BMJ

67bricks

BMJ Best Practice

Reinventing medical information for the digital age

Chris Wroe and David Iddon, BMJ | Susan Crean, 67 Bricks

BMJ started as a medical journal 175 years ago

1847

James Simpson reports the discovery of chloroform.

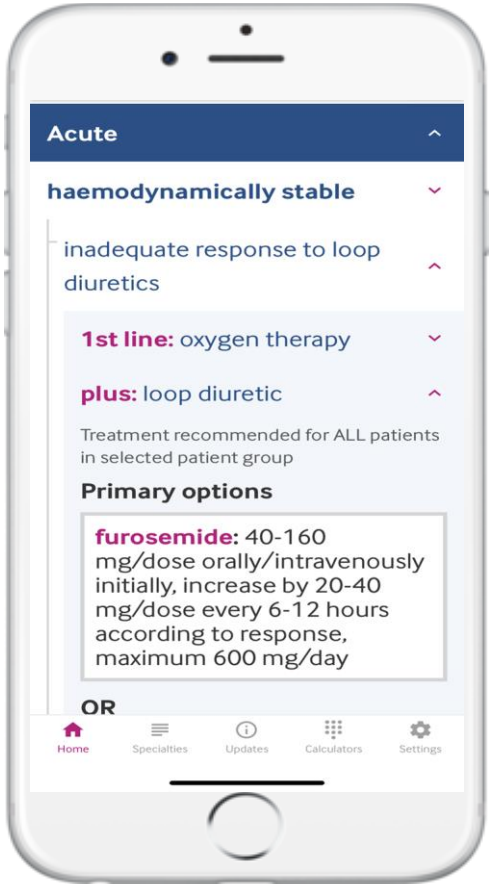
1898

Link between Anopheles mosquito and malaria published.

1950

Feature Richard Doll and Bradford Hill’s first report on smoking and lung cancer.

BMJ Best Practice



BMJ

- Evidence based
- Independent

- 10 years
- Quick answers at the point of care
- Over 1000 conditions
- 30 medical specialties
- Always digital
- Continuously updated
- Translations

BMJ Best Practice

My BMJ Best Practice | Feedback

Your instant second opinion

Search | Show conditions

Search BMJ Best Practice

Guillain-Barre syndrome

Last updated: Apr 03, 2014

Highlights	Basics	Prevention	Diagnosis	Treatment	Follow Up	Resources
Summary	Definition	Secondary	History & examination	Details	Recommendations	References
Overview	Epidemiology		Tests	Step-by-step	Complications	Patient leaflets
	Aetiology		Differential	Emerging	Prognosis	Contributors
	Pathophysiology		Step-by-step	Guidelines		Related BMJ content
	Classification		Criteria			
			Guidelines			
			Case history			

Add to BMJ Portfolio | Bookmark | Notes | Tools

Treatment approach

A multidisciplinary approach to the acute phase combining supportive and disease-modifying therapy (with plasma exchange and high-dose immunoglobulin) is required. The use of plasma exchange or immunoglobulin depends on the institution or whether the patient has a contraindication to immunoglobulin such as IgA deficiency. Both have been shown to be equally efficacious. Their combination is not supported.

Supportive therapy: respiratory management

Respiratory failure is common, and up to 30% of patients need ventilatory support or airway protection. Risk factors for progression to mechanical ventilation include rapid disease progression, bulbar dysfunction, bilateral facial nerve weakness, and dysautonomia. Pulse oximetry and ABGs should not be relied on, as hypoxia or hypercarbia is a late sign and patients will decompensate very quickly. There is insufficient evidence to recommend specific methods for monitoring respiratory function, but respiratory status should be monitored in all patients. [116] Bedside spirometry should be performed every 6 hours initially. Early spirometry will also help triage the patient between the ICU and regular ward. Patients with bulbar dysfunction, high risk of aspiration (i.e., infiltrates on CXR), and new atelectasis on CXR should be intubated early for airway protection and impending respiratory failure. In patients with no bulbar dysfunction or with mild bulbar dysfunction without aspiration risk, the 20/30/40 rule should be used as detailed below. [96] The patient should be monitored in the ICU and elective intubation considered if:

- Vital capacity is <20 mL/kg
- Maximal inspiratory pressure is worse than -30 cmH2O (negative inspiratory force)
- Maximal expiratory pressure is <40 cmH2O
- Vital capacity, maximal inspiratory pressure, or maximal expiratory pressure is reduced by 30% from baseline initial measurement. [96]

The mean duration of ventilation is 15 to 43 days, and weaning should be guided by serial PFTs and assessment of strength. [116] The need for tracheostomy should be addressed from week 2 onwards, especially if PFTs do not show improvement. If there is improvement of PFTs above baseline, tracheostomy may be delayed by an additional week before reassessment. [116]

Supportive therapy: cardiovascular management

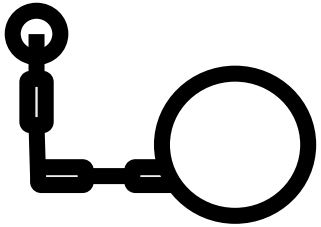
Haemodynamic monitoring of pulse and BP should be started on admission. Telemetry would be prudent here, especially if there is evidence of dysautonomia. If dysautonomia is present, continuous cardiac monitoring and placement of a Foley catheter should be initiated on admission. There are insufficient data for methods and setting of monitors, but all patients with severe disease should have their pulse and BP monitored until they are off ventilator support and have begun to recover. [18] [116] Fluid balance should be monitored carefully, especially because the autonomic dysfunction

- Lots of trusted content
- Quick answers from this long form text?

2016

Knowledge and insights buried in monolithic documents

Losing market share



Weighed down in technical debt

Unhappy users

Excessive manual work

Product development stalled

Danny Cyclone 10 March 2015

★☆☆☆☆

So unstable. Awesome app. When it works. Which is never. Slow, and when you actually manage to search a topic, it'll either freeze it crash. Useless.

Alfred Wong 16 February 2015

★★☆☆☆

Keeps crashing Managed to download all subscribe topics but keeps crashing upon restarting the app. Had uninstalled & re-downloaded the topics but to no avail. Please fix. Xperia Z1

"Unstable and useless"

★☆☆☆☆

Still bugged by **Keyes89**

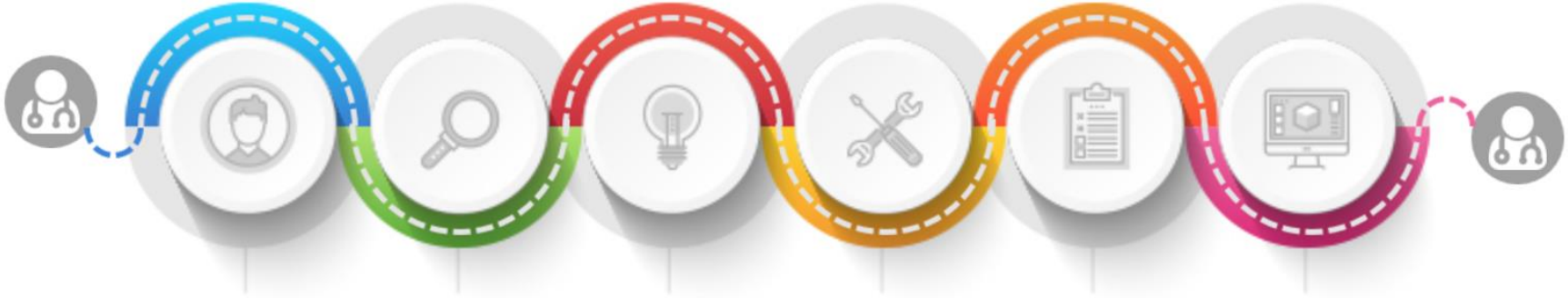
The new format is appealing and faster in performance. However the navigation from searching is too complicated- why search by chapter or subheading. The biggest issue is that of content stability - frequently the topics unsubscribe then need to re install; seemingly taking half a day. What point is a quick reference that is not quick at all!? Beyond that and now there is an appalling flaw that is the lack of resources. I have a full subscription and only 866 topics are available. For Gods sake is your IT department just trolling the general public here? GET IT TOGETHER.

"GET IT TOGETHER"

BMJ Best Practice

- Move to user centred design and product development process
- Revolution not evolution

The User Centred Design Process



Research

Develop an understanding of our customers and users

Define

Compile the research and identify users' problems

Hypothesise

Generate ideas with anticipated outcomes

Prototype

Build real, tactile representations of our hypotheses

Test

Observe what users do on the prototypes - ***iterate***

Implement

Launch the product and then repeat the process

40 workshops

573 prototype tests

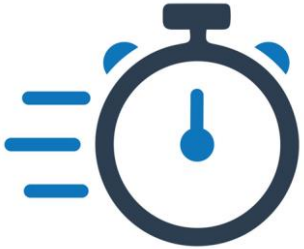
50 site visits

1000+ healthcare professionals

318 interviews

15 countries

What our users needed from BMJ Best Practice



Quick answers at the point of care

Embedded seamlessly into workflow

Trusted and accurate

Latest evidence and information

Enriched and structured

Searchable

BMJ Best Practice

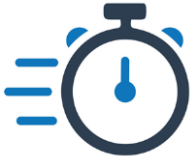
"...will be the number one CDS tool for all healthcare professionals, seamlessly integrated into the clinical workflow. Used daily, it will be easy to access providing quick, actionable answers wherever and whenever they are needed."

