

[H.pylori Management](#)

[NSAID Management](#)

[Treatment](#)

[guideline info](#)

Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

EMR Integrated access

The screenshot displays the 'My Practice' EMR software interface for Marcus Welby. The main window shows patient information for Ms Rita Fox, including her date of birth (22/04/1945), gender (Female), and address (2a Canterbury Place Parnell, Parnell). The 'Consultation' section shows a date of 04/06/2012 at 09:15 a.m. and the user 'Marcus Welby'. The 'Presenting Complaint' section lists 'dyspepsia and heartburn 6 weeks'. The 'Surgical History' section lists 'Appendectomy NEC (2001)'. The 'Family History' section lists 'Brother = Diabetes' and 'Father = Diabetes'. The 'Smoking' section lists 'Current smoker'. The 'Alcohol' section lists 'Regular drinker'. The 'Accident' section lists 'Laceration right leg, 27/12/2001'. The 'Diagnosis' section lists 'Gastro-oesophageal reflux disorder' with code J1011. The 'Left Sidebar' contains a 'Medication Sidebar' with 'Add' and 'Profile' buttons, and a 'Current Problems' section listing 'Diabetes mellitus', 'impaired hearing', and 'Pregnancy 1 EDD: 4/04/2011'. The 'Right Sidebar' contains a 'Tasks' section with 'Finish', 'New Task', 'Peak Flow', 'Inhaler', and 'Smoking', and a 'May I Suggest' section with 'Omeprazole', 'Domperidone', 'H2 Antagonists', 'Burn', and 'Heartburn'. The 'Bottom Panel' contains a 'Notes' section with 'Certificates', 'Accident', 'Off Work', 'Sickness Benefit', 'Clinical Forms', 'Cardio Vascular Risk', 'Diabetes', 'Gastroenteritis', 'Maternity', 'Questionnaires', 'Forms / Documents (F8)', 'WebForms (F9)', 'Resources (F10)', and 'Immunisations'. A red callout box points to the 'WebForms (F9)' section with the text 'Access from EMR systems'.

My Practice Marcus Welby

File View Tools Accounts Help Message New Appoint Tasks Patient Notes Account Autotext Mail Results Scan Healthlink NIR Query Repeat Staff Addr Bo

Appointments Notes - Fox, Rita

Left Sidebar

Medication Sidebar

Add Profile

Current Problems

- Diabetes mellitus
- impaired hearing
- Pregnancy 1 EDD: 4/04/2011

Past History

- Atrophic vaginal, PMB
- Appendectomy
- '66 Prolapse uterus
- 7 children
- Ovarian cyst '54
- '54 Peritonitis
- Acute cholecystitis (2001)

Surgical History

- Appendectomy NEC (2001)

Family History

- Brother = Diabetes
- Father = Diabetes

Smoking

- Current smoker

Alcohol

- Regular drinker

Accident

- Laceration right leg, 27/12/2001.

Ms Rita Fox

NZ European / Pakeha NS Regular Demo 4148 GGP7360 22/04/1945 67y 1m CSC Holder

2a Canterbury Place Parnell, Parnell Ph: 274 5779(Home)

Consultation

04/06/2012 09:15 a. Consultation User Marcus Welby Authorized by Welby, Marcus

Gastro-oesophag... 3 mins

Presenting Complaint

History

dyspepsia and heartburn 6 weeks

Exam

abdominal examination normal

Diagnosis

Gastro-oesophageal reflux disorder J1011 Assist

Right Sidebar

Finish

New Task

Tasks

- FOOT
- Peak Flow
- Inhaler
- Smoking

Other Task

May I Suggest

- Omeprazole
- Domperidone
- H2 Antagonists
- Burn
- Heartburn

Post It Note

Accounts

Preview

Print (Ctrl P)

Print Current

Access from EMR systems

Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

Seamless, shared information

My Practice Marcus Welby

File View Tools Accounts Help Message New Appoint Tasks Patient Notes Account Autotext Mail Results Scan Healthlink NIR Query Repeat Staff Addr B

Appointments Notes - Fox, Rita

Left Sidebar

Medication Scheduler

Ms Rita Fox

NZ European / Pakeha Landscape Designer 22/04/1945 CSC Holder

NS Regular Demo 4148 GGP7360 67y 1m

2a Canterbury Place Parnell, Parnell Ph: 274 5779(Home)

Consultation 04/06/2012 09:15 a. Consultation

User Authorized by

Marcus Welby Welby, Marcus

Notes Results Measurements Scripts Lab Radiol Cardiol Endo Audio Letters Forms Immunisations Web Form

at.dev.cactuslab.com/clinicalpathwa

Embedded within EMR

Dyspepsia Rita Fox

Signed in as:

Initial Presentation NSAID H.pylori Treatment Review Post Review

H.pylori Management

History

Presenting Complaint

Predominant Symptom: ☐ Dyspepsia ☐ Heartburn

☒ H.pylori present

☒ Completed 1 course of triple therapy

☒ Symptoms Improved

☒ Completed 2 courses of triple therapy

☒ Symptoms Improved

Demographics

☒ In a population with >30% H. pylori

South Auckland, Porirua, East Cape, Pacific Islands, Asia including India, South Africa have infection rates all >30% - other places of origin in New Zealand generally have infection rates < 30%. Maori, Pacific and Asian peoples have > 30% prevalence - up to 70% in some groups

Select Action

INSUFFICIENT DATA

Test for H.pylori (Blood, Stool, Breath)

Treat for H.pylori (& smoking cessation advice)

Review (4-12 weeks)

Test for H.pylori - stool

Move to Review Phase

guideline info

Right Sidebar

Finish

New Task

Tasks

FOOT

Peak F

Inhaler

Smokin

Other Tas

May I Sugg

Omepr

Domper

H2 Anta

Burn

Heartbu

Post it No

Accounts

Preview

Print (Ctrl

Print Curr

Create Ap

Correct S

Family Members

Usha Cole-baker	F 55y 0m
Chhaya Smith	F 25y 8m
Dopal Queenin	M 17y 9m

Pre-populated

Write back

HISO e-forms
interface
standard

Smart Presentation

The screenshot shows the 'Initial Presentation' tab of the Pathway Navigator software. The form is divided into several sections: Demographics, History, Presenting Complaint, Past, Family History, and Medications. On the right, there is a 'Select Action' panel with 'RECOMMENDED' and 'INSUFFICIENT DATA' sections. Red callout boxes provide additional context:

- Appropriate Phase of care:** Points to the 'Initial Presentation' tab.
- Familiar clinical workflow:** Points to the 'Presenting Complaint' section.
- All actions presented with recommendations if sufficient information:** Points to the 'RECOMMENDED' actions in the 'Select Action' panel.
- Only enough questions to determine recommendations:** Points to the 'Past' section.

Initial Presentation

Demographics

Gender: ☒ Male ☐ Female

☒ ☐ Maori/Pacific/Asian Ethnicity

☒ ☐ In a population with >30% H. pylori

South Auckland, Porirua, East Cape, Pacific Islands, Asia including India, South Africa have infection rates all >30% - other places of origin in New Zealand generally have infection rates < 30%. Maori, Pacific and Asian peoples have > 30% prevalence - up to 70% in some groups

History

Presenting Complaint

Initial Date: 31/05/2012

Age at first onset: 47

Predominant Symptom: ☒ Dyspepsia ☐ Heartburn

☒ ☐ Unexplained Weight Loss

☒ ☐ GI Bleeding

☒ ☐ Dysphagia

☒ ☐ Recurrent Vomiting

☒ ☐ Persistent Regurgitation of Food

☒ ☐ Complicated Peptic Ulcer Disease (PUD)

☒ ☐ Significant co-morbidities

☒ ☐ Anaemic

☒ ☐ Aspiration

Past

☒ ☐ Peptic ulcer

☒ ☐ GI bleeding

☒ ☐ NSAID Gastropathy

Family History

☒ ☐ Gastric Cancer, onset <50 years

Medications

☒ ☐ NSAID Use

☒ ☐ Anticoagulation Therapy

Select Action

RECOMMENDED

[Refer Gastroscopy](#)

[Offer referral to Maori Health, Pacific Health or Asian Health](#)

[NSAID Management](#)

INSUFFICIENT DATA

[H.pylori Management](#)

[Treatment](#)

[guideline info](#)

Supportive information available

Iron Deficiency | Ryan Maxwell Signed in as:

Initial Presentation | **Management** | Review

Management

Date of Assessment

Date: 03/06/2012

Examination

Date	Blood pressure	Pulse	Stable
03/06/2012	150 / 80	100	☒

Referrals

Type of referral	Date referred	Result seen
Gastroscopy / Colonoscopy	01/04/2012	☒
Duodenal		☐

Select Action

RECOMMENDED

[Iron Replacement](#)

[Click Here](#) [action info](#)

[Review in 3 months & request Hb and Ferritin tests before consultation](#)

[action info](#)

NOT RECOMMENDED

[Blood Transfusion - send to hospital](#)

[action info](#)

[guideline info](#)

Iron Replacement

[Back to Pathway Information Page](#)

Section 1
Iron deficiency should be confirmed by a *low serum ferritin, red cell microcytosis or hypochromia in the absence of chronic disease or haemoglobinopathy* eg thalassaemia.

Section 6
5-12% of pre-menopausal women who are menstruating have IDA.

The commonest overall cause of IDA is menstrual blood loss (20-30% of all IDA). ~30-40% of young menstruating women may have low ferritin with usually normal iron studies and no anaemia or microcytosis - this is termed "latent iron deficiency" and is due to a negative iron balance where iron loss

[Drill down for further information](#)



Enables

- Practitioner may
 - apply judgement
 - change order
 - Share pathway
- Maintain audit trail
- Usage information

Initial Presentation Management Review

Management

Date of Assessment

Date: 03/06/2012

Examination

Date: 03/06/2012 Blood pressure: 150 / 80 Pulse: 100

Referrals

Type of referral	Date referred	Result seen
Gastroscopy / Colonoscopy		
Duodenal		
Gastroscopy / Colonoscopy	01/04/2012	☒

SELECT ACTION

RECOMMENDED

Iron Replacement ✓

Review in 3 months & request Hb and Ferritin tests before consultation ✓

NOT RECOMMENDED

Blood Transfusion - send to hospital

ACTIONS TAKEN

Date	Action
3/6/2012	Review in 3 months & request Hb and Ferritin tests before consultation
3/6/2012	Iron Replacement

Annotations:

- Select any action (points to the 'Iron Replacement' action)
- All actions logged and recorded in your EMR (points to the 'ACTIONS TAKEN' table)

Demo



Disclaimer: Please note this software 'Pathway Navigator' is in beta testing, this version is not intended for commercial release. The software and its development are confidential to Pathway Navigator Ltd. (c) 2012

Summary

Pathway Navigator :

- Will ease utilisation of any clinical pathway
- Is patient specific
- Is relevant to the patient's current phase of illness
- Fits in with a GP/Health professionals work flow
- Takes account of the patient's history/results
- Will resume from the last interaction
- Is able to be shared with other health professionals
- Can be integrated with PMS/ Hospital systems
- Helps with Implementation and uptake of agreed guidelines

Implementation Plan

- **Pilot** system
- User Acceptance Testing
- **Measure** performance /behaviour change
- **Refine**
 - Extend range of pathways
 - Deployment options

For further Information: Contact John
John@healthpoint.co.nz or (09) 630 0828

