

HEALTH IN THE NEWS

THE PORTRAYAL OF PVL-MRSA IN UK NATIONAL NEWSPAPERS

Donal McCullagh

Donal is a medical student at the University of Liverpool who was placed at the Royal Lancaster Infirmary for his fourth year. He has an interest in public perceptions of health issues and the NHS, and completed a special study module in how a new development in the controversial topic of MRSA was portrayed in the newspapers.

Panton-Valentine leukocidin-positive methicillin resistant *Staphylococcus aureus* (PVL-MRSA) is a strain of antibiotic resistant bacteria which can cause a range of morbidity, from simple skin infections to potentially fatal necrotising pneumonia. When two people died due to PVL-MRSA infections transmitted in a UK hospital, various elements of the media presented the incident in contrasting ways. The depiction of this event in UK national newspapers is analysed in this review. There were many noticeable differences between the portrayal of PVL-MRSA in the newspapers, and medical and scientific fact and opinion. Accurate reporting of health news by the media is very important because it is the primary means by which the public can comprehend what is going on in society. It exerts a powerful influence on how individuals think and behave and can even impact on government policy.

INTRODUCTION

The media has the ability to exert a powerful influence over how individuals think and behave, and can shape the priorities and decisions of policy makers. As the primary means by which the public can comprehend what is going on in society and the world around them it is vital that the media conveys health issues accurately and correctly.^(1,2)

This is often not achieved, however, as disproportionate attention is given to problems that are not a significant threat to our health, while major health risks are sidelined or ignored by the media. Examples of this include high profile 'scare' stories about severe acute respiratory syndrome (SARS), variant Creutzfeldt-Jakob disease (vCJD) and numerous crises in the National Health Service (NHS) predominating in the headlines while proven serious health risks such as mental health problems and alcohol misuse remain less prominent.^(2,3)

The media is fundamental in broadcasting public issues to mass audiences, so careful consideration is required for the balance of news reporting of health issues. There is a potential conflict of interest between public health organisations and scientific journals that set out to communicate proven factual information, and journalists, whose news agendas prioritise dramatic stories which will increase newspaper sales or boost television ratings.⁽³⁾

The scope of health coverage in the media is enormous, but the main objective of this review is to focus on the depiction of the issue of PVL-MRSA in UK national newspapers.

BACKGROUND

Staphylococcus aureus (SA) is a Gram-positive cluster-forming coccus, commonly found on human skin and mucous membranes. It is a very successful community- and hospital-acquired pathogen, which causes a broad spectrum of disease, ranging from mild skin infections to more serious invasive infections.

Pathogenicity is related to a number of virulence factors, including cell surface components (for example fibronectin-binding protein and protein A) and exoproteins (for example toxic shock syndrome toxin, exfoliatins and Panton-Valentine leukocidin (PVL)). These factors allow for the pathogen to adhere to surfaces, cause harmful effects to the host, and invade or avoid the immune system.^(4,5)

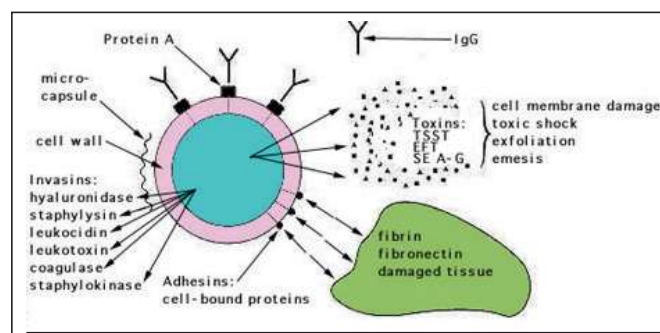


Figure 1 Virulence determinants of SA. PVL is part of the leukocidin group⁽⁴⁾ (Reproduced with kind permission of Todar's online textbook of bacteriology)

PVL is a pore-forming toxin produced by some strains of SA, which destroys white blood cells and is associated with increased ability to cause disease. It is estimated that PVL is carried by less than 2% of SA and has been detected in both methicillin sensitive SA (MSSA) and methicillin resistant SA (MRSA).⁽⁵⁾ PVL-MRSA poses a more serious problem though due to its resistance to antibiotics. Generally, MRSA infections target the elderly and those with weakened immune systems, but PVL strains can affect young healthy people.⁽⁶⁾

Most people with PVL-MRSA will not develop an infection. When it does happen, it is usually in the presence of risk factors such as skin abrasions, inadequate hand hygiene and overcrowded living conditions.

Infections caused by PVL strains of SA normally cause cellulitis and skin infections including boils, abscesses and furuncles. Treatment of these is straightforward, involving surgical drainage of abscesses and systemic anti-staphylococcus antibiotics. Currently, most PVL-MSSA infections can be treated with flucloxacillin, clindamycin and erythromycin.⁽⁶⁾

PVL-SA can also cause severe invasive infections such as:⁽⁶⁾

- bacteraemia
- purpura fulminans
- septic arthritis
- necrotising pneumonia

PVL-MRSA is associated with rapidly progressive, haemorrhagic, community-acquired necrotising pneumonia in young immunocompetent patients. It has a high fatality rate and early diagnosis is essential for survival, although this can be difficult. Typically, patients developing necrotising pneumonia will have no history of skin sepsis, but a preceding flu-like illness.⁽⁶⁾

Treatment and management of necrotising pneumonia consists of:

- admission to intensive care
- respiratory support, including artificial ventilation if necessary
- antibiotic therapy with high dose combinations of linezolid, vancomycin, clindamycin, cotrimoxazole or rifampicin. Treatment with clindamycin is not always recommended though, as it is known to increase risk of *Clostridium difficile* infection
- adjunctive treatment with intravenous immunoglobulin (IVIG) should be considered, especially if septic shock occurs, as it is useful in neutralising exotoxins and superantigens⁽⁶⁾

The occurrence of several different types of community-acquired PVL-MRSA has been reported previously, including five deaths in the community in the past five years. There have been two previous cases where other forms of PVL-MRSA have been transmitted in hospital, although neither caused fatalities.⁽⁷⁾

TRAWLING THE PRESS

A manual search and analysis of UK national newspapers was conducted to find a topical health issue being reported in the press.

The search engines Medline, Ovid and Scopus were used to gain scientific perspective. The limits set were:

- English
- full articles and dating from 2002
- keyword PVL-MRSA

The references of useful articles were scanned for other potential sources of information.

A search of LexisNexis Professional was carried out to find newspaper articles about PVL-MRSA. The search criteria were:

- UK national newspapers
- from 5 February 2006 to 5 February 2007
- ‘MRSA’ and ‘PVL’ or ‘Panton-Valentine leukocidin’ anywhere in the text

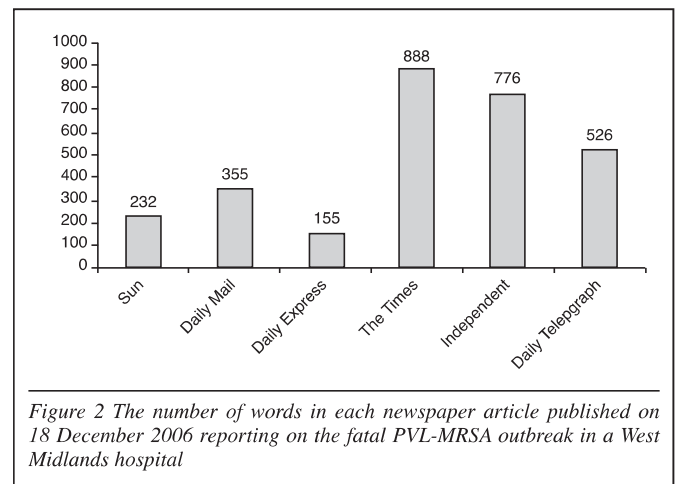
CAUGHT IN THE NET

Table 1 shows the number of PVL-MRSA related articles printed in each national newspaper from 5 February 2006 to 5 February 2007.

Newspaper	Total no. of articles
Daily Mail	6
Daily Telegraph	8
Daily Express	6
Guardian	5
Independent	8
Daily Mirror	6
Sun	6
The Times	5

Table 1 Newspapers and PVL-MRSA articles, February 2006-February 2007

Figure 2 shows that the ‘quality’ papers cover the subject in more detail, as might be expected.



Date	Newspaper	Length (words)	Headline
19 May 2006	Daily Telegraph	391	Grandmother dies after scratch from gorse on dog walk
18 Dec 2006	Daily Telegraph	526	New MRSA strain kills worker and patient
18 Dec 2006	Daily Mail	355	Hospital bug that kills in 24 hours: Two dead from new strain MRSA that targets the young and healthy
18 Dec 2006	Daily Express	155	New superbug kills worker at hospital
18 Dec 2006	Sun	232	Horror bug kills young and healthy
18 Dec 2006	The Times	888	Hospitals on alert for fast strain of MRSA that kills young and healthy
18 Dec 2006	Independent	100, 676	PVL: Remember these initials: New strain of superbug targets the young, and its latest victim is an NHS nurse Young and fit are at risk as lethal strain of MRSA causes alarm
18 Dec 2006	Independent	232	Victim was a 'super-fit' marine recruit
19 Dec 2006	Daily Telegraph	507	Hospital workers and patients die from potent form of MRSA
19 Dec 2006	Daily Mail	1,016	At superbug's mercy; hospitals could be overwhelmed by the flesh-eating strain of MRSA that has already claimed two lives, warns expert
19 Dec 2006	Daily Express	158	Site of superbug deaths revealed
19 Dec 2006	Guardian	470	Nurse and patient were killed by MRSA variant
19 Dec 2006	Independent	659	Nurse killed by new strain of superbug had just given birth
19 Dec 2006	Daily Mirror	64	MRSA kills two
19 Dec 2006	Sun	243	MRSA bug killed nurse in hours
19 Dec 2006	The Times	396	More cases at MRSA hospital
20 Dec 2006	Daily Telegraph	584	Husband to sue over sudden MRSA death
20 Dec 2006	Daily Mail	161	The young mother who was killed by new MRSA strain
20 Dec 2006	Independent	572	Husband tells of grief at wife's superbug death
20 Dec 2006	Sun	92	MRSA in maternity
20 Dec 2006	The Times	274/419	Nurse who had just given birth was first victim of new MRSA strain
21 Dec 2006	Independent	605	Mothers and babies affected in hospital outbreak of PVL
23 Dec 2006	Daily Mail	676	Baby boy dies after superbug outbreak at hospital
23 Dec 2006	Daily Express	454	Hospital bug kills boy and infects five girls
23 Dec 2006	Guardian	417	Concern grows after five babies test positive for PVL bug
23 Dec 2006	Independent	727	PVL superbug outbreak kills premature baby at hospital
23 Dec 2006	Sun	318	Hospital crisis as PVL bug kills tot
23 Dec 2006	The Times	706	Baby's death linked to hospital bug
24 Dec 2006	Sunday Express	103	Bug babies fight on
24 Dec 2006	Sunday Telegraph	624	Five months on leave and £75,000 for failed patient safety bosses. Anger that suspended jobsharers are paid so much when NHS faces financial crisis
26 Dec 2006	Independent	143	Neo-natal hospital unit shut after PVL bug infects babies
27 Dec 2006	Daily Mirror	603	Superbug tragedy exclusive: one minute we were told our little Alfie was fine...the next we were turning off his life support machine
28 Dec 2006	Daily Express	638	Superbug menace is out of control
28 Dec 2006	Daily Mirror	182	MRSA payouts soar to £4.8 million
29 Dec 2006	Sun	356	Muslims 'refuse anti-MRSA soap'
7 Jan 2007	Sunday Mirror	2,192/2,286/ 2,303/2,304	Why is the NHS still so sick? In Labour's 10 years in power the health budget has doubled to £100 billion a year but patients see little improvement ... we ask health minister Patricia Hewitt the questions every family wants answered
11 Jan 2007	Daily Telegraph	671	We may never hit superbug targets, admits Whitehall
11 Jan 2007	Sun	450	NHS has war on MRSA
16 Jan 2007	Daily Mail	2,558	MRSA: It's even worse than you think: cont.
17 Jan 2007	Guardian	2,989	Can anything stop the superbug? cont.
17 Jan 2007	Guardian	231	Know your enemy: some of the most common drug-resistant bugs
19 Jan 2007	Daily Telegraph	574	Deadly new strain of MRSA stalking healthy youngsters
19 Jan 2007	Guardian	599	Bacteria tests reveal how MRSA strain can kill in 24 hours: Cases of drug-resistant PVL likely to rise in Britain, fear that GPs will not recognise lethal infection
19 Jan 2007	Daily Mirror	127	Warning over lung superbug
20 Jan 2007	Daily Express	562	Children at risk as deadly new superbug sweeps in
22 Jan 2007	Daily Telegraph	1,337	How have we fallen so far behind in battle to beat MRSA? Cont.
22 Jan 2007	The Times	814	A sober approach to MRSA
3 Feb 2007	Daily Mail	104	Flesh-eating bug kills girl
3 Feb 2007	Independent	56	Girl, 10, killed by MRSA infection
3 Feb 2007	Daily Mirror	83	Girl dies in bug horror

Table 2 The results of the LexisNexis Professional search for UK national newspaper articles about PVL-MRSA

DISCUSSION

PVL-MRSA had rarely featured in the media before appearing in the headlines of most UK national newspapers on 18 December 2006, when the Health Protection Agency (HPA) released a press statement revealing that a PVL-MRSA outbreak in a West Midlands hospital had contributed to the deaths of two people. This was the first time that transmission and deaths due to PVL-MRSA are known to have occurred in a hospital in England and Wales.

Summary of Health Protection Agency press statement⁽⁸⁾

Outbreak of PVL-positive community-associated MRSA

Eight cases of Panton-Valentine Leukocidin (PVL)-positive community-associated MRSA have been identified among individuals in a hospital and their close household contacts in the West Midlands region. Four of these individuals developed an infection, two of whom subsequently died.

PVL-producing strains of MRSA have been seen in the UK before – however, the small numbers of cases reported have usually been in the community rather than a hospital setting. This outbreak is the first time transmission and deaths due to this strain are known to have occurred in a healthcare setting in England and Wales.

PVL-producing strains are more commonly contracted in the community and generally affect previously healthy young children and young adults – this contrasts with the so called 'hospital-associated MRSA' strains which do not produce PVL and are more commonly associated with causing wound infections and blood-poisoning in more elderly hospitalised patients.

Dr Angela Kearns, an MRSA expert with the Health Protection Agency, said: 'When people contract PVL-producing strains of MRSA, they usually experience a skin infection such as a boil or abscess. Most infections can be treated successfully with everyday antibiotics but occasionally a more severe infection may occur.'

'The Health Protection Agency is advising the hospital on outbreak control measures, and will continue to monitor MRSA infection nationally.'

The story was seized upon by the national media, with six articles published in UK national newspapers that day, and many more in the following weeks as further details emerged and other related stories broke. Those six articles and some others published in the consequent period are analysed below.

The Sun, 18 December 2006

HORROR BUG KILLS YOUNG AND HEALTHY⁽⁹⁾

This article is suffused with hyperbolic language, examples being phrases '*particularly dangerous*', '*highly contagious*' and '*horror bug*'. This shows that the reporting of the outbreak in the *Sun* depicts the story as being dramatic and exciting, and immediately grabs the reader's attention. The article is only 232 words long, and contains a very compact description of what happened during the outbreak. Many of the newspapers reporting this story have included quotes from the HPA, including the *Sun* which mentioned: '*PVL-MRSA is the most toxic of all the strands of MRSA.*' The selection of this sentence suggests that the article wishes to highlight this outbreak as a new, dangerous threat to the populace, building on the pre-existing public anxiety about MRSA.

Along with most of the other newspapers which ran the story of the fatal outbreak in the West Midlands, the *Sun* referred to the 18-year-old Royal Marine recruit Richard Campbell-Smith, who died in 2004 of major organ failure thought to have been caused by PVL-MRSA infection. The shock of a young, healthy soldier dying following infection via scratches on his leg demonstrated the potential of PVL-MRSA to affect fit, healthy members of the population as well as those who are more vulnerable and infirm. The death of this young soldier may have led to greater news coverage of PVL-MRSA stories because the Royal Marines are held in high esteem by the British public, as hard working role-models and defenders of the country.

The Daily Mail, 18 December 2006, ED Section 2 page 8

TWO DEAD FROM HOSPITAL BUG THAT KILLS IN 24 HOURS⁽¹⁰⁾

The headline distils the crucial information from the entire story into one sentence, and focuses on the most shocking element of PVL-MRSA, that it has the ability to cause death in a very short period of time. Further descriptions of the toxin are brief but quite accurate, including '*The PVL toxin is passed between people in close contact, in situations where skin irritation is likely.*' This is an example of simplifying technical vocabulary into lay terms, displaying good journalistic endeavour to convey information to the readers in language they can easily understand. However, there are some mistakes regarding the details of the story, such as: the number of people infected with PVL-MRSA is quoted as seven, when in fact eight people were confirmed to have been infected. This and other inaccuracies cast some doubt over the reliability of the whole article.

Less than four weeks after the HPA press release, another article appeared in the *Daily Mail* which referred to the outbreak of PVL-MRSA in the West Midlands.

The Daily Mail, 16 January 2007, ED 1st page 54

MRSA: IT'S EVEN WORSE THAN YOU THINK⁽¹¹⁾

This article claims that MRSA (including PVL) is a seriously out-of-control problem which is not being correctly dealt with by the NHS and the present government. It states: '*there are 14 times more cases [of MRSA] than the NHS admits*' and that simple solutions are being '*blocked by the arrogance of NHS bosses who just don't care.*' The *Daily Mail* is using the MRSA problem as a means to stir public political opinion and thought, encouraging people to question the government's current health policies. MRSA has featured frequently in the British press has for a long time, and for some elements the PVL-MRSA outbreak is another step in their campaign to make the general public demand more of the NHS. Looking even deeper into this, scares about MRSA in hospitals are often used by opponents of free healthcare as a criticism of the NHS itself. Concern about PVL-MRSA could be the next tactic in their efforts to try to abolish the NHS. Is there a political aim here to drive people away from the NHS into the supposedly clean private sector? Or is the *Daily Mail* simply voicing the legitimate concerns of the public about a state-run organisation? Either way the press and the people of this country retain the right to freedom of speech and should be allowed to criticise and demand improvement from the government, NHS or any other public or private organisation.

The Daily Express, 18 December 2006, News page 21

NEW SUPERBUG KILLS WORKER AT HOSPITAL⁽¹²⁾

The article is brief (155 words) allowing for only a short account of what actually happened and very little analysis of the incident. The factual information is correct though, and the descriptions of symptoms of PVL-MRSA are accurate:

'symptoms range from minor infections in skin and soft tissue to a form of pneumonia that can kill in 24 hours.' However, the report is still too short to give a thorough depiction of the events which unfolded. The *Daily Express* refers to PVL-MRSA as a 'superbug', a term often used in the media to describe antibiotic-resistant bacteria, and this is repeated in headlines of articles about PVL-MRSA which are published in the weeks following 18 December 2006.

The Daily Express, 28 December 2006, News page 1

SUPERBUG MENACE IS OUT OF CONTROL⁽¹³⁾

and

The Daily Express, 20 January 2007, News page 17

CHILDREN AT RISK AS DEADLY NEW SUPERBUG SWEEPS IN⁽¹⁴⁾

While 'superbug' could be deemed to be a hyperbolic term, it is also an attempt to describe antibiotic-resistant organisms in non-technical language which is comprehensible by the majority of the population. Therefore, although it may raise public anxiety somewhat, it may make news more accessible to many people who might otherwise be deterred from reading important health stories containing complicated terminology.

The Times, 18 December 2006, Home News page 4

HOSPITALS ON ALERT FOR FAST STRAIN OF MRSA THAT KILLS YOUNG AND HEALTHY⁽¹⁵⁾

The *Times* headline is accurate and avoids exaggerating the story. The rest of the article follows suit, giving an unbiased report with no distortion of information from the HPA press release. The article is much longer than any of the popular newspaper reports and provides detailed background information on PVL-MRSA. It informs readers of the risks: 'the strain, which is particularly virulent ... can cause symptoms ranging from minor infections in the skin and soft tissue to a form of pneumonia that can kill in 24 hours', but also puts these in a realistic context, 'it [PVL-MRSA] is rare' and 'about 40% of us can carry staphylococcus in our nose at any time ... usually harmless.' The piece acknowledges the significance of the first deaths in hospitals due to this strain of MRSA, and mentions that some action has been taken to prevent further infections, including 'the HPA is advising the hospital on outbreak-control measures, and will continue to monitor MRSA infections nationally' and the headline which states 'hospitals on alert'. The balanced reporting of the PVL-MRSA outbreak by *The Times* constructs a clear picture of the event in the minds of readers, allowing them to draw their own conclusions.

Over the next few days more details about the PVL-associated deaths emerge in the press and interest in the story remains high, including articles interviewing victims' families. Then on 22 December 2006, a press release by a Norfolk hospital revealed that earlier in the month a premature baby had died and was found to have been infected with PVL-MSSA, and five other babies on the neonatal ward had also been infected.⁽¹⁶⁾ Six newspapers covered the story; short articles with sensational headlines being the approach of the popular press, while the quality newspapers chose to examine the incident in more depth and refrained from shocking headlines.

The Sun, 23 December 2006

HOSPITAL CRISIS AS PVL BUG KILLS TOT⁽¹⁷⁾

(318 words)

and

The Times, 23 December 2006, Home news page 22

BABY'S DEATH LINKED TO HOSPITAL BUG⁽¹⁸⁾

(706 words)

The Independent, 18 December 2006, News page 1

PVL: REMEMBER THESE INITIALS: NEW STRAIN OF SUPERBUG TARGETS THE YOUNG, AND ITS LATEST VICTIM IS AN NHS NURSE
continued

News page 2

YOUNG AND FIT ARE AT RISK AS LETHAL STRAIN OF MRSA CAUSES ALARM⁽¹⁹⁾

The PVL-MRSA outbreak in the West Midlands was deemed to be very important by the *Independent*, because it appeared as the main story on the front page. The front page headline is very sensational, grabbing the attention of readers using the phrase 'remember these initials' and the word 'superbug'. The headline for the continuation of the article on page 2 of the newspaper is less evocative of fear or anxiety, relaying factual information about PVL-MRSA. The analysis of the incident in the article sometimes uses scare tactics, with statements such as 'if it [PVL] became established in hospitals, where people are much sicker, it could pose a much more serious threat.' This hypothetical situation is a possibility but there is no evidence that it is about to occur. A quote from an HPA spokesman later in the text says 'there is no indication that [the PVL strain] is widespread or gaining a foothold in hospitals.' Although there is a degree of sensationalism by suggesting the possibility of a terrible outcome, there is a response to this claim, telling us that it is unlikely to occur. This is evidence of balanced reporting, because there is discussion of future outcomes from both negative and positive perspectives. The article again uses a hyperbolic lay term when it describes necrotising fasciitis, 'the so-called "flesh-eating bug".' Apart from this though, the scientific information conveyed is accurate, and the information about the outbreak is correct.

The Daily Telegraph, 18 December 2006, News page 9

NEW MRSA STRAIN KILLS WORKER AND PATIENT⁽²⁰⁾

Immediately the headline is questionable. PVL-MRSA is not a new strain; since 2005 it has been identified to have caused hundreds of infections in hospital and community settings, but had rarely featured in the media until it was a cause of fatalities.⁽⁷⁾ The depiction of the outbreak in the rest of the feature is generally accurate and balanced though. The events which unfolded are described without exaggeration or attempting to evoke unnecessary fear; 'a hospital worker and a patient have died after contracting a strain of MRSA that can attack healthy young people.' There are many direct quotes in the article, including some from Dr Angela Kearns, who is an MRSA expert working for the HPA, one of which is, 'most [MRSA] infections can be treated successfully with everyday antibiotics but occasionally a more severe infection may occur.' The use of non-inflammatory statements from experts in the field of MRSA infections demonstrates that this article is not trying to sensationalise the story, but rather give an explicit factual portrayal of the outbreak. However, the story is only briefly reported, and the last few paragraphs are dedicated to the introduction of the NHS policy involving banning clinical staff from wearing jewellery, ties, watches and other superfluous clothing in an attempt to minimise the spread of MRSA. This focuses on the fact that there are proposed solutions to the broader MRSA problem and that efforts are being made by the NHS to curb the incidence of MRSA infections in the UK.

CONCLUSION

The first deaths due to PVL-MRSA infection transmitted in a hospital setting were landmarks in the ongoing issue of antibiotic-resistant infections in the UK. Health as a news field has a massive potential audience interest, and so the media coverage of this incident was huge. However, there are many influences which can lead to exclusion and distortion of the facts in the media, and the portrayal of the fatal outbreak of PVL-MRSA and its implications for the future varied considerably in UK national newspapers. Tabloid newspapers, such as the *Sun*, have a huge readership and therefore play a vital role in communicating information to millions of people. Tremendous skill is required by journalists working for popular newspapers to relate news stories, especially in a complex and technical field such as health, in short articles which are easily understood by the majority of the population. Efforts were made by serious newspapers, especially *The Times*, to report on PVL-MRSA as accurately and with as little bias as possible, allowing readers to form their own opinions. However, all journalists face obstacles in effectively communicating scientific and health information to the public, as they are not experts in these fields, and have pressures of deadlines to meet and creating interesting articles to sell newspapers. For accurate conveyance of health news in the future there must be increased understanding and compliance between the media and the HPA, NHS and others on whom they report.

ACKNOWLEDGEMENTS

I would like to thank Mr Ron Templeton of the University of Liverpool for his help with this article.

REFERENCES

1. McQuail D. Health News in the Mass Media. Some reflections on press roles and performance. Kings Fund Publications: 2003
2. Harrabin R, Coote A, Allen J. Health in the News. Risk, reporting and media influence. King's Fund Publications: 2003
3. Lyons R. Shooting the messenger. Spiked-health; 23 September 2003. Available at: <http://www.spiked-online.com/Articles/00000006DF30.htm> (accessed 22 January 2007)
4. Todar, K. Todar's online textbook of bacteriology. Bacterial pathogens and diseases of humans; staphylococcus and staphylococcal disease. University of Wisconsin-Madison, Department of Bacteriology. 2005. Available at: <http://textbookofbacteriology.net/staph.html> (accessed 29 January 2007)
5. Holmes A, Ganner M, McGuane S, Pitt TL, Cookson BD, Kearns AM. *Staphylococcus aureus* isolates carrying Panton-Valentine Leucocidin genes in England and Wales: frequency, characterisation, and association with clinical disease. *J Clin Microbiology* 2005;43(5):2384-90
6. Department of Health. Interim guidance on diagnosis and management of PVL-associated Staphylococcal infections in the UK, 13 March 2007. Available at: http://www.dh.gov.uk/en/Aboutus/MinistersandDepartmentLeaders/ChiefMedicalOfficer/Features/DH_4133761 (accessed 29 January 2007)
7. Health Protection Agency. PVL-associated *Staphylococcus aureus* – Frequently Asked Questions, 22 December 2006. Available at: http://www.hpa.org.uk/infections/topics_az/staphylo/pvl_FAQ.htm (accessed 29 January 2007)
8. Health Protection Agency. Outbreak of PVL-positive community-associated MRSA. Press Statement, 18 December 2006. Available at: http://www.hpa.org.uk/hpa/news/articles/press_releases/2006/061218_pvl.htm (accessed 19 February 2007)
9. Wheeler V. Horror bug kills young and healthy. *The Sun*. 18 December 2006
10. Ballinger L. Two dead from hospital bug that kills in 24 hours. *The Daily Mail*. 18 December 2006. ED SC2; p8
11. MRSA: it's even worse than you think: cont. *The Daily Mail*. 16 January 2007. ED 1st; p54
12. New superbug kills worker at hospital. *The Daily Express*. 18 December 2006. News; p21
13. Dixon C. Superbug menace is out of control. *The Daily Express*. 28 December 2006. News; p1
14. Reynolds M. Children at risk as deadly new superbug sweeps in. *The Daily Express*. 20 January 2007. News; p17
15. Rose D. Hospitals on alert for fast strain of MRSA that kills young and healthy. *The Times*. 18 December 2006. Home News; p4
16. eMax Health. Non-MRSA PVL identified at Norfolk hospital. