A BRIEF HISTORY OF BUPROFEN JAWN CONNELLY	Pharmacist and pharmacologist Stewart Adams (pictured) and chemist John Nicholson, employed at Boots Pure Drug Company Ltd, begin work to identify an analogue of aspirin that might be suitable for long-term use for rheumatoid arthritis	After screening more than 600 candidates, Adams and Nicholson file a patent for the compound 2-(4-isobutylphenyl) propionic acid, later to be called ibuprofen; it is granted the following year	Clinical trials of ibuprofen take place in Edinburgh in six patients with rheumatoid arthritis	<ul> <li>Ibuprofen is launched in the UK for treatment of rheumatic diseases and marketed as prescription medicine Brufen at a dose of 600-800mg per day</li> <li>Ibuprofen compares favourably with gold standard treatment for rheumatoid arthritis, aspirin, but with a better gastrointestinal side- effect profile (Annals of the Rheumatic Diseases 1969;28:513)</li> </ul>	BRUFEN 400 CONTRIBUTION BRUFEN 400 CONTRIBUTION BRUFEN BRUFEN 400 CONTRIBUTION BRUFEN 400 CONTRI BRUFEN BRUFEN BRUFEN BRUFEN BRUFEN BR	Additional indications for ibuprofen are added to the datasheet in the UK, including non-articular rheumatic conditions, periarticular conditions and soft tissue injuries	Mild to modera added as an in for ibuprofen i
	1953	1961	1966	1969	Early 1970s	1979	1981

1995	1996	2005	2006	2008	2014	2016
A randomised, double-blind, placebo- controlled trial reveals that high doses of ibuprofen (mean dose 25mg/kg) slow lung disease in patients with cystic fibrosis by inhibiting release of lysosomal enzymes and the migration, adherence, swelling, and aggregation of neutrophils ( <i>NEJM</i> 1995;332:848)	lbuprofen is switched to general sale list (GSL) status, meaning it can be sold in general retail outlets without the supervision of a pharmacist	<ul> <li>An observational study involving 114,000 women suggests that long-term (&gt;5 years) daily use of ibuprofen is associated with a 51% higher risk of breast cancer (<i>Journal of the National Cancer Institute</i> 2005;97:805). Information on dose was not collected</li> <li>An epidemiological study suggests that regular use of ibuprofen lowers the risk of Parkinson's disease (PD) (<i>Annals of Neurology</i> 2005;58:963). A Cochrane review in 2011 also shows that ibuprofen may reduce the risk of PD but says many questions remain</li> </ul>	Following a review of new thrombotic cardiovascular safety data, the European Medicines Agency (EMA) concludes that non-selective non-steroidal anti- inflammatory drugs (NSAIDs) may be associated with a small increase in the absolute risk for thrombotic events, especially when used at high doses (>2,400mg for ibuprofen) for long-term treatment. However, the overall benefit-risk balance remains favourable	<text></text>	<text></text>	<ul> <li>The advertising watchd advertisement for Nurofen claims that the product catarget joint and back pain. marketed for specific type removed from sale in Aust because they misled constructed because they misled constructed for a specific type removed from sale in Aust because they misled constructed for a specific type removed from sale in Aust because they misled constructed for a specific type removed from adverse cardiovascul preserving the nitric oxide as being released into the liquickly than standard ibup <i>Journal</i> 2016;30:4172)</li> <li>Current use of ibuprofer is linked to a 19% increased admission for heart failure, study of more than 8 millior four countries, finds (<i>BMJ</i> 2) The authors say that althout focused only on prescription findings might apply to NSA the counter as well</li> <li>Based on prescription datis linked to a 31% increase in hospital cardiac arrest in an study of nearly 30,000 patie on OTC use was available (<i>Journal: Cardiovascular P</i> online 24 December 2016)</li> </ul>

Syst Rev. 2011 Nov 9;(11):CD008454)

ate pain is dication n the UK

## Ibuprofen is approved as an over-the-counter (OTC) medicine in the UK at a maximum daily dose of 1,200mg and launched as Nurofen

 Boots worldwide patent for ibuprofen expires and generic products are launched

 Boots receives the Queen's Award for Technological Achievement for discovering ibuprofen, and by this time more than 100 million people in 120 countries have received ibuprofen

1983

## 1985

og bans a UK TV because it falsely specifically Nurofen products s of pain were ralia in 2015

l studies, lege London find t licensed in the e) could protect lar effects by pathway, as well loodstream more rofen (The FASEB

or other NSAIDs risk of hospital In observational NSAID users in 016;354:i4857). gh the study NSAIDs, the IDs obtained over

ta, ibuprofen risk of out-ofobservational ents. No information uropean Heart armacotherapy,

2017

• An observational study suggests that taking ibuprofen (and other NSAIDs) during a cold or flu infection increases risk of heart attack by 3.3 times for high dose and 3 times for low-dose preparations (Journal of Infectious Diseases 2017;215:503)

• A systematic review finds that ibuprofen and other NSAIDs do not provide clinically important effects for back pain over placebo (Annals of the Rheumatic Diseases 2017;76:1269)



Ibuprofen at doses >1,200mg daily, along with other NSAIDs, increases risk of myocardial infarction, especially within the first month, according to an analysis of data from nearly 450,000 patients (BMJ 2017;357:j1909)

mages from Boots UK (Stewart Adams). The Museum of the Royal Pharmaceutical Society (Brufen pill box) and Shutterstock.com

Sources: Medicines and Healthcare products Regulatory Agency (MHRA); European Medicines Agency (EMA).

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