

# Early awareness and alert (EAA) systems

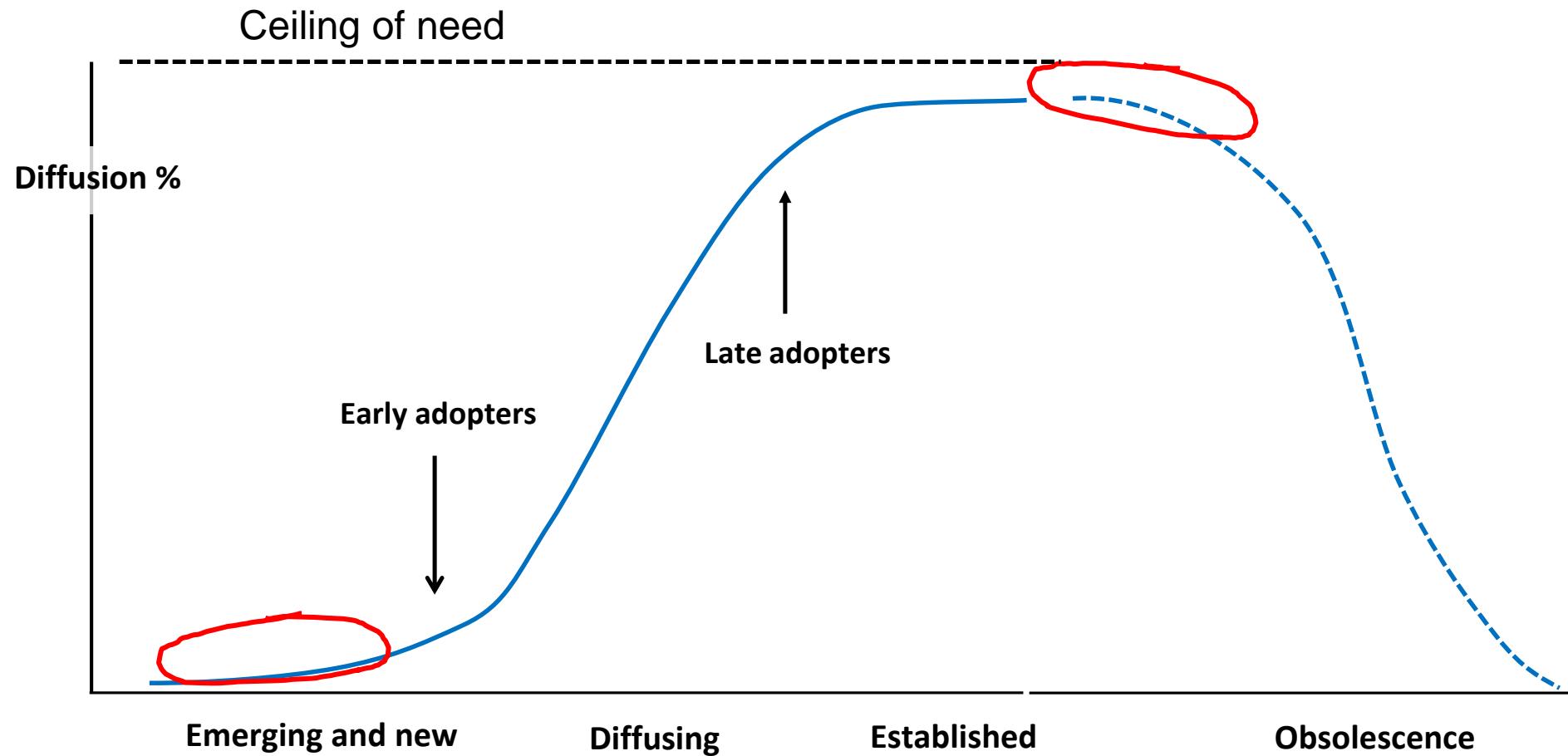
## EuroScan International Network: History and Impact

Dr Claire Packer  
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University of Birmingham

# Early awareness and alert (EAA) systems

- EAA systems are also known as early warning systems or horizon scanning systems
- Aim to:
  - identify, filter and prioritise new and emerging health technologies;
  - assess or predict the impact of emerging technologies on health, costs, society and the healthcare system; and
  - inform decision makers, research planners, health care professionals, patients and patient organisations.

# Adoption, diffusion and obsolescence



# Benefits of EAA systems



## Being systematic:

- Ensuring a methodical approach to identifying important new and emerging health technologies

## Being prepared:

- Ensuring that technologies are considered for evaluation at the right time
  - protecting patients from ineffective and potentially unsafe health technologies
  - supporting the development and uptake of innovative, cost effective health technologies
- Alert policy makers and health services to technologies that could
  - change current options or decisions,
  - require revision of current guidelines, and/or
  - require further planning or commissioning of activities e.g. research
- Planning for infrastructure changes – staff, equipment etc.

# History



- 1980s: Banta and Gelijns recommended systematic approach to the identification and early assessment of new health technologies
- Early 1990s: discussed the feasibility and benefits of an international horizon scanning network
- 1993: unsuccessful proposal to establish European system submitted to EU (EUR-ASSESS)
- 1995 Danish Hospital Institute meeting: 'International collaboration concerning monitoring of emerging medical technologies' (7 countries)
- 1997 European workshop: 'Scanning the horizon for emerging health technologies' (12 countries)
  - Strongly recommended collaboration and cooperation:
  - Activities focused on sharing information, identification of relevant technologies, defining terminology, developing methods for early assessment
  - Early assessment should be perceived as an iterative evaluation process
  - Different perspectives and preferences (including users) should be identified
  - Identified different levels of collaboration, up to a single international centre with no national centres

# Establishment of EuroScan



- Feb 1998: initial meeting of working group (7 countries)
  - Aim: to enhance the exchange of information on new and emerging health technologies among members
- Oct 1999: EuroScan International Network formally established
- 2016-17: Establishment of the EuroScan International Network Association – a legal entity
  - Scientific-focused network and association open for members of public agencies and academic areas, with working groups open to for non-members

# EuroScan inauguration, 1999

Andrew Stevens,  
NHSC, UK

Per Carlsson,  
SBU, Sweden

Gebriel ten Velden,  
Health Council, the  
Netherlands

Torben Jørgensen,  
DIHTA, Denmark



José Asua, Basque Office  
for HTA, Spain

Claire Packer, NHSC,  
UK (Secretary)

