

# Data Science for Drug Discovery, Health & Translational Medicine

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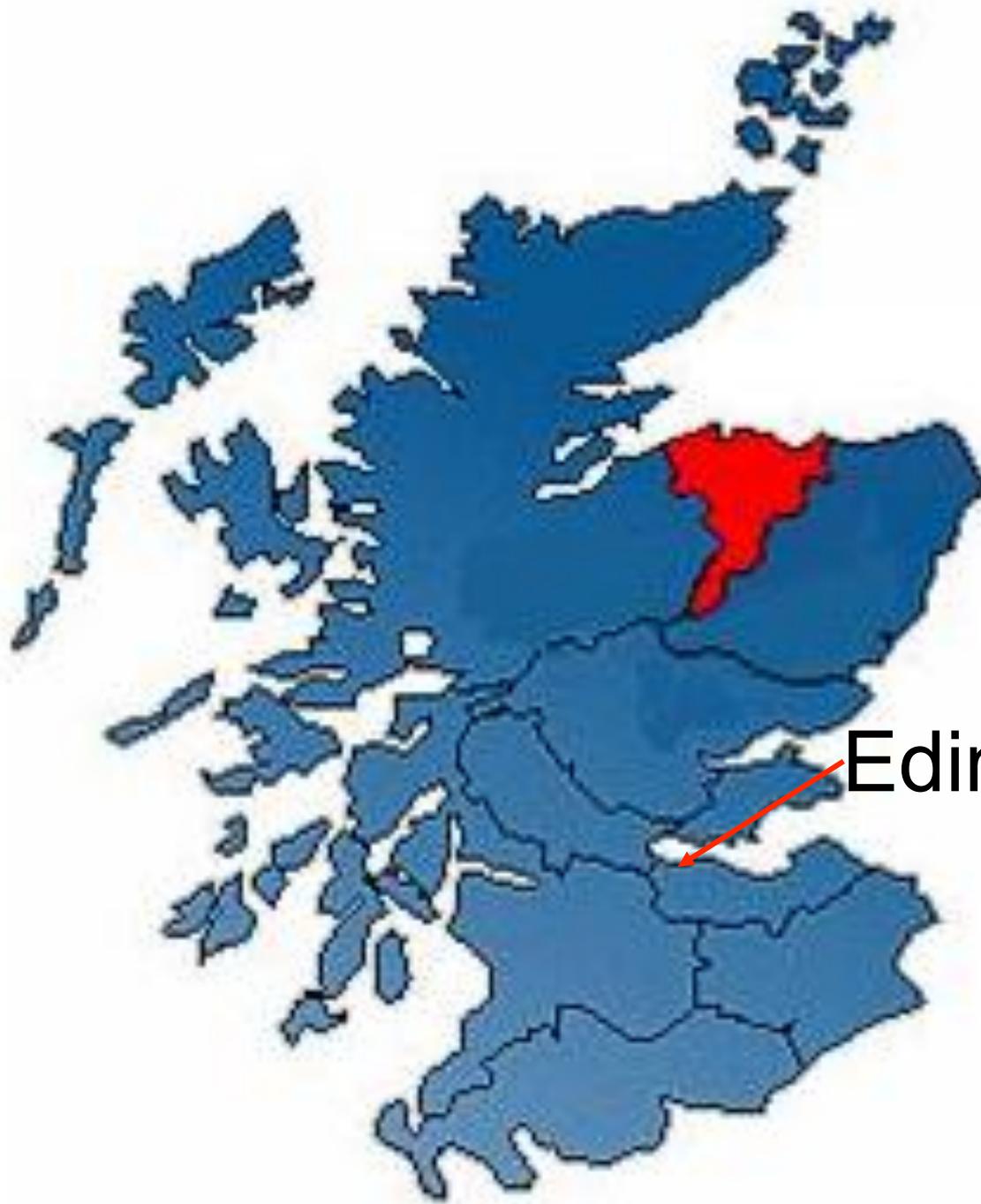
Guest Lecture

Prof Grant Cumming



DATA SCIENCE FOR DRUG DISCOVERY, HEALTH AND TRANSLATIONAL MEDICINE





Edinburgh





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Honorary Senior Lecturer University of Aberdeen



Foundations and Trends® in  
Web Science

4:4

## Health Web Science

Joanne S. Luciano, Grant P. Cumming,  
Eva Kahana, Mark D. Wilkinson,  
Elizabeth H. Brooks, Holly Jarman,  
Deborah L. McGuinness and Minna S. Levine

now

the essence of knowledge



# How data science can help clinicians treat patients better

## A clinician's perspective

What data science can do for patients - preferred health outcomes





*to address and solve the particular  
problems & challenges facing 21<sup>st</sup> century medicine  
using Information & communication technologies  
and in particular  
those utilising the Web & the Internet to deliver health care*



# Learning Objectives

Recap some of the syllabus you have already covered  
but through the eyes of a clinician

Gain some insights into the introduction  
of using Information and communication technologies  
in Women's health care (note not exhaustive)

Extrapolate these insights into other areas of health care

Be aware of the need for quality control & ehealth literacy  
as online health information becomes unregulated

Be aware of how quickly technology becomes main stream  
sometimes without proper evaluation (i.e. fake news)



- General Comments
- Data Science Challenges
- Exemplars (Women's Health)



- General Comments
- Data Science Challenges
- Exemplars (Women's Health)





# Challenges 21<sup>st</sup> century Medicine



- ↑ population (9 billion 2050)
- ↑ ageing population
- ↑ Chronic diseases
  - (Long Term Conditions)
- Information overload
- Shortage health professionals
- Climate change
- Environmental degradation

Infectious diseases (pandemics)

# We have a problem

## Sustaining health and care delivery

If we carry on doing more of the same.....

- A new 50 bed care home will be required every 2 weeks for next 20 years!
- A new 300 bed District General Hospital will be required every 3 years for next 20 years!
- £2.8 billion additional investment for sheltered housing
- By 2020 virtually all school leavers will need to be recruited into the care sector!

We know its not sustainable!

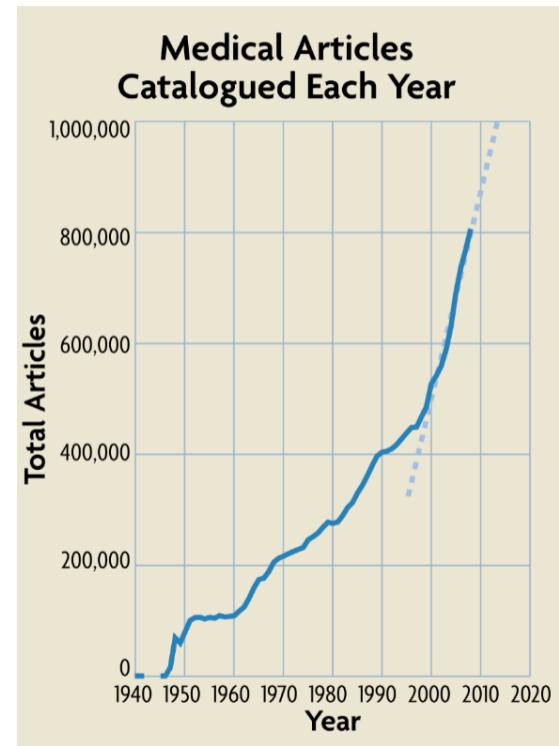


# Problems- needing solutions

Medical literature

epidemiologist needs 21 hrs of study day  
to remain current !

Today, a typical primary care doctor must stay abreast of approximately 10,000 diseases and syndromes, 3,000 medications 1,100 laboratory tests the list grows every year



Source: the fourth paradigm

Polymath has gone! Need help (machine learning)

## Dissemination of Medical Discoveries to Clinical Practice: The Last 2,500 Years

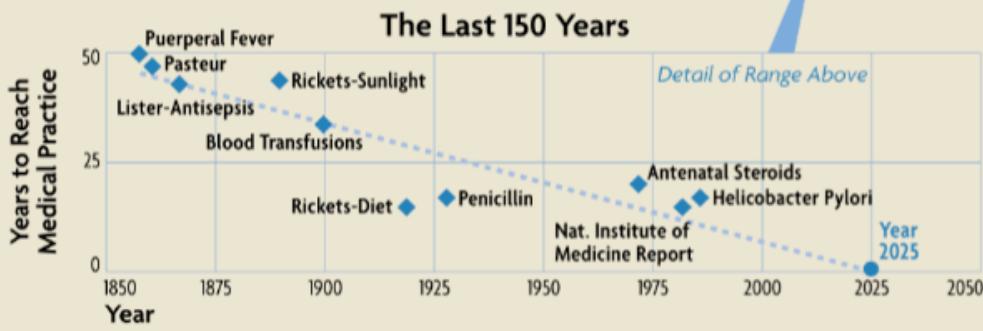
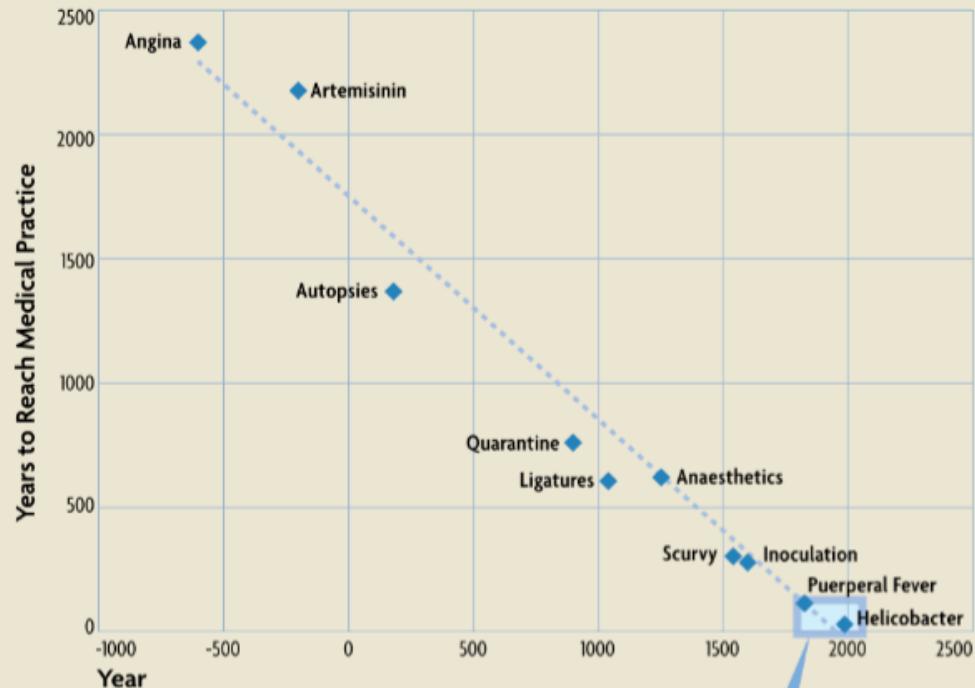


FIGURE 2.

While it took 2,300 years after the first report of angina for the condition to be commonly taught in medical curricula, modern discoveries are being disseminated at an increasingly rapid pace. Focusing on the last 150 years, the trend still appears to be linear, approaching the axis around 2025.

The health care singularity  
bench to bedside  
(2025)

Source: the fourth paradigm



there is a growing awareness that Internet interventions work, but as yet it is unclear for whom, for what behaviours, and for which medical conditions (*Murray 2010*)





Health related actions cannot be explained using rational models

Human agency is complex, nuanced and subject to a host of influences such as cultural and symbolic meanings, practical constraints and personal priorities

The logic of care is non-linear and unpredictable



# Describe this reality



The mutual approach of two pairs of lips,  
the reciprocal transmission  
of carbon dioxide and microbes  
and juxtaposition of two orbicularis oris muscles  
in a state of contraction

*Dr Henry Gibbons 1808-1884 & David Wilkinson 1993 (theologian)*

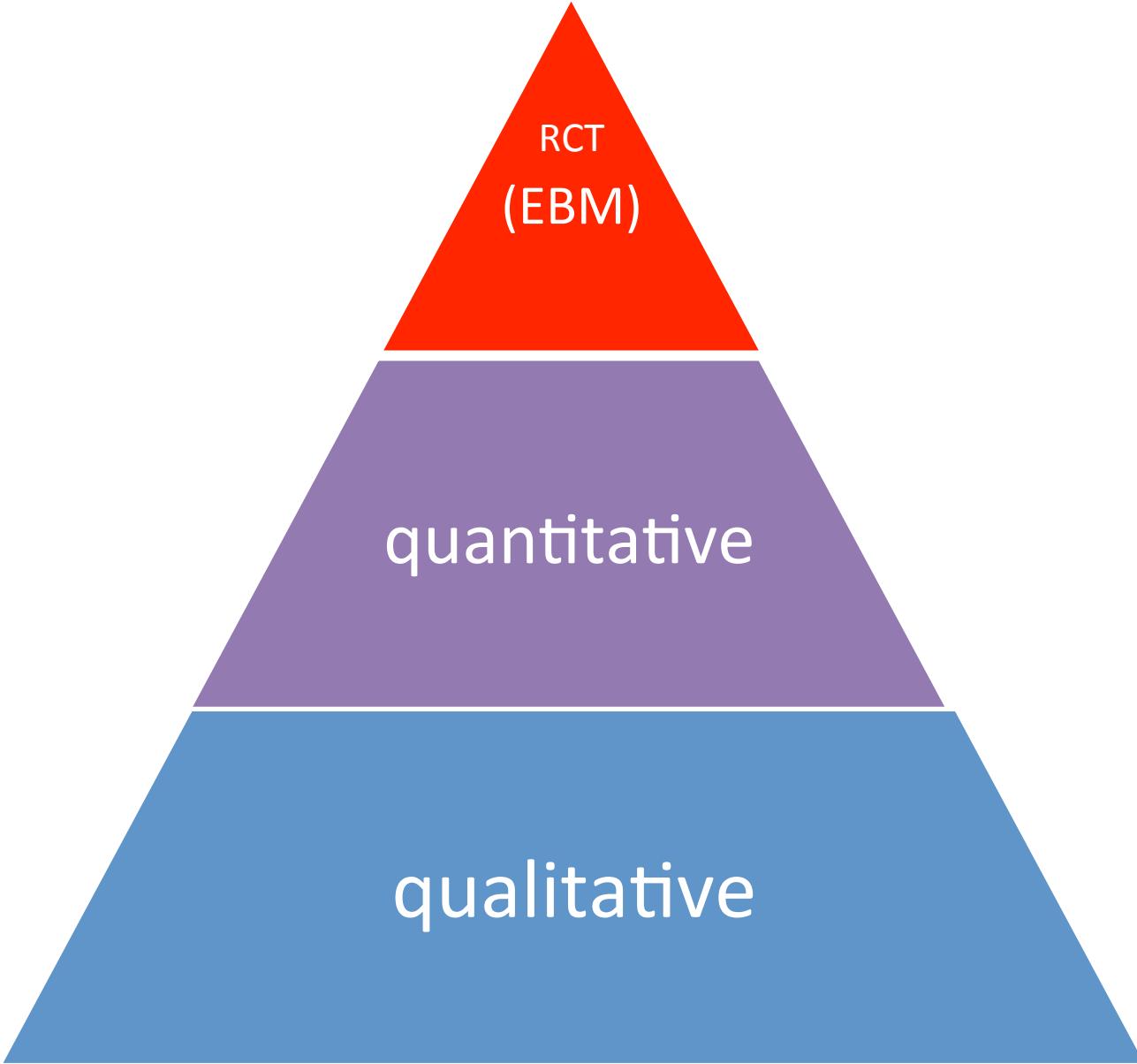


There are known knowns.  
These are things we know that we know.  
**(evidence based medicine – quantitative**



There are known unknowns.  
That is to say, there are things that we know we don't know.  
**(social context-human behaviour is complex and unpredictable  
qualitative- evidence informed medicine**

But there are also unknown unknowns.  
There are things we don't know we don't know.  
**Emergent properties- the whole is greater than the sum of the parts  
agile iterative approaches cf fixed milestones**



RCT  
(EBM)

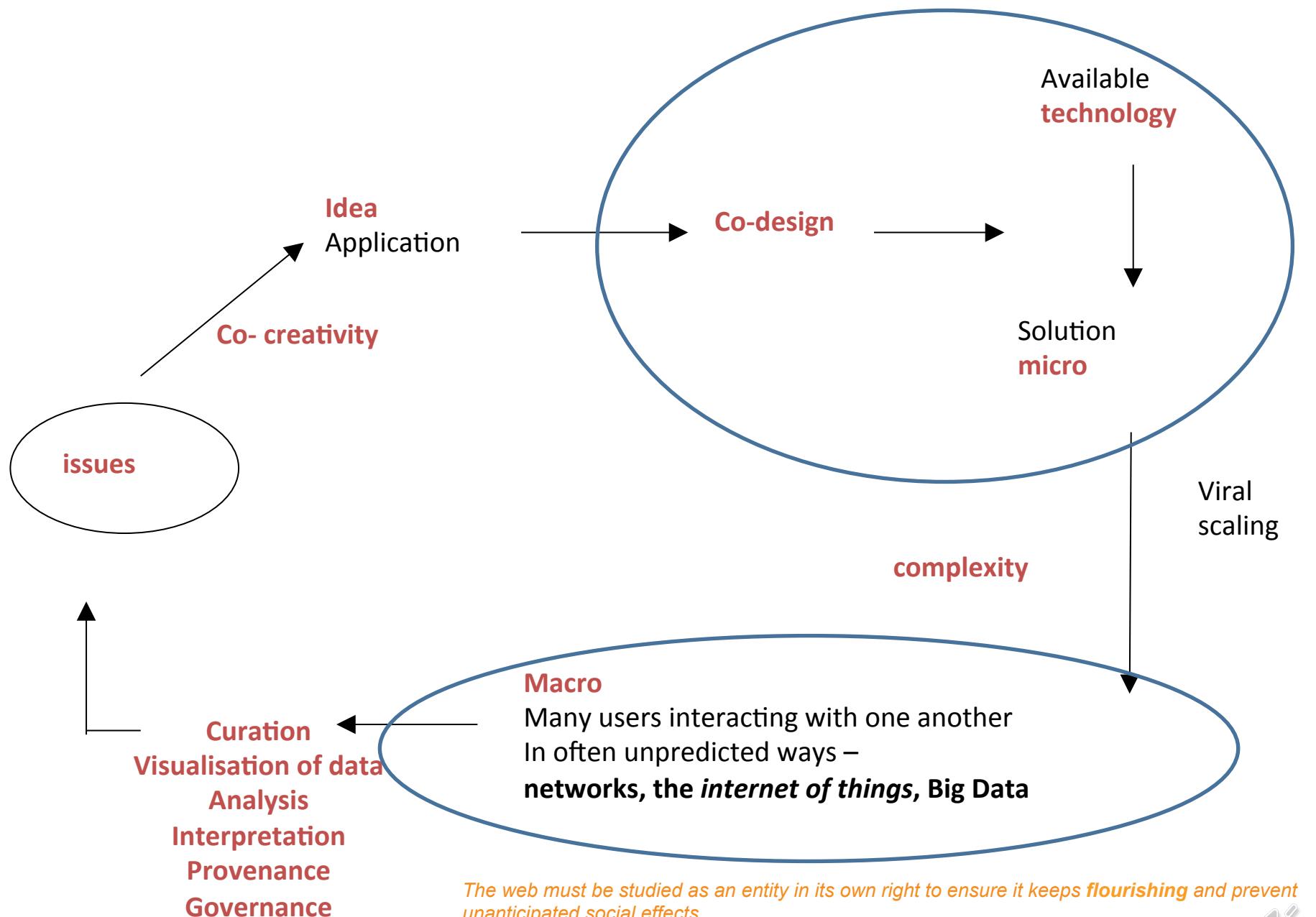
quantitative

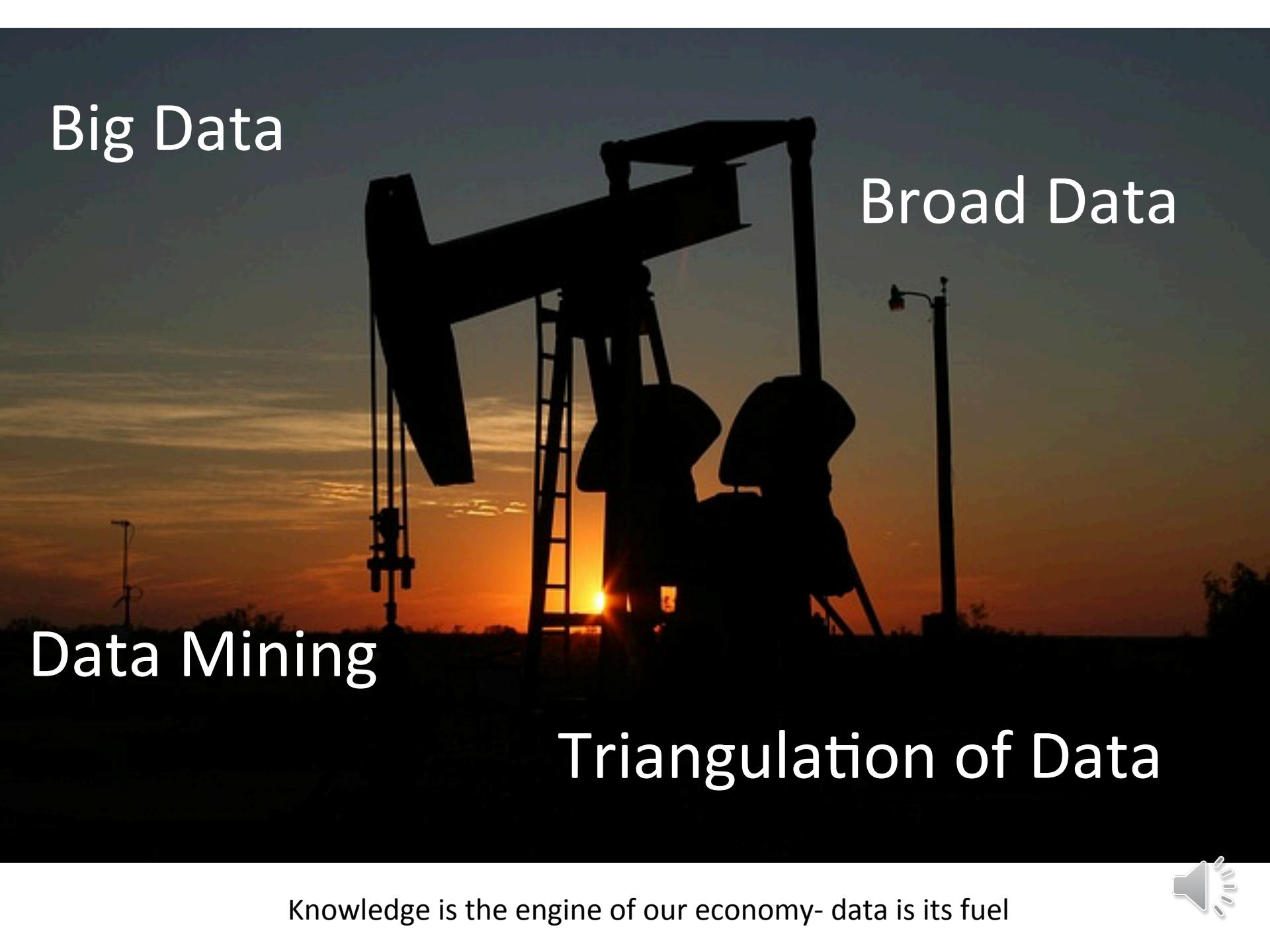
qualitative



- General Comments
- Data Science Challenges
- Exemplars





A photograph of several oil derrick silhouettes against a vibrant orange and yellow sunset sky. The sun is low on the horizon, creating a bright glow. The foreground is dark, making the silhouettes stand out.

# Big Data

# Broad Data

# Data Mining

# Triangulation of Data

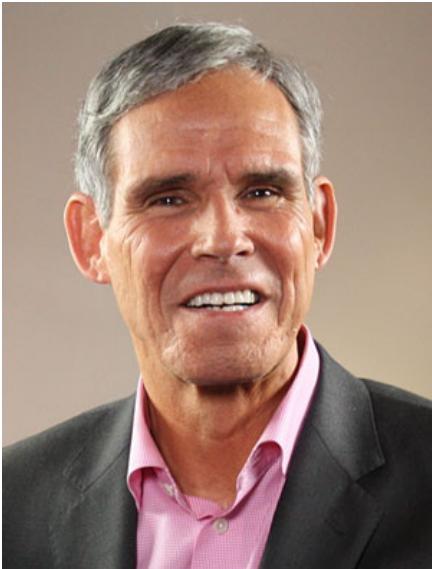
Knowledge is the engine of our economy- data is its fuel





The Internet is turning prediction into an equation  
Beware of making false correlations  
everything can be significant!





# Reactive to proactive health Population to individual health

Interrogating the Internet for health information and combining this information with that from the IoT, together with health professional patient information systems, and the emerging field of systems biology means that we are entering a new era of medicine in which each person can be “near fully defined at the individual level, instead of how we presently practice medicine which is at a population level”



Eric Topol

- General Comments
- Data Science Challenges
- Exemplars (Women's Health)



# Exemplars using

Websites, social media, apps & telemedicine

Information	as a snapshot of what's happening in the specialty give knowledge and context (knowledge into wisdom) – Understanding to empower patient to take action seek professional help expert patient- knows more than health professional discussion with health professional as an equal partner
Intervention	

Information	informs health professional trickle down effect from policy makers in that field Trickle up effect to policy makers
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Nudge

Change is happening quickly- evolution of the Internet in delivering health care

How governance impacts on progress



## 3 mantras

- Online behaviour influences offline behaviour
- Computers are not magic (each keystroke costs)
- Quality of information varies



# Problems inherent in analysing citizen generated data from websites

Targeting a computer literate population

Self selection

Recollection

Multiple entries

Free text boxes

Pushing an agenda

Emergent properties/unintended consequences

Making connections that don't actually exist

Noise

There are various standards to minimise above

Checklist for Reporting Results of Internet E-Surveys (**CHERRIES**)

Eysenbach G

Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). J Med Internet Res 2004;6(3):e34 DOI: 10.2196/jmir.6.3.e34  
PMID: 15471760 PMCID: PMC1550605





# MENOPAUSE MATTERS

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## Welcome to MENOPAUSE MATTERS.



[Updated : 18th September 2010](#)

**Menopausematters.co.uk** is an independent, clinician-led website. Our aim is to provide easily accessible, up-to-date, accurate information about the menopause, menopausal symptoms and treatment options, including Hormone Replacement Therapy (HRT) and alternative therapies, so that women and health professionals can make informed choices about menopause management.

Menopause management should encompass a holistic approach to include discussion on life-style and dietary factors, as well as specific menopause treatment options. For many women, hormone replacement therapies can provide very effective relief of distressing menopausal symptoms, significantly improving their quality of life, and can provide an important preventive role, reducing the risk of debilitating disease such as osteoporosis. For others, non-hormonal options (alternative or complementary therapies or natural remedies) may be preferred.

When treatment is considered necessary for menopausal problems, **Menopause Matters** aims to help therapies to be chosen and adjusted appropriately.

[Click here to visit our shop page](#)



**Menopause Matters Magazine!**  
**Even bigger 32 pages - Issue Twenty out now!**

### Book Choice:

*Award Winning 'Menopause - Answers at your fingertips.' By Dr. Heather Currie. Available now!*



# Women's attitudes to hormone replacement therapy, alternative therapy and sexual health: a Web-based survey

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## Abstract

**Objective.** To survey women's views on hormone replacement therapy (HRT), alternative therapies and sexual health using the Internet.

**Study design.** Three questionnaires were offered on a UK, patient-tailored, independent, clinician-led dedicated menopause website. They covered HRT, alternative therapies and sexual health. The anonymous responses of the users of the website were analysed.

**Results.** There were 1026, 1072 and 1002 responses for the HRT, alternative therapies and sexual health questionnaires, respectively. On the first, 75% of respondents were in favour of HRT; 36% felt media reports of the risks of HRT had been exaggerated, and 73% of women did not know enough about HRT to make informed choices. In relation to alternative therapies, 85% of respondents felt they did not know enough to make informed choices, 71% received no advice before starting an alternative therapy and 69% were unaware of possible interactions. Ninety-five per cent would try alternative therapies before HRT in the belief that they were more natural and 68% were prepared to pay more than £10 a month for such therapies. On the questionnaire on sexual health, 88% of respondents indicated that they believed an active sex life was important. Fifty-three per cent recorded that they experienced dyspareunia, but 51% of women hid their symptoms and 31% made excuses to avoid intercourse; 54% felt their confidence had been adversely affected. Only 20% had discussed their symptoms with health professionals and only 12% were using prescribed treatment.

**Conclusions.** Online questionnaires are a useful means to obtain data. Our surveys raised several issues, including the observations that the majority of women said they did not know enough about HRT and alternative therapies to make informed choices. There appeared to be many women with vaginal symptoms who had not spoken with a health professional and therefore were untreated.



Original article

# Web-based survey on the effect of menopause on women's libido in a computer-literate population

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## Abstract

**Objective.** The objective of this study is to use the internet to survey the effect of menopause on women's experience of libido.

**Study design.** A questionnaire incorporating the Brief Profile of Female Sexual Function (B-PFSF) on a UK menopause website.

**Main outcome measure.** Questions on reduced libido, distress, level of help sought and treatment.

**Results.** Eighty-four percent of women ( $n = 2112/2527$ ) felt that an active sex life was important. One thousand and fifty-one perimenopausal and 560 postmenopausal women reported reduced libido causing distress with 2.3% and 35% discussing this with health professionals. Eighteen percent perimenopausal and 30% postmenopausal women had tried non-testosterone hormone replacement therapy with 34% and 37%, respectively, finding it helpful. Testosterone was deemed useful in some perimenopausal ( $n = 6/17$ ) and postmenopausal ( $n = 23/50$ ) women. Twenty-seven percent premenopausal, 38% perimenopausal and 56% postmenopausal women reported vaginal dryness with 78% peri- and 87% postmenopausal women believing it a factor causing reduced libido. Twenty-two percent premenopausal, 28% perimenopausal and 46% postmenopausal women had discussed this with health professionals and 17%, 36% and 55%, respectively, were on treatment. Women in all reproductive epochs completed the B-PFSF (a validated tool for postmenopausal women only).

**Conclusions.** An active sex life was deemed to be important but many women were not seeking help for menopause-related reduced libido causing distress. For many, vaginal changes contributed to their symptoms. In those seeking advice, treatment was commonly not prescribed. Health professionals must ask appropriate direct questions to all women, especially as part of menopausal assessment. A need for the B-PFSF to be validated in non-postmenopausal women was also indicated.



Original article

# Web-based survey on the effect of digital storytelling on empowering women to seek help for urogenital atrophy

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## Abstract

**Objective.** To evaluate an online digital story aimed to empower women suffering from urogenital atrophy to seek health professional advice.

**Study design.** A questionnaire evaluating a digital story on the UK-based menopause website [www.menopausematters.co.uk](http://www.menopausematters.co.uk).

**Main outcome measure.** Answers to questions on empowerment.

**Results.** A total of 539 responses were obtained over the 62 weeks that the questionnaire was online. In women who had not previously sought help for urogenital atrophy, 145 were too embarrassed and 105 did not want to bother the health professional. Having watched the video, 73% ( $n = 105/143$ ) of women who had been too embarrassed to discuss their symptoms with their doctor would now do so and 87% ( $n = 89/102$ ) of women who had not wanted to bother their doctor would also make an appointment. Ninety-six percent ( $n = 138/144$ ) of women would be willing to try treatment. Over two-thirds of women favoured webcast information to written information; however, postmenopausal women were less likely than peri- or premenopausal to favour this method of presenting health information.

**Conclusion.** Using digital stories for health promotion is a new area for research. Our data provide preliminary evidence that women can feel more empowered to seek help for urogenital atrophy using digital storytelling.



Short report

# The effects of urinary incontinence and availability of publically accessible toilets: an online survey

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## Abstract

Previous surveys on [www.menopausematters.co.uk](http://www.menopausematters.co.uk) and published in this journal show that women are reluctant to seek help for reduced libido, vaginal atrophy and dyspareunia despite adverse effects on health and wellbeing. Additionally, health professionals frequently fail to explore these areas during consultations despite proven treatments being available. Women suffering urinary incontinence (UI) show similar trends in their reticence to seek help and in their health professionals addressing their issues. These issues must be addressed through patient empowerment and direct questioning from health professionals. Well maintained, publically accessible toilets are also an important provision to achieving a holistic approach to UI.

**Keywords:** Incontinence, public health, online survey, Internet, women





# ToiletFinder

Community Powered Healthcare

“the wisdom of the crowd”





ToiletFinder  
Share - Locate - Rate

# ToiletFinder

ToiletFinder – All Toilets

http://toiletfinder.uhi.ac.uk/ MBP HDD = Read It Later Post with Tweetie Apple Yahoo! Google Maps YouTube Wikipedia Feeds (180) Popular YouTube – D...without you RedBalcony ...'m With You >>

**ToiletFinder** Give Feedback

Search for a Toilet Add a New Toilet Links iPhone About

ToiletFinder is currently a pre-release preview. Please provide [feedback](#) to help us improve ToiletFinder.

Where Are You Going? Map

POWERED BY Google

Map data ©2010 Tele Atlas - [Terms of Use](#)

■■■■ = Toilet Location (Brighter indicates higher rating) ■ = Your Location



Original article

# Searching for pelvic floor muscle exercises on YouTube: what individuals may find and where this might fit with health service programmes to promote continence

Kate Stephen\* and Grant P Cumming†

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## Abstract

**Objective.** This paper describes the investigation, categorization/characterization and viewing of pelvic floor muscle exercises (PFME) on YouTube from the perspective of the 'wisdom of the crowd'. The aim of the research was to increase awareness of the type of clips that individuals are likely to come across when searching YouTube and to describe trends and popularity. This awareness will be useful for the design of continence promotion services, especially for hard-to-reach individuals.

**Study design.** Web-based videos relating to PFE were identified by searching YouTube using the snowball technique.

**Main outcome measures.** Number of views; the approach taken (health, fitness, sexual and pregnancy); product promotion; and the use of music, visual cues and elements designed to encourage exercise. The number of views of each video was recorded at three points over a seven-month period.

**Results.** Twenty-two videos were identified. Overall these videos had been viewed over 430,000 times during the study period. One video was viewed over 100,000 times and overall the median increase in views was 59.4%.

**Conclusions.** YouTube is increasingly used to access information about pelvic floor exercises. Different approaches are used to communicate PFME information but there are no formal structures for quality control. Further research is required to identify which elements of the video clips are effective in communicating information and in motivating exercise and to establish appropriate protocols. Kitmarking is recommended in order that women obtain correct advice.



# Background: Smart phone apps



*Where adherence is a problem ... technology can play an important role*  
Boulos et al, 2011

... provide a useful starting point for implementing behavioural change in resource-poor settings  
Bennett et al, 2011

... the potential for mobile communication to transform healthcare and clinical intervention in the community is tremendous  
Boulos et al, 2011

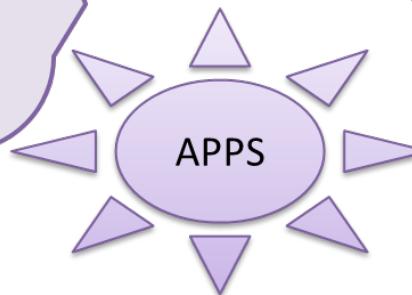


# Qualitative Results

"Time and memory are massive constraints for me with this type of exercise.

When I used the app, I would do more exercise as I would complete the sets even when I got distracted or forgot how many I had done. Without the app, I rarely did as many reps and often forgot completely."

They all seemed fun to try and definitely helped me get into the habit of doing the exercises. In the end I stopped using the app and just did the exercises myself morning and night



"It was fun but soon got bored with the apps."

"I'm afraid none of the apps were interesting or motivating enough to use them more than 3 times. I would have preferred a DVD or program for a computer ... but then I am not used to an iPhone or smart phone."

"As far as the apps went, I didn't find them helpful I'm afraid."



# Qualitative Results

"The calm voice talked me through the exercises making them simple and relaxing as well as reminding me of important things and which muscles to focus on. As the app counted each set for me, I carried on and did more than if I am doing the exercises without the app."



They also made me think about the timing."

"Clear and easy to follow"

"Encouraging and kept me focused"

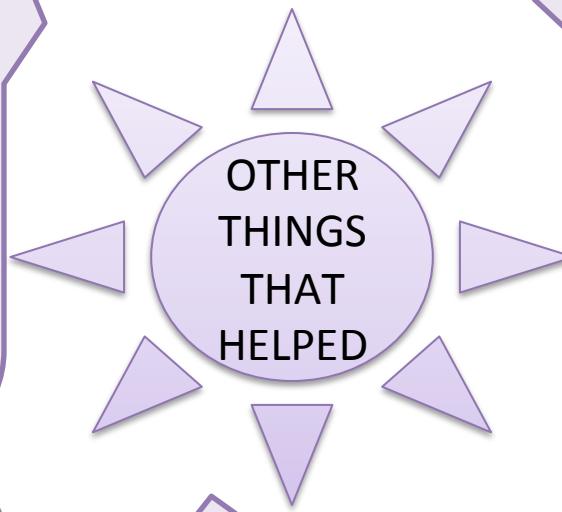
"They all seemed fun to try and definitely helped me get into the habit of doing the exercises. In the end I stopped using the app and just did the exercises myself morning and night for 100 reps each time."



# Qualitative Results

“What helped, and so far has continued to keep me exercising was having the form to truthfully fill in. It became a habit that, even now I don't have the form, I can visualise the number of exercises I want to do and imaging writing them in.”

“Although the apps didn't really help me a lot, the protocol & writing down what I had done on every given day enabled me to remember and get into a routine. I will continue!”



“Chart on bathroom wall helped me to develop habit”

“Having the form to fill; being part of something other people were doing; sense of having a framework of support to exercise.”

“Having a set time to do the exercises”



Original article

# Stopping hormone replacement therapy: were women ill advised?

Grant P Cumming,\* Heather D Currie,† Nick Panay,‡ Rik Moncur§  
and Amanda J Lee\*\*

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## Abstract

**Objective.** To survey women who stopped hormone replacement therapy (HRT) after 2002, including those who later restarted.

**Study design.** A questionnaire on the UK-based menopause website [www.menopausematters.co.uk](http://www.menopausematters.co.uk) evaluating how women are influenced by HRT advice.

**Main outcome measures.** Answers to questions regarding stopping/restarting HRT in response to the advice in the early 2000s and advice given today.

**Results.** A total of 1100 responses were obtained. Of those who made the decision to stop HRT themselves, 56.4% ( $n = 425/754$ ) said that they were influenced by the media. In those who would potentially most benefit from HRT, 72.8% ( $n = 220/302$ ) stopped without medical advice. Overall, women aged under 50 years were significantly more likely to stop HRT themselves than women over 50 ( $P < 0.001$ ). In women in whom symptoms returned, 37.5% ( $n = 362/966$ ) said these affected their ability to work, 45.1% ( $n = 436$ ) had problems with decision-making, 53.6% ( $n = 518$ ) admitted to relationships being negatively affected and 29.2% ( $n = 286$ ) said that symptoms affected their social relationships. Overall 46.5% of women ( $n = 485/1044$ ) would not have stopped HRT given the current understanding of risk. Compared with women over 50, significantly more women under the age of 50 said that they would not have previously stopped their HRT based on their current understanding of risk ( $P < 0.001$ ).

**Conclusions.** The negative impact of published research and its reporting from the early 2000s are being mitigated by current press coverage. Media reports appear to influence the younger woman more than the older woman. Health professionals and media must learn the lessons from the past.



Original article

# Web-based survey 'Contraception and attitudes to sexual behaviour' completed by women accessing a UK menopause website

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## Abstract

**Background and methodology.** Sociodemographic trends mean increasing numbers of new relationships in later life. These trends may not only have health consequences for women and health services but also impact on the targeting of sexual health messages. This study aimed to examine attitudes and knowledge surrounding contraception, sexual health and unwanted pregnancy among those accessing the website [www.menopausematters.co.uk](http://www.menopausematters.co.uk). A voluntary online survey was completed.

**Results.** Survey was completed by 550 respondents. Three hundred and sixty-six women, 94% of whom self-classified as pre- or perimenopausal, had been sexually active with a male partner in the previous four weeks. Commonest contraceptive methods used by perimenopausal and postmenopausal women were condoms, combined oral contraceptive pill (COCP) and male sterilization. Up to 42% of women surveyed were unhappy with their contraception. A total of 27% premenopausal, 32% perimenopausal women and 40% postmenopausal used no contraception. One-third of women were unhappy about this and 19 unplanned pregnancies had occurred. The majority of women were informed regarding COCP use over 35 years, hormone replacement therapy, emergency contraception and ceasing contraception. The majority of women were unaware that more terminations of pregnancy are performed in women over 40 than any other age group per total pregnancies. Almost a third of women were unaware that chlamydia incidence is increasing in older women.  
~~Most would use condoms in new relationship.~~

**Discussion and conclusions.** Women accessing [www.menopausematters.co.uk](http://www.menopausematters.co.uk) are well informed about contraception and sexual health. The majority of those accessing the site are sexually active, but many use no contraception, or are unhappy with their chosen method, leaving them vulnerable to unwanted pregnancy or sexually transmitted infection.



# The need to do better – Are we still letting our patients down and at what cost?

**Grant Philip Cumming<sup>1</sup>, Heather Currie<sup>2</sup>, Edward Morris<sup>3</sup>,  
Rik Moncur<sup>4</sup> and Amanda J Lee<sup>5</sup>**

Post Reproductive Health  
2015, Vol. 21(2) 56–62

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[prh.sagepub.com](http://prh.sagepub.com)



## Abstract

**Objective:** To survey women's views on HRT and alternative therapies and make comparisons with 2007 data.

**Study design:** A questionnaire on a UK patient-tailored independent clinician-led website with anonymous responses analysed using descriptive statistics.

**Main outcome measures:** Answers to survey questions in 2007 and 2014.

**Results:** A total of 1476 responses from 33 countries were obtained. Almost 70% of respondents had used/would consider using HRT. Over the last 5 years, 27.7% felt that their views had changed for the better. Most obtained information from health professionals or the Internet. About 51.1% felt that their family doctor did not recognise the importance of the menopause with one-third feeling resistance to being offered HRT. Compared to 2007, significantly more women were aware of the different risks associated with different types of HRT. More women were able to respond positively to the question asking whether or not they felt able to make an informed choice regarding HRT/alternative therapies.

**Conclusions:** There has been negativity and confusion regarding HRT management since the beginning of the millennium. Our findings suggest that we, as health professionals, continue to let our patients down with poor provision of information, inaccurate or wrong information, or access to the right care. The cost of this is women living with preventable sequelae associated with the menopausal transition with a consequent adverse impact on health and the health economy. The importance of the menopause consultation as part of a life course approach is highlighted as well as the emerging discipline of Health Web Science.



# Web site as an intervention



# miscarriage matters

Wednesday, 08 June 2005

Welcome > Impact of miscarriage > Psychological impact > impact on partners

## Main Menu

- Welcome
- Using the site
- Introduction
- Clinical information
- Impact of miscarriage
  - > Physical impact
  - > Psychological impact
    - impact on women
    - impact on partners
    - impact on children
    - impact on others
    - impact on relationships
    - normal reactions
    - adjusting to the loss
    - prolonged distress
    - positive outcomes
- Future pregnancy
- Forum
- Ask the Expert
- Support - specific
- Contact us
- Terms and Conditions

## Login Form

Hi, denise

### What is the impact of miscarriage on partners?



- It is important to recognise that it is not just women who suffer after experiencing a miscarriage, partners may also experience the same kind of feelings and, in some cases, may also experience prolonged distress.
- However, it is also important to recognise that for some partners the way in which they react to that loss may be different to that of women for the following reasons.
  - They have not experienced the same physical and emotional changes caused by the hormones produced during pregnancy.
  - Attachment to the unborn child may not be as strong as that of women because they may not have seen a scan or felt the baby kicking. This may result in a difficulty in appreciating why their partner is distressed and life hasn't got 'back to normal'.
  - Feelings of guilt about causing the pregnancy in the first place.
  - Sense of powerlessness about how best to help.
  - Feeling the need to be strong for their partner's sake and therefore finding it difficult to say how they are feeling. (This can give the impression that the partner does not care.)
  - Feeling left out and isolated if concern is only expressed in relation to the woman's distress.

*"I think it has affected him badly, but in different ways."*



*"I feel guilty that I don't feel as bad about things as my wife does."*

*"Most people are concerned, but ask how my wife is, not me."*



# Summary

Miscarriage impacts negatively on HADS and SF36 scores

In those who had access to the website:

HADS anxiety & depression scores significantly improved

SF-36 scores all approximated to the norm at 3 months  
(apart from general health)

In those who did not have access to the website:

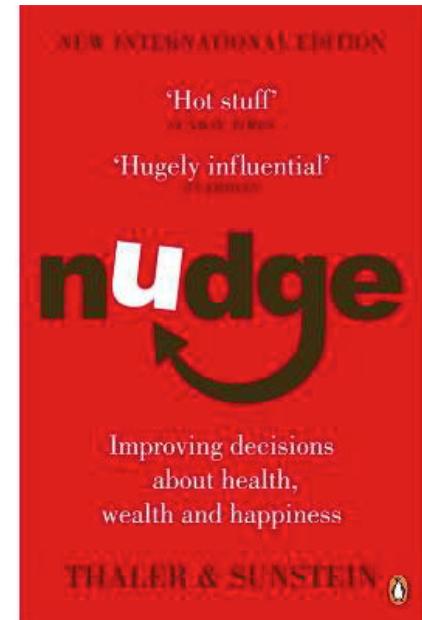
SF-36 scores showed no significant improvement  
at 3 months cf baseline

Evaluating the effectiveness of a web-based intervention to promote mental wellbeing in women and partners following miscarriage using a modified patient preference trial design: An external pilot Klein S, Cumming GP, Lee AJ, Alexander DA, Bolsover D  
BJOG 2012;119: 762-767



# Web site as a nudge to change behaviour





[Reset](#)

# HEALTH SPACE

Making e-Health Real Health

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## HEALTH PROVIDERS

- Hospitals
- GP Practices
- Telehealthcare
- Community Pharmacists

## HEALTH INFORMATION

- Health Topics A to Z
- Digital Stories
- Mobile Information Bus
- School
- Spiritual/Pastoral Care
- Maternity Liaison Committee
- Clinician Blogging

## MAPS

- List of Useful Maps

You Are Here: [Home](#) > Looking After Baby

### Looking After Your New Baby



In this section you can find information on lots of things related to your baby. Please click the topic you are interested in to take you to more information on that topic.

- [Early Days](#)
- [Routine Care](#)
  - [Bathing](#)
  - [Baby Care/Skin Care](#)
  - [Nappy Care](#)
  - [Umbilical Cord Care](#)
- [Bed Time](#)
- [Feeding](#)
- [Crying](#)

## LOOKING AFTER BABY

- Early Days
- Routine Care
- Bathing
- Baby Care/Skin Care
- Nappy Care
- Umbilical Cord Care
- Bed Time
- Feeding
- Crying

## AFTER YOU HAVE BABY

- Looking After Baby
- Looking After Mum
- Support Networks
- Dads



- SCHOOL
- Spiritual/Pastoral Care
- Maternity Liaison Committee
- Clinician Blogging

## MAPS

- List of Useful Maps

## LOGIN

Username

Password

Remember Me

- [Forgot your password?](#)
- [Forgot your username?](#)
- [Create an account](#)

more yellowish. Depending on the way you are feeding your baby; Breastfed or Bottle-fed, the poo can appear different in consistencies.



When you are going to change your baby's nappy you need to make sure you have everything you need to hand. This may include change of nappy, baby wipes or some water and cotton wool for cleansing baby's bottom. It should be noted that wipes, if used, can sometimes cause skin irritation.

Nappy rash is common in babies. You may notice a nappy rash if your baby's bottom becomes red and sore. It can occur on your baby's bottom or around the genitals. You can help to prevent this from happening by making sure you change your baby's nappy as soon as it's dirty and by making sure your baby's bottom is always cleaned and dried carefully. If the rash persists or looks like it's become infected you should speak to your health visitor, GP or community midwife.

For more information about nappy care and how to change your baby's nappy, click the link below:  
<http://www.readysteadybaby.org.uk/first-days-together/caring-for-your-baby/nappies.aspx>

For more information on the debate on whether or not to use disposable or reusable nappies click on "[debate](#)."

For a local source of "real nappies for real babies" click on link [www.cuddlybums.co.uk](http://www.cuddlybums.co.uk)

## AFTER YOU HAVE BABY

- Looking After Baby
- Looking After Mum
- Support Networks
- Dads



# HEALTH SPACE



Making e-Health Real Health

Search...

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## MAPS

- ▶ List of Useful Maps

You Are Here: [Home](#) > [Routine Care](#) > [Nappy Care](#)

### Reusable nappy debate



**Waste Statistics in Moray:** facts below taken from:

[http://www.moray.gov.uk/moray\\_standard/page\\_41054.html](http://www.moray.gov.uk/moray_standard/page_41054.html)

- Disposable nappies take between 250 and 500 years to decompose.
- 5 million nappies are disposed of every year in Moray alone.
- Green waste is the most potent source of methane, a Greenhouse gas, when it is disposed of in landfill.

For a good overview of the debate for using disposable or reusable nappies go to <http://en.wikipedia.org/wiki/Diaper> and look for "debate" under Types. For the science informing this debate click on ref 18 in wikipedia article or on this link "[Environment Agency 2008](#)."

Add this page to your favorite Social Bookmarking websites



## LOOKING AFTER BABY

- ▶ Early Days
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- ▶ Crying

## AFTER YOU HAVE BABY

- ▶ Looking After Baby
- ▶ Looking After Mum
- ▶ Support Networks
- ▶ Dads



# Potentially changing health behaviour using nappy 'nudges'

## Abstract

The aim of this study was to investigate whether or not a website ([www.health-e-space.com](http://www.health-e-space.com)) could be used as a conduit to influence the public to change healthcare-related behaviours. The environmental and financial issues surrounding the use of disposable and reusable nappies was used as an example to investigate if providing information in a certain way could 'nudge' people to consider the possibility of using reusable nappies at the cost of convenience. An online survey was completed by staff and students at Moray College, Elgin. A total of 188 surveys were completed. The study found that showing responders the health-e-space website was an enabling process with 73.4% stating the website encouraged them to think about using reusable nappies in the future. Of those who said that they would use disposable nappies prior to viewing the online information, 39.1% said that they would now use reusables, with 30.5% willing to consider using this type of nappy. Of those who did not know if they would use reusables, after viewing the site, 36.4% said they would now use reusables, and 54.5% said they would now consider this method. Being able to tailor and bring together in one place 'kitmarked' information and links to online health care information which the user may find useful (a form of personalization) is a novel and promising way of promoting self-care through education and empowerment which could ultimately help make health care more sustainable.

Care (Scottish Government, 2007) and the growing belief in Scotland that the use of the internet can help facilitate and deliver this agenda (Scottish Government, 2008).

## Healthcare provision

In a recent presentation, NHS Scotland (2009) made the stark statement that:

*'if we continue to carry on delivering health care as we are currently doing then a new 50 bed care home will be required every 2 weeks for the next 20 years, a new 300 bed district general hospital will be required every 3 years for the next 20 years, and by 2020 virtually all school leavers will need to be recruited into the care sector'.*

The term 'paradigm shift' has been used to explain how a crisis within a scientific theory or model creates a 'tipping point' (Gladwell, 2001; Brooks, 2010) beyond which evidence which has slowly been building up can no longer be ignored and a new way of describing the world emerges which replaces the established dogma (Gladwell, 2001; Brooks, 2010). Arguably, healthcare provision is at that 'tipping point' in delivery, with healthcare becoming increasingly expensive, making current models of treatment ultimately unsustainable. If health care is to meet the needs of the public and be free at the point of delivery, there needs to be a change in how healthcare is provided—from treatment to prevention—as well as an increasing emphasis on individuals taking responsibility for their own health (self-care/empowerment) (DH, 2010).

New methods of promoting health care are therefore desperately needed (DH, 2010). Applying Chris Anderson's (2007) 'Long Tail' concept (a

Janice Miller  
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Midwife, NHS Grampian, Dr Gray's Hospital, Elgin

Grant Cumming  
Consultant Obstetrician



# Twittering on about social networking and babyfeeding matters

## Abstract

The aim of this pilot study was to investigate whether or not social networking increases traffic to a website offering support and advice on infant feeding and whether or not this technology is potentially more useful than the existing online forum. Profile accounts were set up on Bebo, Facebook and Twitter and people who might be interested in infant feeding were contacted through the search facility on each of these

professionals and non-professionals alike. There is an ongoing need, therefore, to make sure these websites are accurate, up to date and meeting the needs of its users. (Powell et al, 2003; McMullan, 2006). Worryingly ,75% of US users surveyed admitted not to checking the date or source of health-care information (Fox, 2006).

Various methods to overcome the problem of





## news

**07 November  
2007**

Nursing not behind  
saggy breasts

Contrary to popular  
belief, breastfeeding  
does not make  
breasts sag,  
according to  
research...  
[...read more](#)

**06 November  
2007**

Gene 'links  
breastfeeding to IQ'

A single gene  
influences whether  
breastfeeding  
improves a child's  
intelligence, say  
[...read more](#)

## welcome to babyfeeding matters

**Babyfeeding matters** is an independent, health-professional led website. Our aim is to provide easily accessible, up-to-date, accurate information about all matters related to babyfeeding and to give you a **free** forum, where you can become part of an online community.

You can use the **free forum** to share your stories, concerns, successes and hot-tips regarding all matters related to babyfeeding. We would also appreciate feedback on how we can tailor the site to meet your specific needs.

We have guest access to the forum but registration is required to post messages - it's free to register and free to use.

[Privacy statement](#).

## In your area

Find out what's happening in your local area:  
breastfeeding groups, baby massage etc.

[Click in your area for more information](#).



## menu

### **Navigate to...**

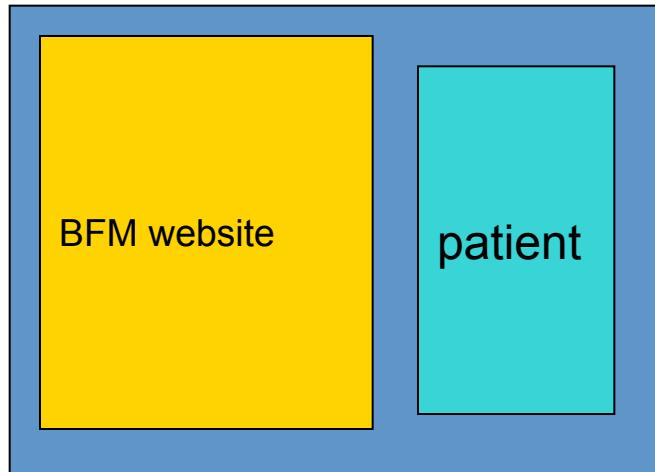
- » [home](#)
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- » [breast feeding](#)
- » [formula feeding](#)
- » [weaning](#)
- » [is my baby getting enough?](#)
- » [baby's weight](#)
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# Baby feeding videoconferencing study

Dr Grays

VC unit - spilt screen

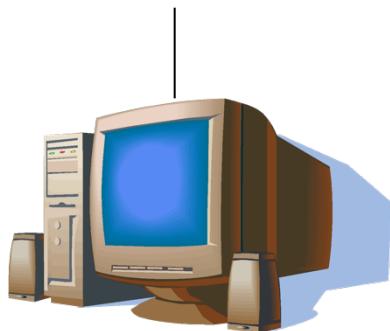
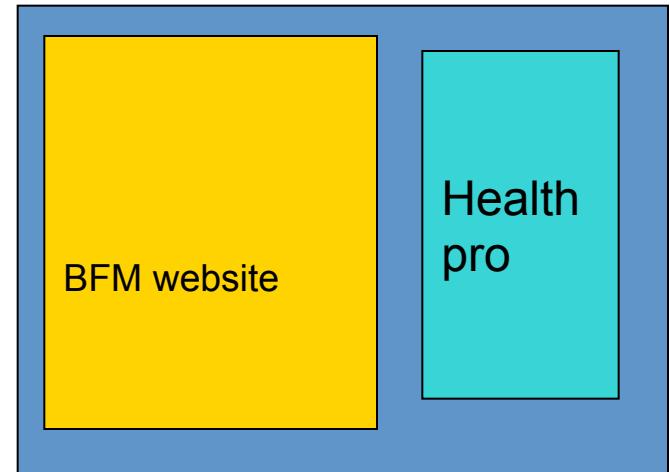


Internet Protocol  
(IP)

Integrated Service  
Digital Network  
(ISDN)

Buckie

VC unit – split screen



[www.babyfeedingmatters.co.uk](http://www.babyfeedingmatters.co.uk)  
used as interactive teaching aid



Published on 11.12.12 in Vol 14, No 6 (2012): Nov-Dec

This paper is in the following e-collection/theme issue:

◊Medicine 2.0: Social Media, Open, Participatory, Collaborative Medicine

Article

Cited By (26)

Tweetations (261)

Metrics

Original Paper

## Increased Use of Twitter at a Medical Conference: A Report and a Review of the Educational Opportunities

Douglas RA McKendrick<sup>1,2</sup>, MBChB, FFA; Grant P Cumming<sup>2,3,4</sup>, B.Sc (Hons), MD, FRCOG; Amanda J Lee<sup>5</sup>, BSc, MSc, PhD

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This paper is in the following e-collection/theme issue:

↳ Early Reports ↳ Demographics of Users, Social & Digital Divide ↳ Information Seeking, Information Needs

Article

Cited By (2)

Tweetations (15)

Metrics

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Original Paper

# The Prevalence of Online Health Information Seeking Among Patients in Scotland: A Cross-Sectional Exploratory Study

Julia Moreland<sup>1</sup>, BA (Hons), PgCert  ; Tara L French<sup>1</sup>, MA (Hons), MBPsS, PhD  ;

Grant P Cumming<sup>1,2,3</sup>, BSc (Hons), MBChB, MD, FRCOG 

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The results suggest that online health information-seeking behavior influences offline health-related behavior among the population surveyed. Patient attitudes to online health information seeking were focused on issues relating to trust, reliability, privacy, and confidentiality. This study provides support for the growing phenomenon of an empowered, computer-literate, health information consumer, and the impact of this phenomenon must be considered in the context of the patient-health professional dynamic. The unpredictable nature of human thought and action in relation to this field of study requires an ongoing program of ethnographic research, both physical and virtual, within a Health Web Science framework. This study has provided a baseline of the prevalence of online health information seeking in the Grampian region of Scotland.



Online behaviour affects offline behaviour

Encouraged people to seek medical advice, when they would not normally have done so

Medical knowledge has now become open access for many

Trust, reliability, privacy, and confidentiality

Consumers think that if they can read it, they understand implications without any knowledge of context or holistic perspective of human health and well-being (ehealth literacy)

Super-empowered health information consumer presents to the HP demanding what they think they require

Worried Well, increases footfall in primary care





# Data re-entry overload: time for a paradigm shift in maternity IT?

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Helga Perry<sup>4</sup>

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<sup>2</sup>St Thomas' Hospital, Kings Health Partners, London, UK

<sup>3</sup>Dr Gray's Hospital, Elgin, UK

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Correspondence to: Rupert Fawdry. Email: rupertfawdry@gmail.com

## DECLARATIONS

### Competing interests

RF has served on virtually all UK national maternity notes and IT projects in the last 30 years. From 1990–2001 he was reimbursed by Protos (now iSoft Evolution) for the use of his expert medical knowledge; he has had no commercial

## Summary

This paper provides an overview of maternity information technology (IT) in Britain, questioning the usability, effectiveness and cost efficiency of the current models of implementation of electronic maternity records. UK experience of hand-held paper obstetric notes and computerized records reveals fundamental problems in the relationship between the two complementary methods of recording maternity data. The assumption that paper records would inevitably be replaced by electronic substitutes has proven false; the rigidity of analysable electronic records has led to immense incompatibility problems. The flexibility of paper records has distinct advantages that have so far not been sufficiently acknowledged. It is suggested that continuing work is needed to encourage the standardization of electronic maternity records, via a new co-creative, co-development approach and continuing international electronic community debate.



# Qualitative website analysis of information on birth after caesarean section



Valerie L Peddie<sup>1\*</sup>, Natalie Whitelaw<sup>2</sup>, Grant P. Cumming<sup>3</sup>, Siladitya Bhattacharya<sup>4</sup> and Mairead Black<sup>5</sup>

## Abstract

**Background:** The United Kingdom (UK) caesarean section (CS) rate is largely determined by reluctance to augment trial of labour and vaginal birth. Choice between repeat CS and attempting vaginal birth after CS (VBAC) in the next pregnancy is challenging, with neither offering clear safety advantages. Women may access online information during the decision-making process. Such information is known to vary in its support for either mode of birth when assessed quantitatively. Therefore, we sought to explore qualitatively, the content and presentation of web-based health care information on birth after caesarean section (CS) in order to identify the dominant messages being conveyed.

**Methods:** The search engine Google™ was used to conduct an internet search using terms relating to birth after CS. The ten most frequently returned websites meeting relevant purposive sampling criteria were analysed. Sampling criteria were based upon funding source, authorship and intended audience. Images and written textual content together with presence of links to additional media or external web content were analysed using descriptive and thematic analyses respectively.

**Results:** Ten websites were analysed: five funded by Government bodies or professional membership; one via charitable donations, and four funded commercially. All sites compared the advantages and disadvantages of both repeat CS and VBAC. Commercially funded websites favoured a question and answer format alongside images, 'pop-ups', social media forum links and hyperlinks to third-party sites. The relationship between the parent sites and those being linked to may not be readily apparent to users, risking perception of endorsement of either VBAC or repeat CS whether intended or otherwise. Websites affiliated with Government or health services presented referenced clinical information in a factual manner with podcasts of real life experiences. Many imply greater support for VBAC than repeat CS although this was predominantly conveyed through subtle use of words rather than overt messages, with the exception of the latter being apparent in one site.

**Conclusions:** Websites providing information on birth after CS appear to vary in nature of content according to their funding source. The most user-friendly, balanced and informative websites appear to be those funded by government agencies.



# What data science can do for patients?

preferred health outcomes  
Health Web Science

