

## COMMENTARY

# Free open access medical education can help rural clinicians deliver 'quality care, out there'

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## ABSTRACT

Rural clinicians require expertise across a broad range of specialties, presenting difficulty in maintaining currency of knowledge and application of best practice. Free open access medical education is a new paradigm in continuing professional education. Use of the internet and social media allows a globally accessible crowd-sourced adjunct, providing inline (contextual) and offline (asynchronous) content to augment traditional educational principles and the availability of relevant resources for life-long learning. This markedly reduces knowledge translation (the delay from inception of a new idea to bedside implementation) and allows rural clinicians to further expertise by engaging in discussion of cutting edge concepts with peers worldwide.

**Key words:** Australia, educational resources, FOAMed, social media.

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## Introduction

Rural clinicians require expertise spanning not just office-based primary care, but also procedural skills such as emergency medicine, anaesthesia, obstetrics and surgery. As such there is a requirement to remain at the forefront of several different fields. Therein lies a dilemma – how to

maintain the necessary knowledge, particularly in the face of rapidly evolving developments across several clinical arenas.

There is a concerted effort by professional bodies to embrace the diversity of rural medicine and define rural generalist pathways, ensuring that rural clinicians have the necessary skills to perform their diversified role. Whilst the focus of training organisations and professional colleges is often



focused on training rural generalists, there is less emphasis on maintenance of knowledge and skills. Clinicians should be 'life-long learners' – yet the reality is that the knowledge translation of new concepts may take years to percolate to frontline practice, through the usual means of reading the literature, publication of consensus guidelines and attendance at upskilling events and conferences<sup>1</sup>. Use of simple tools utilising web 2.0 technology enables rapid sharing of new concepts in practice between clinicians, development of consensus best practice and allowing one to stay abreast of both basic and cutting edge medicine.

## Free open access medical education for rural clinicians

Conceived in 2012, free open access medical education (FOAMed) is an evolving paradigm, which was initially enthusiastically adopted by emergency and critical care clinicians.

*If you want to know how we practised medicine five years ago, read a textbook.*

*If you want to know how we practised medicine two years ago, read a journal.*

*If you want to know how we practise medicine now, go to a (good) conference.*

*If you want to know how we will practise medicine in the future, listen in the hallways and use FOAM.<sup>2</sup>*

A full report of the development of FOAMed can be read from Nickson and Cadogan, authors of the [lifeinthefastlane.com](http://lifeinthefastlane.com) website<sup>3,4</sup>. Key features of the FOAMed paradigm include:

- Sharing educational resources, such as slide presentations, clinical images, ECGs and case presentations (traditionally held in personal or institutional collections) with colleagues globally, for use or modification without expectation of reward (although attribution is expected).
- Use of web 2.0 connectivity to share articles (blogs), audio (podcast) or video (vodcast) reviews, and collate and curate educational resources.

- Encouragement of asynchronous learning, such as the 'flipped classroom' (disseminating educational content via blogs, podcasts and vodcasts prior to formal face-to-face teaching or conference sessions) or review of material offline when convenient.
- Use of social media platforms to allow clinicians to broaden the reach of usual 'corridor conversations', gathering experience through establishing global discussion networks on evolving clinical concepts or revision of established dogma.

FOAMed has the power to democratise knowledge and to rapidly shorten the 'knowledge translation' gap between inception, publication and bedside application<sup>5</sup>. Yet the benefits of FOAMed remain confined to those 'in the know'. Concerted efforts are being made to engage grassroots clinicians and educationalists, who may be suspicious of both web-based and social media platforms, to demonstrate the benefits of FOAMed.

Weingart, one of the leading bloggers for emergency medicine and critical care, has established the paradigm of 'bringing upstairs care, downstairs'<sup>6</sup>. This is the translation of cutting edge critical care FOAMed into the emergency room. As rural clinicians, we believe in extending the power of FOAMed further– to bring 'quality care, out there' to rural clinicians. One of us (CP) has run an educational blog since 2011, with interactive case studies allowing feedback from clinicians in Australia and overseas. Inspired by this, many other rural clinicians have established blogs that have become a repository for collated and curated FOAMed resources and reflections (Table 1).

Amongst FOAMed users, cases and concepts are reviewed then disseminated as educational podcasts, vodcasts or blog posts in efforts to shorten the knowledge translation gap that typically occurs in rural medical education. Unfortunately many traditional routes to continuing professional development (upskilling events, courses required for credentialing in rural hospitals, educational events) do not cover the cutting edge, contemporary concepts in care that are the essence of FOAMed. This is disappointing given the potential benefits of such knowledge to rural clinicians and their patients.



**Table 1: Recommended FOAMed resources for rural clinicians**

Title	Description	URL
<b>FOAMed sites created by Australian rural clinicians</b>		
BroomeDocs	Dr Casey Parker (@BroomeDocs) blogging on rural generalist education	broomedocs.com
Doctors Bag	Dr Edwin Kruys (@EdwinKruys) blogging on healthcare, social media and ehealth	doctorsbag.net
FOAM4GP	Various authors – Free Open Access Medical Education for General Practice	FOAM4gp.com
GPs Down Under	Closed Facebook group open to Australian GPs	facebook.com/gpsdownunder
KI Docs	Dr Tim Leeuwenburg (@KangarooBeach) blogging about rural medicine	kidocs.org
Nomadic GP	Dr Penny Wilson (@nomadicGP) rural GP obstetrician	nomadicgp.wordpress.com
Pre Hospital and Retrieval Medicine	Dr Minh le Cong (@RFDSdoc) with a repository of FOAMed relevant to rural critical care and retrieval	prehospitalmed.com
Ruraldoctorsnet	Collated and curated FOAMed content for rural doctors including anaesthesia, obstetrics, emergency medicine	ruraldoctors.net
Rural Flying Doc	Dr Gerry Considine (@ruralflyingdoc), rural GP and pilot	ruralflyingdoc.com
<b>Other FOAMed sites of relevance to rural clinicians (international)</b>		
EM Crit	ED Intensivist Dr Scott Weingart (@Emcrit) 'Bringing upstairs care, downstairs' one podcast at a time	emcrit.org
GoogleFOAM	A collation of FOAMed sites with option to search FOAMed resources	googlefoam.com
IntensiveCareNetwork	Huge repository of resources, relevant to rural critical care including feed from 'Social Media and Critical Care' conferences	intensivecarenetwork.com; smacc.net.au
Lifeinthefastlane	Australasian emergency physicians and nurses exploring the changing world of eLearning, & emergency medicine, through clinical cases, fictionalized anecdotes and medical satire	lifeinthefastlane.com
Resus Medical Education	Retrievialist Dr Cliff Reid (@CliffReid) summarises the latest in resuscitation and emergency medicine	resus.me
ScanCrit	Mostly focusing on the critically ill patient (@ScanCrit)	scancrit.com
Skeptics Guide to Emergency Medicine	Ken Milne (@thesgem), Canadian rural emergency physician, encourages turning traditional medical education on its head	thesgem.com
St Emlyns	A collection of people and projects aimed at improving Emergency Medicine through free and open access education (FOAMed)	stemlynsblog.org

FOAMed, free open access medical education.

## Examples of practical FOAMed: airway management and cutting edge critical care

Airway management, particularly emergency intubation, can be one of the most stressful activities for the rural clinician – he or she may have only infrequent exposure to this high-risk, tightly coupled procedure. Moreover, these patients are usually critically unwell, and the procedure must take place with limitations of available personnel, equipment to manage the difficult airway and without specialist backup. New developments in airway management have been developed and disseminated via FOAMed prior to traditional journal publication. Perhaps most discussed is the technique of apnoeic diffusion oxygenation<sup>7</sup>. Recognising the utility of

such a technique, this concept was shared as FOAMed, enabling refinement and rapid adoption within the emergency medicine and critical care community prior to formal publication<sup>8</sup>.

FOAMed also allows 'dogmalysis' – the rapid dispelling of inaccurate or superseded medical knowledge – rather than the slow trickle of revised medical knowledge through the traditional routes of conference abstracts, journal publication, write up in textbook or incorporation into course material. Other examples abound where the usual pathway from publication to practice has been rapidly shortened through use of FOAMed<sup>8</sup>. Pertinent to rural clinicians are discussions around management of emergencies such as cardiac arrest<sup>9</sup>,



use of bedside ultrasound for decision making<sup>10</sup>, subtleties in trauma and airway management and use of agents such as ketamine for psychiatric sedation and transfer<sup>11</sup>. It is true that the emergency and critical care communities are early adopters of FOAMed into clinical practice, with FOAMed resources recently incorporated into curriculum and the journal of the Australasian College of Emergency Medicine<sup>8</sup>. The Royal Australian College of General Practitioners now recognises use of social media FOAMed resources such as the 'GPs Down Under' Facebook group discussions and other FOAMed resources as being recognised for continuing professional development points<sup>12</sup> (K. Price, pers. comm. 2015).

## Using social media and web 2.0 technology

Social media has many connotations. Anyone who has read a web article and clicked on the 'comment' section, used a smartphone to text or posted to Facebook is already using social media. Connectivity is expected in our modern world, yet social media is often associated by clinicians with inane chit-chat about celebrities, rather than as a professional tool for education. Moreover, there are fears that use of social media risks breaching professional standards<sup>13</sup>. Organisations are developing standards for the use of social media, but the following rule of thumb from the Mayo Clinic blog serves well, 'Don't Lie, Don't Pry – Don't Cheat, Can't Delete – Don't Steal, Don't Reveal'<sup>14</sup>.

Twitter is a microblogging platform (limited to 140 characters) allowing rapid signposting of information and real-time discussion among colleagues worldwide. Many medical conferences now have moderated twitter streams to allow real-time feedback on speakers and promote instantaneous dissemination outside of the conference room into the global community. The use of a hashtag allows collection of information on specific topics (eg #FOAMed, #smaccGOLD, #GoRural) and collation of educational material (eg the moderated #GasClass anaesthetic stream or Twitter-based journal clubs such as #twitJC). The Royal Australian College of General Practitioners now encourages moderated Twitter educational discussions via the hashtag

#RACGPed, with continuing professional development points awarded for such interactivity (K. Price, pers. comm. 2015).

For those sceptical of dipping their toes into the public arena of Twitter, the use of online discussion fora such as Google+ and comments sections on websites that collate FOAMed information may be more familiar. Some useful blog resources are included in Table 1; this list is ever-growing. Concomitantly, the availability of audio (podcasts) and video (vodcasts) allows content rich resources to be created, downloaded and used for asynchronous education offline. Technology such as smartphones or tablets means that content is always available, whether it be for morning commute, at the gym or at the bedside<sup>15</sup>. Social media use is gaining acceptance within medical education circles; FOAMed merely extends the paradigm to disseminate free information and encourage content creation, collation, curation and communication<sup>16</sup>.

New developments such as GoogleGlass (an internet-enabled camera and visual display worn as glasses) may allow the rural clinician and specialist colleagues to share visual information about a patient. Similarly, information (such as infrequently used drug protocols or explanation of how to perform a procedure) can be pushed to the rural clinician via the GoogleGlass display. Such wearable technology is rapidly becoming available and early adopters among the FOAMed community hope to shape such content for future clinical benefit.

## Drinking from the fire hose

With the explosion of information available, the rural clinician may feel overwhelmed with information – a process alluded to as 'drinking from the fire hose'. Having effective filters to allow streaming of only relevant content is essential. Fig 1 summarises strategies to effectively use online resources.



## STEP ONE : Use of Collated & Curated Compilations to Discover Quality Resources

New users may prefer to rely on recommendation of FOAMED resources initially, then select own content according to niche interest as experience grows.

Examples of such collated resources are given in Table One



eg.: [FOAM4GP.com](http://FOAM4GP.com)

## STEP TWO : Use of an Aggregator / Filter tool

Content from selected FOAMED websites (blogs, podcasts, vodcasts) can be streamed directly to a personalised reader using a 'really simple syndication' (RSS) feed. This allows only relevant content to be delivered as a 'digest' for viewing either on- or offline.



RSS & Feedly icons

## STEP THREE : Use of Podcasting Technology

Podcast applications are the audio-equivalent of RSS feeds for written resources. Users can subscribe to audio-content from preferred sources and content can be downloaded to users for listening when convenient (eg: commute, gym). Content is usually created by FOAMED users and takes the form of expert opinion on current topics.



Podcast RSS feed to eg: iTunes

## STEP FOUR : Use of Custom Search Engines

FOAMSearch (formerly GoogleFOAM) is a dedicated search engine for educational material tagged with the FOAMED label. Content is heavily biased to early adopters, namely the emergency and critical care community, but many topics are relevant to rural clinicians.

# FOAM SEARCH

Search engines for FOAMED material

## STEP FIVE : Use of Social Networks to Connect

This allows users of FOAMED to connect with content creators and peers, allowing rapid two-way communication, discussion of contemporary topics and challenge of opinions. Think of it as a 'medical grand round' or journal club - but on a global scale.

Popular platforms include Twitter and Google+, with occasional use of Facebook. The latter is well-recognised, but less easy to engage users or have detailed conversations. Twitter, a micro-blogging platform limited to 140 characters, is excellent for rapid discussion, signposting of information and extending reach of conferences - most FOAMED producers use this medium to disseminate information, reserving Google+ for detailed discussions and niche discussions.



Professional discussion via Social Media

Figure 1: Strategies to effectively use online FOAMED

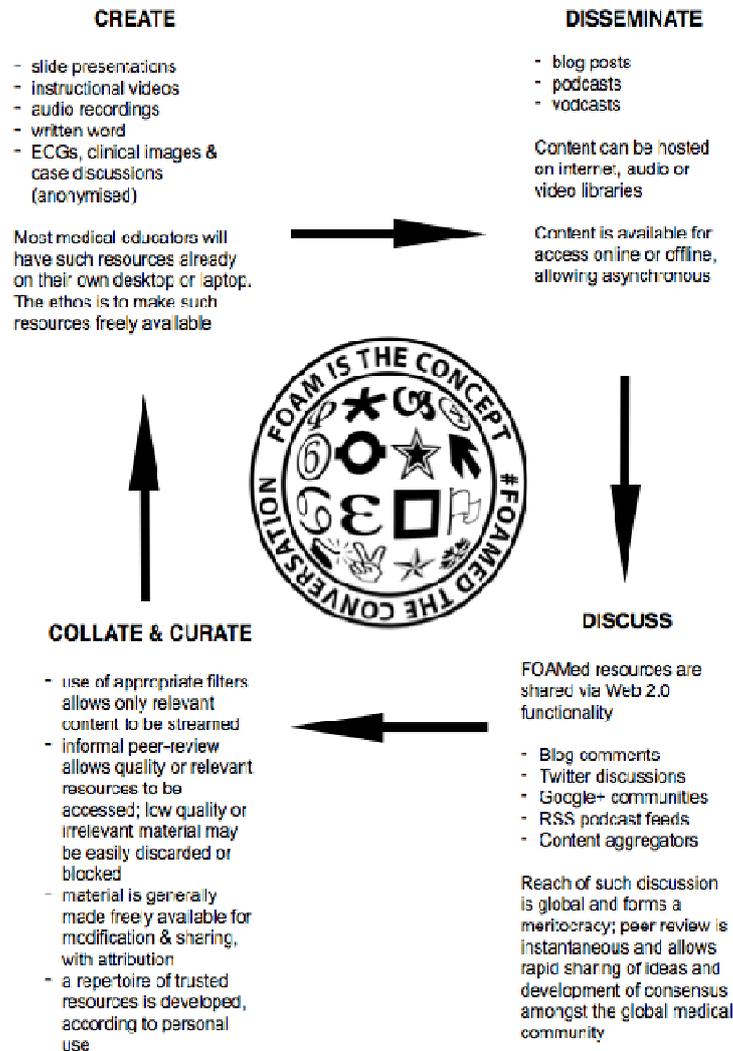


Figure 2: Overview of FOAMed content creation, collation and curation, with communication and collaboration

Concerns are commonly raised about sorting information from resources that may be of variable quality. Yet the same argument can be applied to papers published in peer reviewed journals, many of which may suffer from the same problems of quality, quantity and, most importantly, delay in translation to the bedside<sup>17,18</sup>. Peer review is a cornerstone of the FOAMed community, with the connectivity and implicit willingness to share ideas freely amongst global FOAMed users offering immediate peer review and quality

control. Moreover, a social media index for FOAMed sites has been developed, akin to the impact factor used in traditional journal publications<sup>19</sup>. An international consensus has been developed for assessing the quality of FOAMed sites in emergency medicine and these criteria are easily transposed to FOAMed resources for other specialties, including primary care<sup>20</sup>.



It should be emphasised that FOAMed is predominantly a tool to share rapidly emerging concepts and narrow the knowledge translation gap; it is no substitute for formal medical education and postgraduate training. The origins of FOAMed are firmly enconced in testing new ideas and disseminating them; it has potential to further the continuing medical education of established clinicians, rather than to teach novices from scratch. Indeed there is a danger in novice clinicians embarking on a course of action that they have 'read about on a blog'. But the information genie is out of the bottle – students and registrars are using the tools of the internet and social media to gather information, and experienced rural clinicians need to be familiar with these information streams and help to moderate knowledge.

For those exploring FOAMed, visiting a few well-organised and curated sites or podcasts is a sensible way to start. Subscribing to a few well-trusted blogs or podcasts allows highly relevant, peer reviewed and current content to be delivered to your inbox or iTunes library via RSS feeds for browsing at your leisure. An excellent review can be found in a short 400 s 'pecha kucha' talk entitled *Dr INFOLove or 'How I learned to stop worrying and love the FOAMed'*<sup>21</sup>. Using effective filters prevents the problem of 'information overload' yet allows the rural clinician to remain up-to-the-minute in knowledge.

## Summary

FOAMed is a powerful tool for rural clinicians and educators. Using the internet and various social media platforms, new clinical information and discussion can be shared with colleagues worldwide. Underpinning FOAMed is a sense of community, a willingness to share information freely, with the cornerstone being improved patient care through more rapid application of useful clinical concepts.

*It is said that only a fool learns from his own mistakes, a wise man from the mistakes of others (source unknown).*

Rural clinicians, traditionally isolated through distance and with the added challenge of being a 'jack of all trades, master

of none', can tap into the collective experience of experts and peers in the global medical community using FOAMed resources to improve patient care and clinical skills (Fig2). We are all comfortable with sharing our ideas and skills with patients, colleagues and students on a daily basis in the clinic or at conferences, FOAMed extends the sharing of such knowledge to a global stage.

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