Jill Sanders, CCOHTA, Canada

Julian Shilling,  
SFOSS, Switzerland





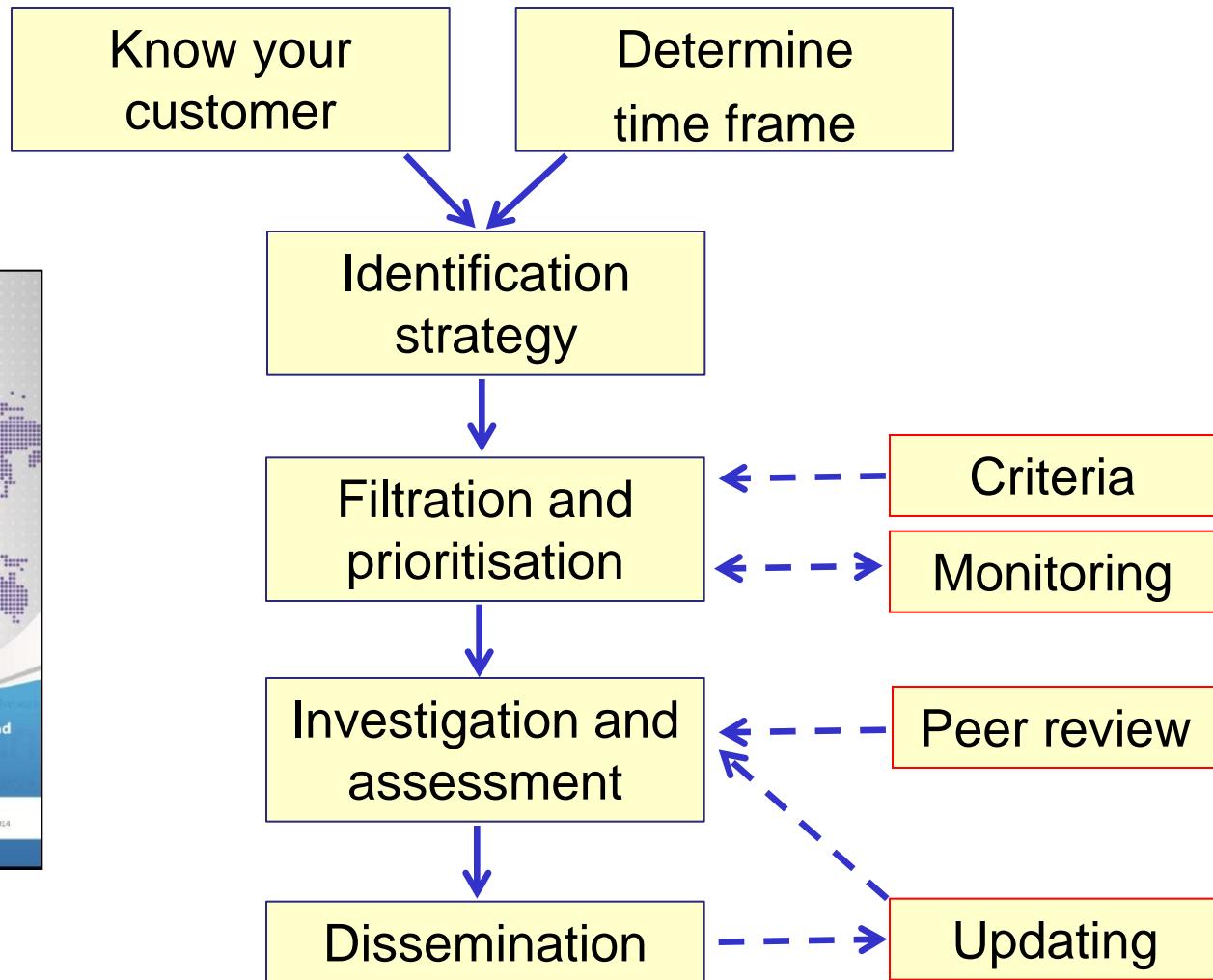
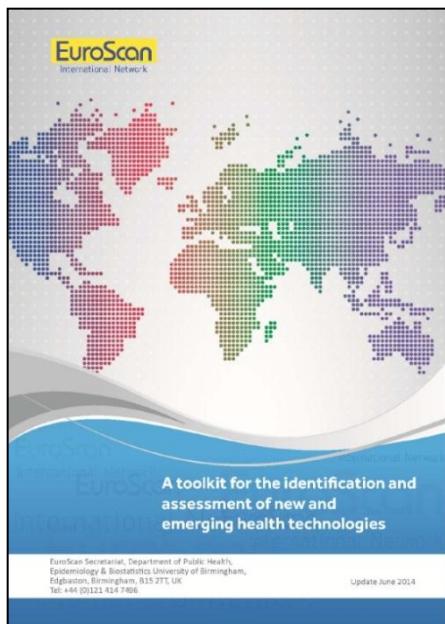
# 1999 action plan

Task	2006 status
1 Develop a common terminology, classification and understanding	Complete
2 Identify, evaluate, and monitor the quality of sources of information concerning new and changing health technology	Operational and ongoing
3 Identify, and if appropriate develop, methods for early assessment of new and changing health technology	Operational and ongoing
4 Pilot the exchange of information	Complete
5 Establish a common database	Complete
6 Publish the results of EuroScan's activities	Ongoing
7 Identify areas for further research	Current
8 Design and implement a permanent system	Ongoing

# EuroScan Goals (2011)

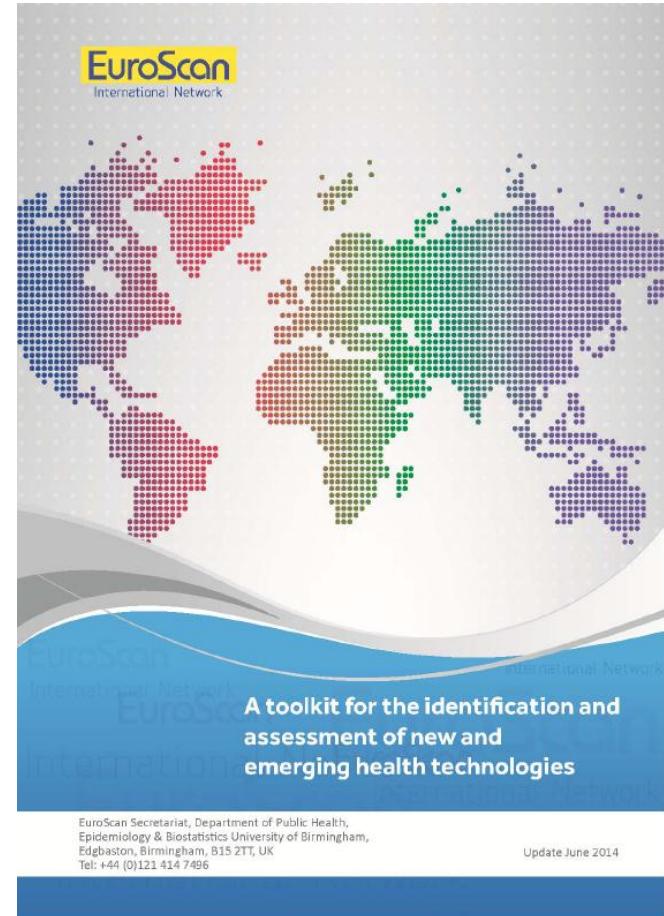
- Establish a system to share skills and experience in early awareness and alert activities.
- Strengthen activities for the development of methodological approaches to the identification, description and assessment of emerging technologies.
- Improve the exchange of information about new and emerging health technologies and their potential impact on health services and existing health technologies.
- Increase the impact of EuroScan International Network's output.
- Identify relevant not-for-profit public partners to share the results of work with partners/members of the EuroScan International Network collaboration.
- Advise not-for-profit organisations within public administrations who wish to establish of early awareness and alert activities.

# EuroScan key achievements: shared understanding



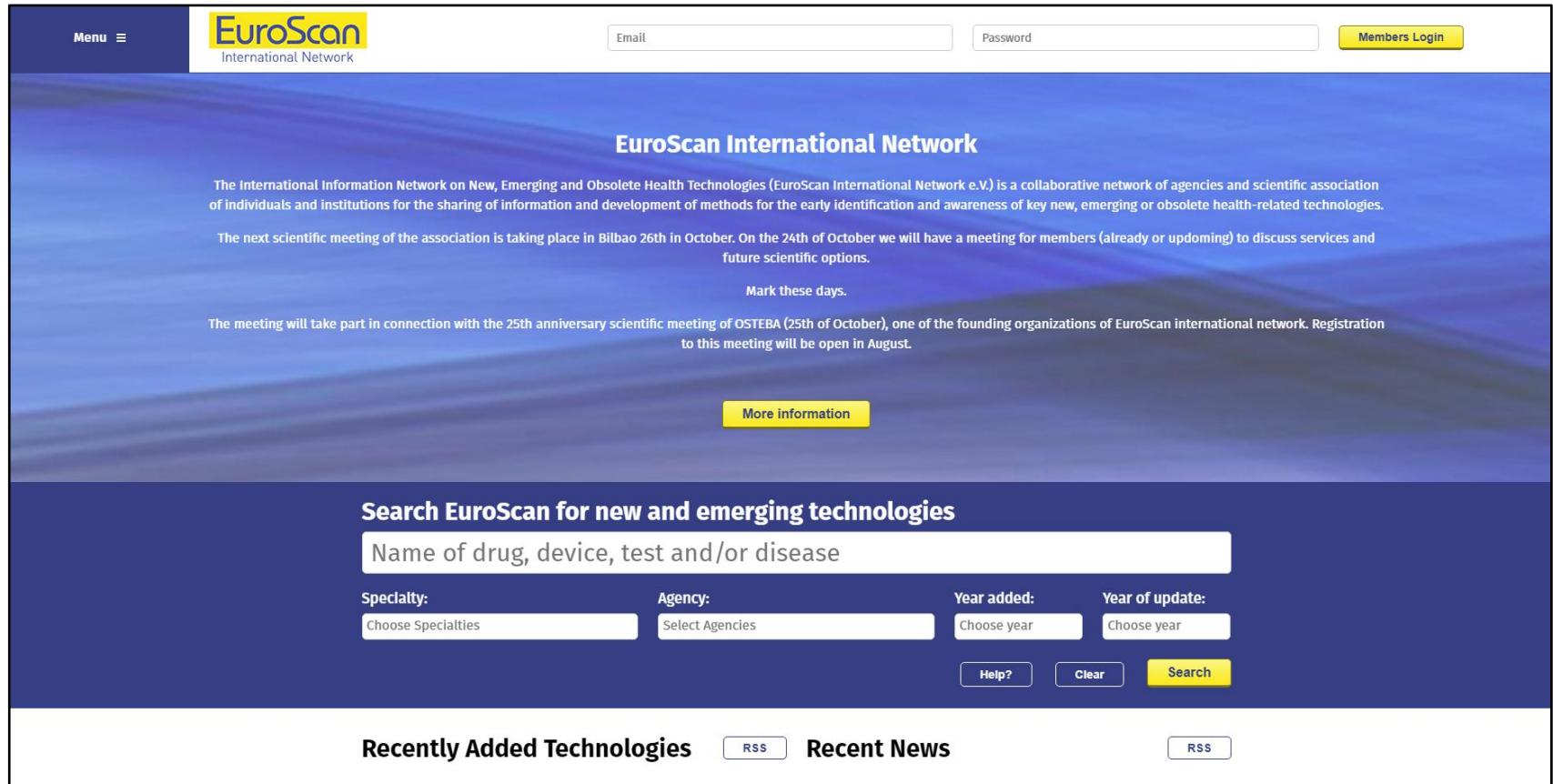
# Methods toolkit

- Collaborative document covering all approaches used by members
- Sets out stages found in EAA systems to:
  - find
  - select, and
  - evaluate ... important emerging health technologies
- Incorporates a checklist of key questions
- Provides valuable information to those interested in establishing, or improving an existing, early awareness and alert system



<https://www.euroscan.org/methods/methods-toolkit/>

# EuroScan website [www.euroscan.org](http://www.euroscan.org)



The screenshot shows the homepage of the EuroScan International Network website. At the top, there is a dark blue header bar with the "EuroScan International Network" logo on the left, a "Menu" button with three horizontal lines, and a search bar with "Email" and "Password" fields along with a "Members Login" button on the right. The main content area has a blue background with a wavy pattern. At the top of this area, the text "EuroScan International Network" is displayed in a bold, white, sans-serif font. Below this, a paragraph of text in a smaller, white, sans-serif font provides information about the network. Further down, another paragraph of text in a smaller, white, sans-serif font provides details about a scientific meeting. A "Mark these days." link is present. Below this, a "More information" button is visible. The bottom section of the page has a dark blue background with the text "Search EuroScan for new and emerging technologies" in a white, sans-serif font. It features a search input field with the placeholder "Name of drug, device, test and/or disease", and four dropdown menus for "Specialty", "Agency", "Year added", and "Year of update", each with a "Choose [category]" option. Below these are "Help?", "Clear", and "Search" buttons. At the very bottom, there are two sections: "Recently Added Technologies" and "Recent News", each with an "RSS" button to its right.

# Database of new & emerging technologies

- A web-based database of information on key health technologies
- Contains information on almost 3,000 technologies - 50% are pharmaceuticals
- Access to the EuroScan data:

	<b>Basic technology details (technology name, type of technology, patient indications, source agency)</b>	<b>Full record – if record is publicly available</b>	<b>Full record – if record is not publicly available</b>	<b>Ability to add technologies to database</b>
Member	✓	✓	✓	✓
Non- member	✓	✓	x	x

# EuroScan Newsletter

- [www.euroscan.org/news/newsletters](http://www.euroscan.org/news/newsletters)
- Bi-annual
- Contributions from members on:
  - EAA systems
  - EAA activities and methods
  - Interesting emerging health technologies
- News from collaborating organisations
- Related news stories



The EuroScan Newsletter Issue 18, June 2015, features a yellow sidebar on the left with the table of contents:

INSIDE THIS ISSUE:	
Are horizon scanning sources useful in identifying possible technologies for disinvestment? 2	
Cardiac Contractility Modulation (CCM) therapy: new results coming. 3	
New report on artificial pancreas device systems in development for type 1 diabetes 4	
What's on the horizon for COPD diagnostics and monitoring technologies? 5	
Focus on new and emerging treatments for Hepatitis C Virus 6	
HTAi Oslo 2015 8	
Standardisation of European HTA – Application of the EUnetHTA HTA Core Model for Rapid Relative Effectiveness® in Austria 9	
4th HTAsiaLink annual conference 10	
An Update from INAHTA 11	
CNEHS Top 10 2015 12	

The main content includes:

- The year so far ....**
- EuroScan started 2015 with a new Chair; Dr Roberta Joppi** who leads the Italian Horizon Scanning Project (IHSP) in Verona. Roberta took over from Professor Brendon Kearney who successfully lead the network for four years. IHSP joined EuroScan in 2008 at a EuroScan meeting in Zurich. As well as being an active member, Roberta was previously the Registrar for EuroScan (January 2013 - December 2014). Our new Registrar is Dr Sungkyu Lee from NECA in South Korea.
- EuroScan's first meeting in 2015 was aptly in Zurich; hosted by the Swiss Federal Office of Public Health (SFOPH).** The venue, a hotel on the Uetliberg mountain provided amazing views over Zurich. The fresh mountain air stimulated lots of discussion including ideas for EuroScan's forward work programme. This will be agreed at the Autumn meeting.
- Members also heard about progress with the new EuroScan website and database.** The current website is showing its age (6 years old in July) and the database no longer meets member requirements (and is even older!). We apologize to anyone who has recently visited the website and experienced problems but the good news is that EuroScan will have a new improved website in the next few months. The database is being designed to enable members to easily upload information on new and emerging technologies. This in turn will further address one of EuroScan's goals - To improve the exchange of information about new and emerging health technologies and their potential impact on health services and existing health technologies.
- on the afternoon of Saturday 13th June.** The workshop will focus on the EuroScan Methods Toolkit with presentations from members on various aspects of early awareness and alert systems.
- When we are in Oslo we will take time out to remember our friend and EuroScan member Dr Inger Norderhaug** who sadly passed away on 25th May 2015. Inger first joined EuroScan in May 2002 and quickly became a valued member of the collaboration at a time when early awareness and alert activity was a relatively new discipline in the HTA world. Inger was the Registrar of EuroScan for 5 years, from January 2004 until December 2008, championing EAA activities at international level and internally strengthening the collaboration.
- Inger will be remembered fondly for her friendly, welcoming and enthusiastic approach; her constructive ways of finding solutions and agreements, and her insight into the field of new and emerging technologies that has been an inspiration to us all.** Our thoughts go to her family and her colleagues at NOKC.

# Workshops & presentations

- HTAi pre-conference workshops
  - 2010: Maximising the value of HTA: The contribution of EAA systems
  - 2011: Establishing a sustainable EAA system
  - 2012: Identification sources and processes
  - 2013: Filtration and prioritisation of emerging health technologies
  - 2014: Evaluation of EAA systems
  - 2015: The EuroScan methods toolkit (2014)
  - 2016: Managing emerging health technologies: An introduction to early awareness and alert systems
- Training, workshops and presentations



# Collaboration with other organisations

EuroScan is happy to collaborate in order to:

- Disseminate information and increase understanding of early awareness and alert systems and activities
- Share experiences, methods and outputs; and avoid duplication
- Promote the introduction and diffusion of safe, effective and cost effective health technologies in health systems around the world

EuroScan has Memorandum of Understandings with:

- International Network of Agencies for Health Technology Assessment ([INAHTA](#))
- World Health Organisation (WHO) Dept. of Essential Health Technologies
- Health Technology Assessment International ([HTAi](#))
- HTAsiaLink [www.htasialink.org](http://www.htasialink.org)
- RedETSA [www.redetsa.org](http://www.redetsa.org)

EuroScan has links to:

- EUnetHTA [www.eunethta.eu](http://www.eunethta.eu)

# EAA system impact

# EAA evaluation – key relevant elements from HTA evaluation models

- Buxton, Hanney and colleagues – ‘Payback model’, impact of health research
  - Knowledge development
  - Benefits to future research – better targeting of future research
  - Political and administrative benefits – improved information base
- Wanke (2006) and Lafortune (2008) – generic evaluation framework for HTA agencies
  - Goal attainment
  - Production of outputs
  - Adaptation to the environment and responsiveness to change
  - Culture and values including leadership and communication
  - Political credibility
- Structure - process - output - outcome



# Evaluation dimensions (1)

Dimension	Examples
Structure	Funding Governance – independence, Staffing – skills Facilities – information system, access to sources
Process – generic	Responsiveness to funder requests Financial management Staff management – objectives, review Project management – tools
Process – specific to EAA	Timely identification, Use of agreed identification criteria Use of agreed filtration/prioritisation criteria Timely updating of information
Process – system accuracy	Accuracy of identification and reporting – sensitivity & specificity Accuracy of prediction - technologies, timeframes, diffusion and impact

# Evaluation dimensions (2)

Dimension	Examples
Outputs - direct	Number and type of output Relevance to users Quality – readability, based on evidence, timeliness, independence Accessible Coverage across all relevant patient groups
Outputs - indirect	Workshops & training Visitors and other enquiries Student placements
Outcomes	Awareness of agency Satisfaction with agency or products Agency credibility and respect Utility of information – change in awareness, change in knowledge, information considered by decision makers, information changed decision taken

# Horizon Scanning Research & Intelligence Centre – 5 years from 2012 to 2017

Claire Packer, Derek Ward, Sue Simpson,  
Andrew Stevens and the HSRIC team



# Identification: 2012/3 to 2016/7

The HSRIC team identified almost 6,000 new and emerging technologies and new indication for currently available products since 2012

Technology type	TOTAL
Pharmaceuticals and cell therapies	4,132
Devices and biotechnology	716
Diagnostics and imaging	750
Other technology types e.g. surgical and non-surgical procedures	212
<b>TOTAL</b>	<b>5,810</b>

# Identified technologies by ICD

Chapter	Codes	Title	Number	%
I	<u>A00–B99</u>	Certain infectious and parasitic diseases	209	3.60
II	<u>C00–D48</u>	Neoplasms	1915	32.96
III	<u>D50–D89</u>	Blood and blood-forming organs and certain disorders involving the immune mechanism	133	2.29
IV	<u>E00–E90</u>	Endocrine, nutritional and metabolic diseases	364	6.27
V	<u>F00–F99</u>	Mental and behavioural disorders	201	3.46
VI	<u>G00–G99</u>	Nervous system	536	9.23
VII	<u>H00–H59</u>	Eye and adnexa	184	3.17
VIII	<u>H60–H95</u>	Ear and mastoid process	30	0.52
IX	<u>I00–I99</u>	Circulatory system	334	5.75
X	<u>J00–J99</u>	Respiratory system	304	5.23
XI	<u>K00–K93</u>	Digestive system	281	4.84
XII	<u>L00–L99</u>	Skin and subcutaneous tissue	220	3.79
XIII	<u>M00–M99</u>	Musculoskeletal system and connective tissue	361	6.21
XIV	<u>N00–N99</u>	Genitourinary system	124	2.13
XV	<u>O00–O99</u>	Pregnancy, childbirth and the puerperium	22	0.38
XVI	<u>P00–P96</u>	Conditions originating in the perinatal period	19	0.33
XVII	<u>Q00–Q99</u>	Congenital malformations, deformations and chromosomal abnormalities	54	0.93
XVIII	<u>R00–R99</u>	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	116	2.00
XIX, XX, XXI, XXII	<u>S00–Z99</u>	Injury, poisoning and external causes other miscellaneous factors and codes	203	3.49
		Unclassified	200	3.44
		Total	5,810	100.00

# Technology outputs: 2012/3 to 2016/7

1,068  
~200 p.a.  
restricted

611,  
>100 p.a.

197,  
~40p.a.

25,  
~4-5 p.a.

## Horizon Scanning Centre

Cancer Drug Filtration Form

### Mogamulizumab for cutaneous T-cell lymphoma – subsequent line

This form is provided to help decide if the topic fits into NICE's current Technology Appraisal programme and the Highly Specialised Technology guidance relevant to the technology and/or patient group –

• No relevant guidance identified.

NHS England guidance relevant to the technology and/or patient group –

- NHS England, 2013/14 NHS Standard Contract for Cancer: Chemotherapy
- NHS England, 2013/14 NHS Standard Contract for Cancer: Chemotherapy (Young Adults), B125/D.
- NHS England, 2013/14 NHS Standard Contract for Cancer: Radiotherapy
- NHS England, 2013/14 NHS Standard Contract for haematopoietic B040/a.
- NHS England, 2013/14 NHS Standard Contract for haematopoietic B040/b.

Other considerations:

None.

Company	Protekta.
Drug name and synonyms	Mogamulizumab (AMG 761; KMB-114)
Patient group and/or indication including stage of disease and targeted patient subgroups	Cutaneous T-cell lymphoma (CTCL)
What is its place in the treatment pathway?	Second and subsequent line.
What is the class of drug? What is its pharmacological action?	Mogamulizumab is a fully human monoclonal antibody that binds to C-C chemokine receptor 4 (CCR4) selectively binds to and blocks the CCR4, which may inhibit CCR4-mediated chemotaxis and proliferation of T cells. Mogamulizumab acts through anti-directed cellular cytotoxicity and its enhanced through antibody engineering.

**Horizon Scanning Centre**  
September 2015

**Eltrombopag (Revolade) for severe aplastic anaemia – second line**

**SUMMARY** NIHR HSC ID: 968

Eltrombopag is intended to be used for the treatment of cytopenia patients with severe aplastic anaemia who are refractory to immunosuppressive therapy. If licensed, eltrombopag will offer a new option for this patient group. Eltrombopag is a non-peptidyl thrombopoietin (TPO) receptor agonist. TPO is the principal cytokine involved in regulation of megakaryopoiesis and platelet production and acts through activation of the TPO receptor. Eltrombopag mimics the effect of TPO, thereby stimulating platelet production. Eltrombopag is licensed in the EU for the treatment of chronic immune (idiopathic) thrombocytopenic purpura in adult splenectomised patients who are refractory to other treatments, second line treatment of thrombocytopenia in adult non-splenectomised patients where surgery is contraindicated, and for the treatment of thrombocytopenia in adult patients with chronic hepatitis C virus infection.

Aplastic anaemia is a rare condition and its precise incidence is difficult to determine due to the imprecision in establishing a diagnosis. However, estimates indicate that annual incidence is around two cases per million population. The incidence of aplastic anaemia varies throughout the world and is 2-3 times more common in Southeast Asia. In England, there were 12,300 consultant episodes in 2012, resulting in 20,400 finished consultant episodes and 19,658 bed days. In 2012, four aplastic anaemia accounted for 216 deaths in England and Wales.

Treatment for aplastic anaemia aims to correct the hypo-cellular bone marrow of the patient while providing supportive care where appropriate. There are two effective treatments for those with acquired severe aplastic anaemia and aplastic bone marrow: bone marrow transplantation or immunosuppressive therapy. Supportive care can include blood and blood cell transfusions, growth factors and antibiotics. Eltrombopag is currently in uncontrolled phase II clinical trials to determine its effect on haematological response in patients with severe aplastic anaemia. These trials are expected to complete in December 2016.

This briefing presents independent research funded by the National Institute for Health Research (NIHR). The views expressed are those of the author and not necessarily those of the NIHR, the NHS or the Department of Health.

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Web: <http://www.hsc.nihr.ac.uk>

**National Institute for Health Research**

**Horizon Scanning Research & Intelligence Centre**  
September 2015

**Sonata™ System for the removal of uterine fibroids**

**TIMEFRAME:** Estimated earliest commercial availability in the UK (CE Marked)

Currently unclear Now 6 months 1 year 18 months 2 years Over 2 years

**TECHNOLOGY**

The Sonata™ System (previously VizAblate™), developed by **Gynematics**, is an incisionless, transvaginal system that combines ultrasound image guidance with radiofrequency (RF) ablation. The system is designed to treat symptomatic uterine fibroids in a hospital outpatient setting, depending on anaesthetic requirements.

Sonata™ consists of an intrauterine ultrasound probe at the tip of a radiofrequency ablation device, which is inserted through the cervix into the endometrial cavity. Other components include an RF generator that controls energy delivery to maintain a constant temperature of 105°C. The probe is used to identify the borders of the fibroid. The SMART Targeting Guide, which optimises the ablation area, whilst minimising thermal injury to adjacent organs. Options for anaesthesia include general or local anaesthesia, as well as conscious sedation.

Sonata™ is CE marked and the company anticipates launch for routine clinical use during 2016.

**POTENTIAL FOR IMPACT**

Fibroids are benign tumours that develop within the uterine wall and are one of the common gynaecological problems among women in the UK. They are often asymptomatic but they can cause symptoms such as abnormal uterine bleeding and dyspareunia (painful intercourse). They may also be associated with reproductive problems such as subfertility and miscarriage. Fibroids can be singular or multiple.

Treatment depends on whether the fibroid causes symptoms and/or whether the woman wishes to conceive.

This briefing presents independent research funded by the National Institute for Health Research (NIHR). The views expressed are those of the author and not necessarily those of the NIHR, the NHS or the Department of Health.

NIHR Horizon Scanning Research & Intelligence Centre, University of Birmingham, Email: [nihrsso@contacts.bham.ac.uk](mailto:nihrsso@contacts.bham.ac.uk)  
Web: <http://www.hsc.nihr.ac.uk>

**National Institute for Health Research**

UNIVERSITY OF BIRMINGHAM

## Horizon Scanning Research & Intelligence Centre

New and emerging technologies for hearing loss

March 2017



**NHS**  
National Institute for Health Research

UNIVERSITY OF BIRMINGHAM

**NHS**

National Institute for Health Research

# Accuracy of identification and filtration

		<b>Technologies likely to have a significant impact on patients, services or finance</b>		
		<b>Yes</b>	<b>No</b>	
<b>Identified and filtered correctly</b>	True positives	False positives	All topics identified and filtered by EAA system	
<b>Not identified and/or not filtered correctly</b>	False negatives	True negatives	All topics not identified or eliminated in filtration	
	New technologies with signification impact	New technologies without signification impact	<b>Every new health technology</b>	

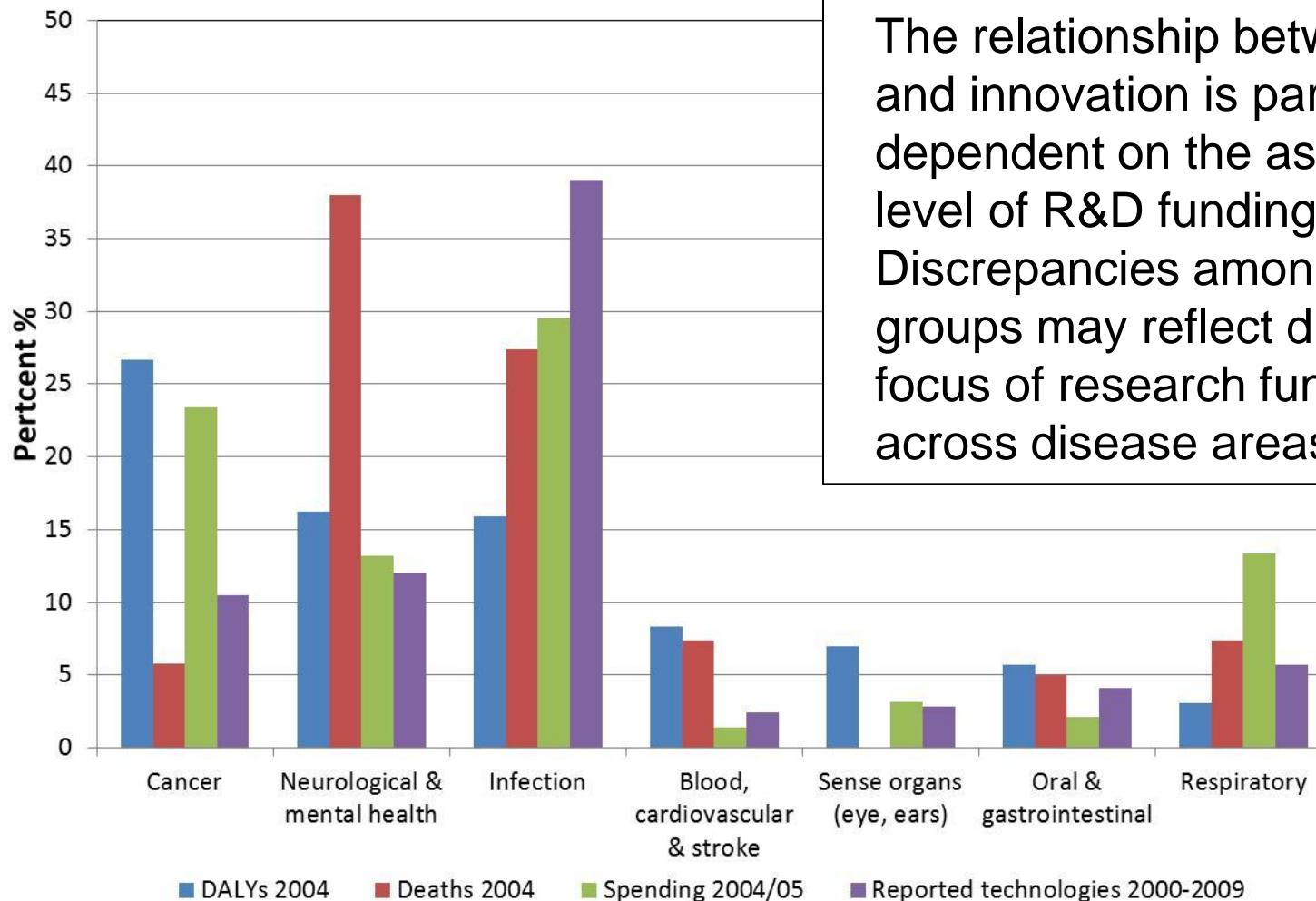
Simpson S, Hyde C, Cook A, Packer C, Stevens A. Assessing the accuracy of forecasting – applying standard diagnostic assessment tools to a health technology early warning system. IJTAHC 2004;20(3): 381-384.

Packer C, Fung M, Stevens A. Analyzing 10 years of early awareness and alert activity in the United Kingdom. IJTAHC 2012;28(3):308–314.  
doi:10.1017/S026646231200030X

# Analysing 10 years of HSC activity - results

- Results:
  - We estimate that overall HSC identification, filtration and reporting had a positive predictive value of 0.39 (95% CI, 0.36 to 0.43) and a false positive rate of 60%. Using NICE appraisals and EuroScan's database as proxies for pharmaceuticals of significance, we estimate the HSC sensitivity over the 10-year period at 0.92 (95% CI, 0.89 to 0.95) and 0.89 (95% CI, 0.82 to 0.96) respectively.
- Conclusion:
  - Our results suggest that the HSC has performed well in terms of sensitivity over the past decade, but that the false positive rate of 60% may indicate that the filtration criteria for pharmaceuticals could be tightened for increased efficiency.
  - Future evaluations of EAA systems should include an element of external review and explore the level of accuracy acceptable to funders and customers of such systems.

# Burden of disease, research funding and innovation in the UK



## ❖ **Conclusions:**

The relationship between BoD and innovation is partly dependent on the associated level of R&D funding. Discrepancies among key groups may reflect differential focus of research funding across disease areas.

# Evaluation: notice period to NICE (drugs)

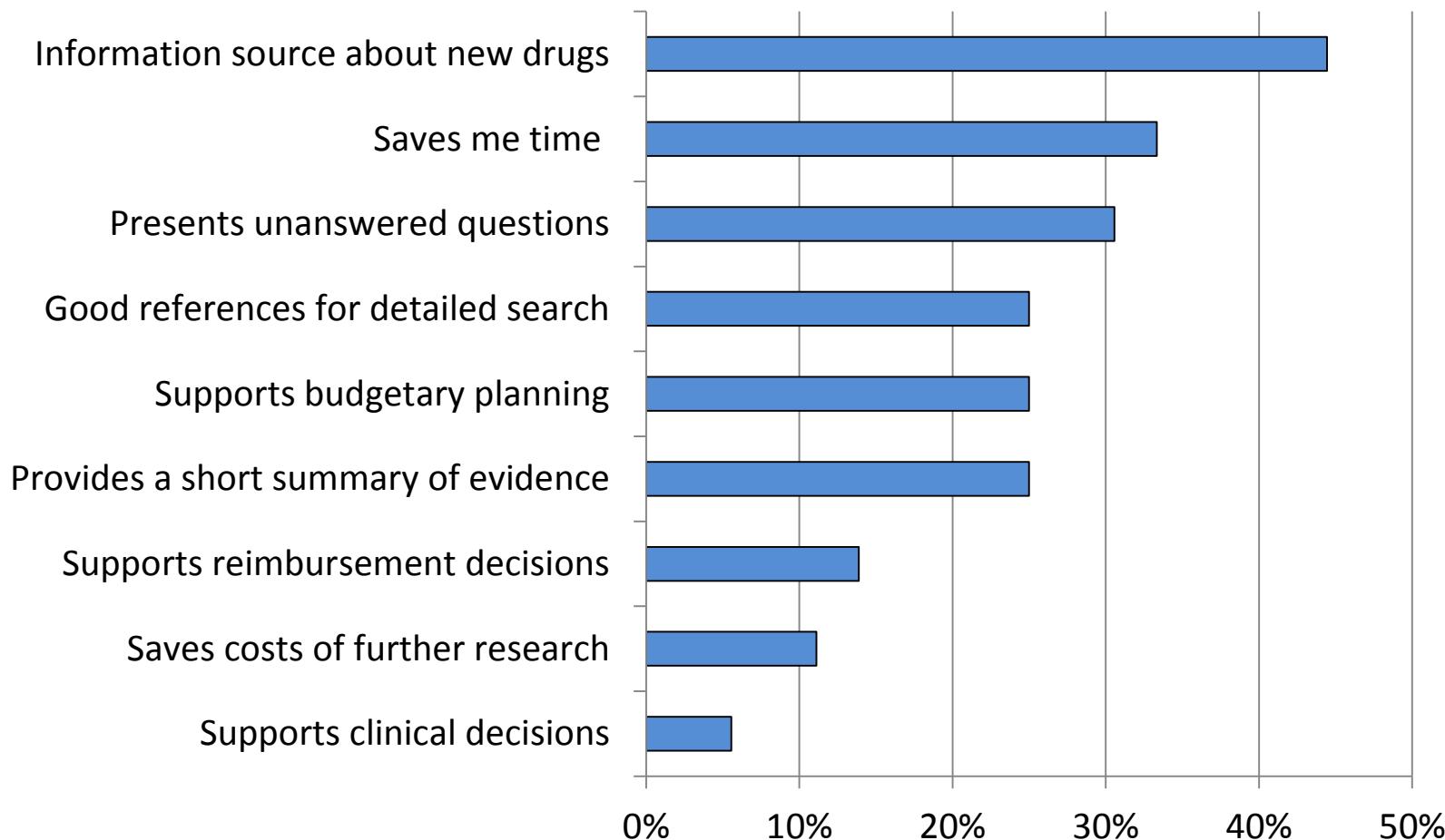
<b>Year (number of topics audited)</b>	<b>New products: 20 month target</b>	<b>New indications: 15 month target</b>	<b>TOTAL</b>
2016/17 (158)	25.3 months	17.1 months	78% within target
2015/16 (131)	23.7	19.2	71% within target
2014/15 (97)	22.6	14.0	67% within target
2013/14 (100)	26.1	16.0	70% within target
2012/13 (94)	22.4	16.9	71% within target

# Evaluation: HSRIC website visitors and downloads

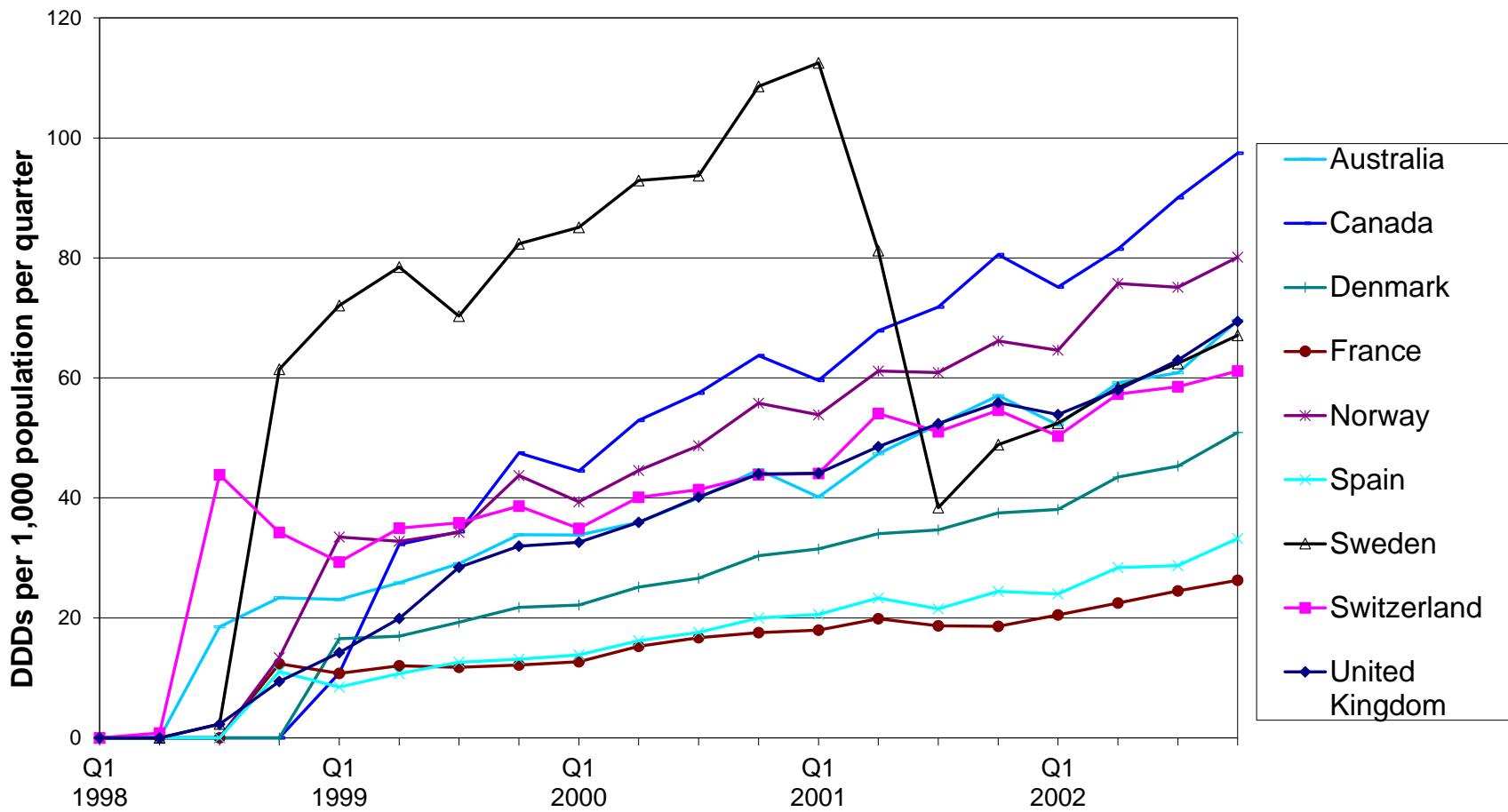
	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Sessions - visits</b>	27,795	36,385	39,624	38,457	64,868
<b>Unique users</b>	20,723	28,739	29,296	28,987	50,106
<b>Downloads (total)</b>	8,593	7,228	9,378	-	-
<b>Downloads (users self-reporting from England)</b>	-	3,150	5,096	6,161	7,627

\* Due to changes in software and analytic tools over time, we cannot directly compare between some years for some of the numbers presented, in particular the numbers of downloaded reports in 2015/16 are estimated from part-year figures.

# Reported use of LBI-HTA Horizon Scanning reports (2009-2012)



# Sildenafil: DDDs per 1,000 population per quarter;



# Challenge: How to measure end-impact of EAA systems?

- Patients
  - Access to new, effective interventions – variability, time frames
  - Reduced uncertainty and improved risk-benefit ratio
- Health services
  - Timely decision making and policy development
  - Timely identification and access to finance
  - Development of appropriate services and training
  - Additional local research and modelling
- Developers and manufacturers
  - Supporting innovation
  - Supporting applicable research and data collection
  - Identifying the less economically sensible at an early stage

**ANY QUESTIONS?**

**THANK YOU**