Solutions

Latest evidence and information

Update specific recommendations

Move from monographs to more granular chunks of content



Quick answers at the point of care

More directive structured content

Journal article standards

Technical manual standards

</>

Capability to evolve our bespoke XML content structure

Solutions

Embedded seamlessly into workflow

Semantically enriched

APIs available for integration into hospital systems

What was important to us

Retain control

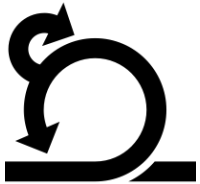
Be flexible

Move quickly

Co-development

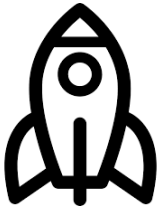
Trusted partnership

Common goal



Agile working methodology

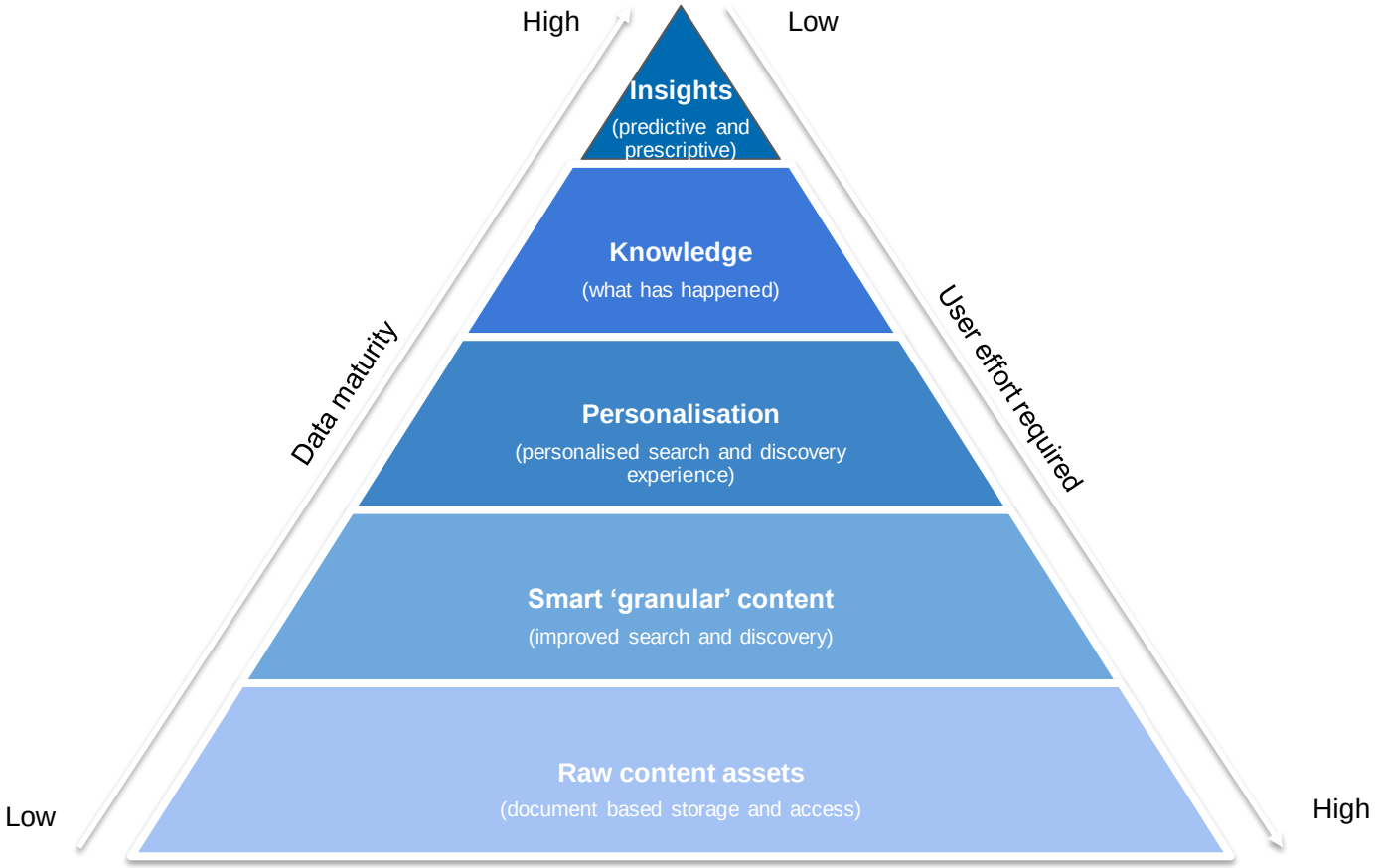
Strong prioritisation



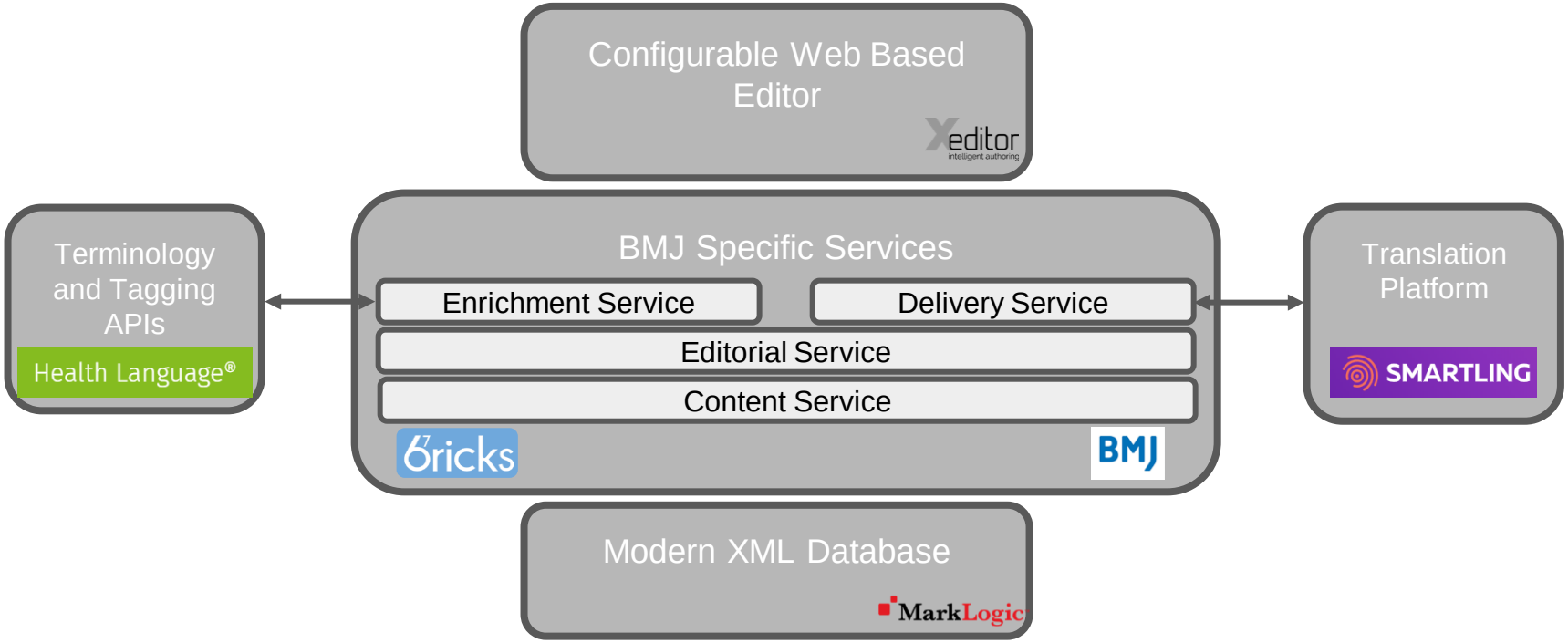
Prototyping and testing with real users

Knowledge transfer

Data maturity pyramid



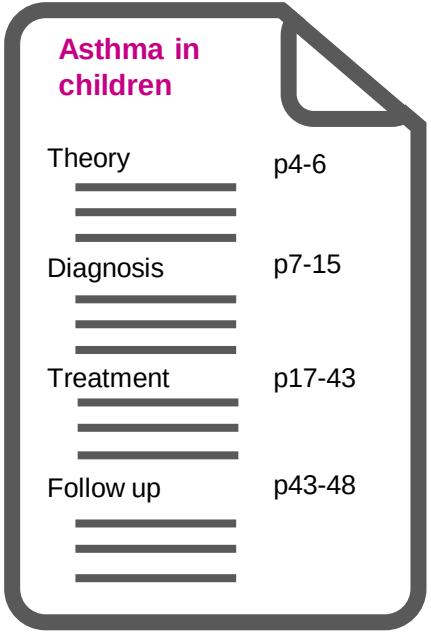
Updating the Technical Architecture



A new content model

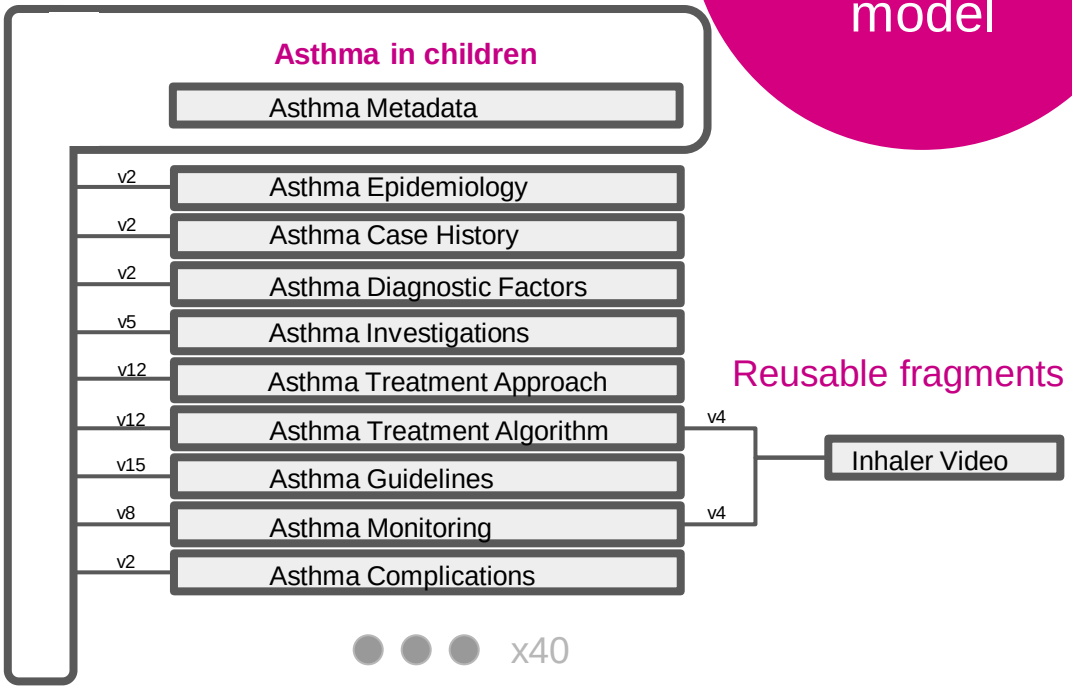
Reinvented data and content model

Before



One large document

After



~40 fragments docked into topic container

Reinvented data and content model

The aim of asthma management is achieving control of the disease, such that the child has no daytime symptoms or night-time awakening, no need for rescue medication, minimal exacerbations (and no severe exacerbations), no limitations on activity, and normal lung function (in practical terms FEV1 and/or peak expiratory flow [PEF] >80% predicted or best) with minimal pharmacological adverse effects. Benefits achieved during continuous treatment with asthma preventer medication do not persist after treatment is discontinued.[94] Good control of asthma and prevention of exacerbations is important. New data suggest that severe asthma exacerbations are associated with a more rapid decline in lung function in children, but not in adolescents, and that treatment with low doses of inhaled corticosteroid is associated with an attenuation of the decline.[13] [14]

In clinical practice a balance between these aims and potential adverse effects, such as impact on growth or inconvenience of taking medication, may be necessary. For example, while other aspects of good control are achievable in the majority of children, a significant number will continue to have viral-induced exacerbations despite good control. A study highlighted the heterogeneity in treatment response seen in paediatric asthma in children at step 3 of the management guidelines, and compared the three options for treatment at this step on the ladder (higher-dose inhaled corticosteroids [ICS], ICS plus leukotriene receptor antagonists [LTRAs], ICS plus long-acting beta agonists [LABAs]).[95] Determining which child would respond best to which treatment option was not possible; this emphasises the need for physicians to evaluate treatment changes made in asthmatic children with suboptimal asthma control by reviewing response to treatment and, if no evidence of benefit is seen, to cease and evaluate alternate options.

Education is fundamental to paediatric asthma management and should include training in the optimal use of medications, inhaler technique review (including spacers in young children), and individualised written asthma management plans.

Inhaled corticosteroids

The beneficial effect of inhaled corticosteroids (ICS) has been long established.[96] A number of different ICS medications are available, and appropriate dosing varies between them. This is due in part to the particle size generated and subsequent drug deposition. Local adverse effects can be avoided, particularly if delivered via a spacer, limiting oropharyngeal deposition.[97] [98] [99] Cataracts have been reported in 15% to 35% of children receiving oral corticosteroids for more than 1 year, but follow-up of the Childhood Asthma Management Program (CAMP) study cohort has shown that no increased risk exists for those children treated with low to moderate doses of ICS as maintenance therapy.[100] [101] [102] When starting therapy with corticosteroids,initial low dose is as effective as initial high dose and subsequent down-titration.[103] 1[C]Evidence At medium doses of inhaled corticosteroids, the main adverse effects seen are local (e.g., candidiasis) or a transient slowing of growth. Monitoring of growth should be performed in all children. Unlike in adults, increased respiratory infection has not been found to be associated with use of ICS in children.[104] There are concerns over systemic adverse effects of inhaled corticosteroids, particularly at higher doses.2[A]Evidence Oral corticosteroid bursts have been shown to decrease bone mineral accretion and increase the risk of osteopenia.[110] Common adverse acute events related to oral corticosteroid use of ≤14 days' duration were vomiting, behaviour change, and sleep disturbance (incidence of 5.4%, 4.7%, and 4.3%, respectively).[66] The systematic review also reported that other less common but serious adverse events were infection (incidence of 0.9%), increased blood pressure (39%), hypothalamic-pituitary axis suppression (81%), and weight gain (28%).[66] Another systematic review of oral corticosteroids of least 15 days of treatment (for multiple reasons including

ONGOING

age 0 to 4 years

- step 1 (intermittent and exercise-induced asthma)
  - **1st line** — **short-acting beta-2 agonist when required + education**
- step 2 (persistent)
  - **1st line** — **low-dose inhaled corticosteroid**
  - **Plus** — **short-acting beta-2 agonist when required + education**
  - **2nd line** — **montelukast**
  - **Plus** — **short-acting beta-2 agonist when required + education**
- step 3 (persistent)
  - **1st line** — **medium-dose inhaled corticosteroid**
  - **Plus** — **short-acting beta-2 agonist when required + education**
- step 4 (persistent)
  - **1st line** — **medium-dose inhaled corticosteroid + montelukast**
  - **Plus** — **short-acting beta-2 agonist when required + education**
- step 5 (persistent)

New systems

New editorial production system

BMJ Knowledge Content Editor

cwroe@bmj.com Logout

Tasks Topics Search Publications

Return to Task | Related Fragments | Parent Fragments | Topics - Urticaria and angio-oedema

Ext Figure Important update

individual responses in both efficacy and side-effect profile. Although all second-gener
have a favourable side-effect profile, cetirizine has been reported to cause a slightly gr
as compared with the others. Reference

First-generation antihistamines are often a secondary option due to their side effects,
Reference Reference Many patients are unable to tolerate these drugs, even in low
Furthermore, their pharmacokinetics often necessitates 3 or 4 times-daily dosing, whic
makes compliance more difficult. If used, physicians should start at a low dose and titra
clinically effective dose. Tricyclic antidepressants also have potent H1 blockade and hav
the treatment of urticaria. Doxepin provides the additional benefit of a longer half-life
suitable for once-nightly dosing. Therapy must be dictated by individual variations in r
efficacy and side-effect profile.

Regimen (tier: 1)

Component: loratadine

Dosage: 10 mg orally once daily
(modifier: unset)

18 results found for: *loratadine* in *en-GB*

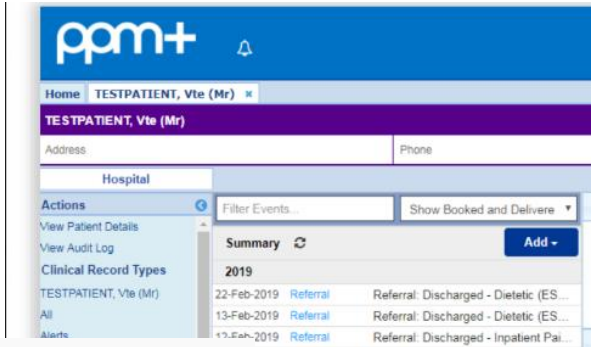
Show drug databases mapping for loratadine

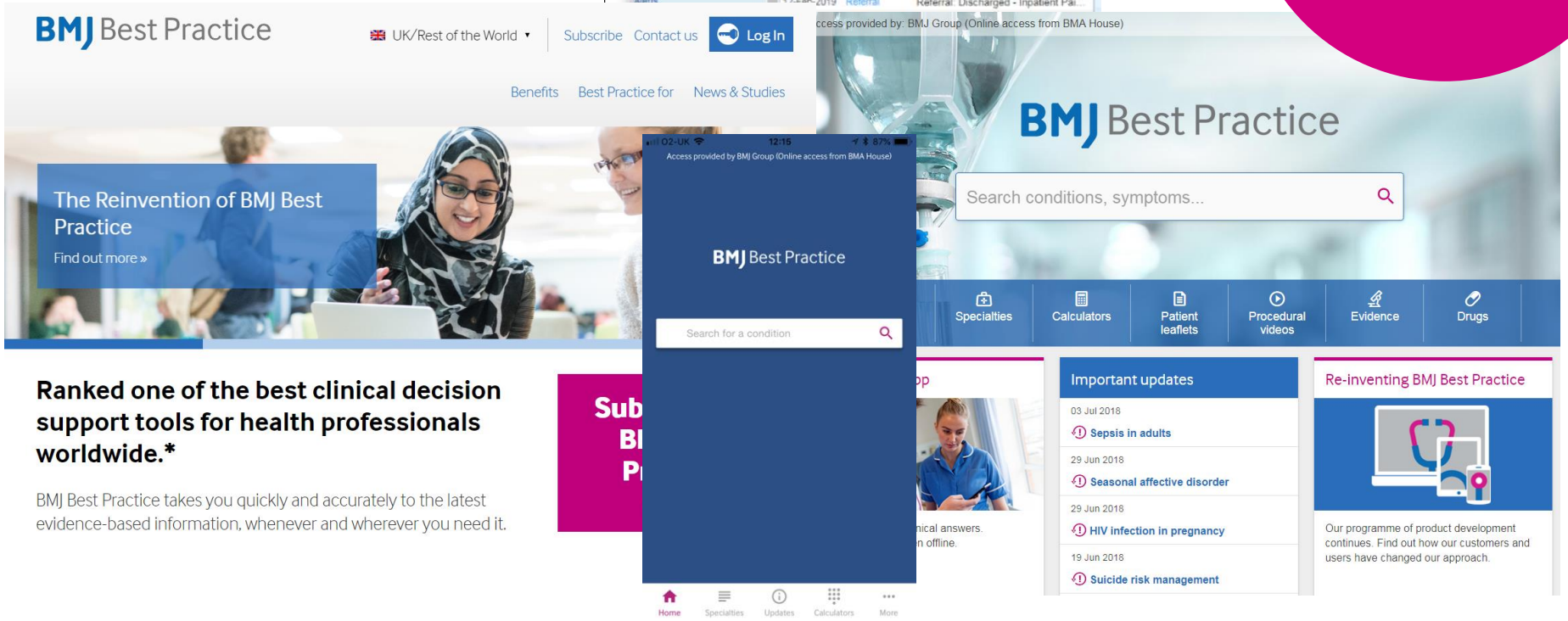
AHFS	BNFC	BNF	Epocrates	Martindale
id: 397038 **name:** Loratadine	**id:** 733393336 **name:** loratadine	**id:** 733393336 **name:** loratadine	**id:** 504 **name:** loratadine	**id:** 18661-c **name:** Loratadine

Filter:

#	Fragment ID	Parent topic title	Dosage	Patient group	Treatment type
1	b821b2cd-85d6-4422-a63a-b66fb92f345c	Urticaria and angio-oedema	10 mg orally once daily	without airway involvement	H1-receptor antagonists (antihistamines)
2	b821b2cd-85d6-4422-a63a-b66fb92f345c	Urticaria and angio-oedema	10 mg orally once daily	chronic urticaria ± angio-oedema	H1-receptor antagonists (antihistamines)
3	b821b2cd-85d6-4422-a63a-b66fb92f345c	Urticaria and angio-oedema	10 mg orally once daily	drug-induced angio-oedema without urticaria	H1-receptor antagonists (antihistamines)
4	b821b2cd-85d6-4422-a63a-b66fb92f345c	Urticaria and angio-oedema	10 mg orally once daily	idiopathic angio-oedema	H1-receptor antagonists (antihistamines)
5	6e71c0a5-2131-470f-9488-01eecb592144	Acute conjunctivitis	10 mg orally once daily	moderate	mast cell stabiliser ± antihistamine
6	6e71c0a5-2131-470f-9488-01eecb592144	Acute conjunctivitis	10 mg orally once daily	moderate	mast cell stabiliser ± antihistamine

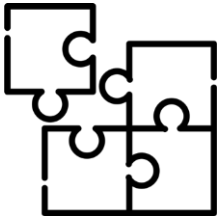
New APIs, websites and app





BMJ Best Practice New Approach

Focussed updating with a wider team



Hospital system integration enabled - seamlessly into the clinical workflow

Increased production capacity and faster update turnaround

New features: Update alerts, practical videos

Improved reach

Relaunched BMJ Best Practice

202%
growth in traffic

Over 1m
users a month

95%
customer renewal rate

From 2 to 4.8
app store rating

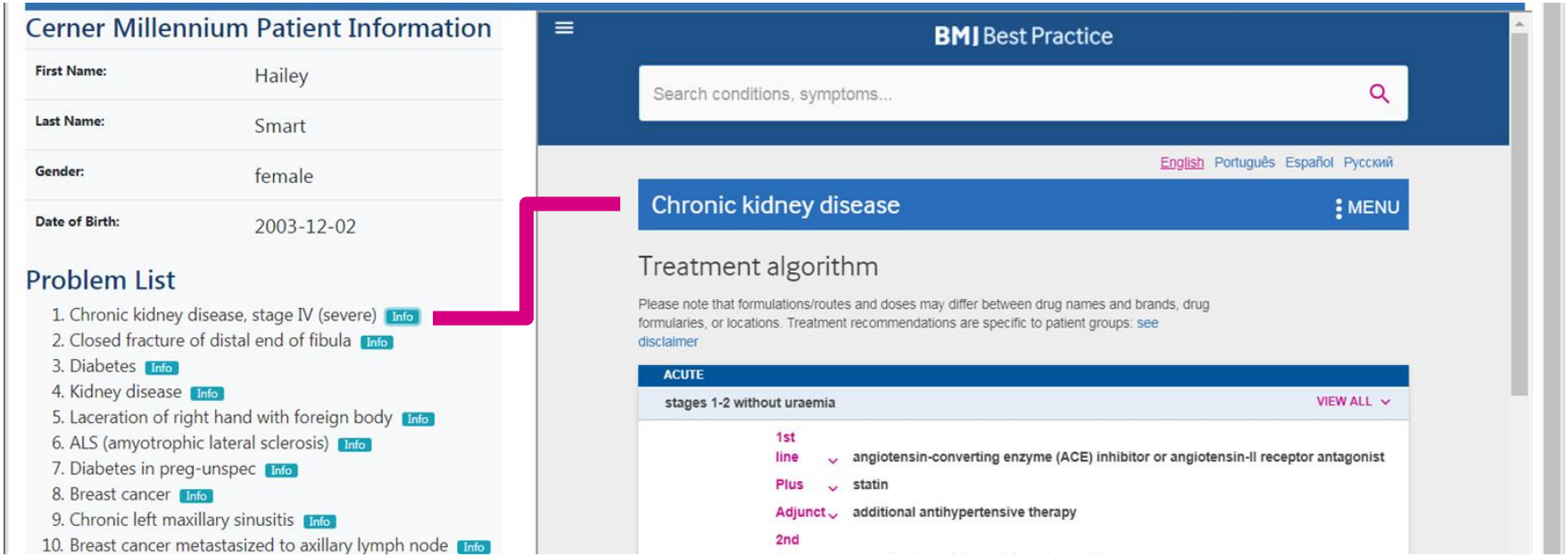
80k+
downloads of the app

Digital Experience Awards
2 prizes 2018

Academy of Interactive and Visual Arts
2 silvers 2018

3 prizes 2019

Deeper hospital integration (SMART Apps)



Patient Data

Patient Specific Recommendations

2016

Years of research and user feedback not being actioned

Product development stalled

Technical debt

Excessive manual work

2019

96% say it helps them improve patient care

Exciting new product development projects and partnerships

Clear technical debt

Increase production capacity

From this:

Danny Cyclone 10 March 2015

★☆☆☆☆

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Alfred Wong 16 February 2015

★★☆☆☆

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"Unstable and useless"

★☆☆☆☆

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"GET IT TOGETHER"

To this:

Ainara Scott August 17, 2017

★★★★★

The best thing ever created. Fantastic format for learning about all the different conditions, presentations, examinations and management.

Thank you

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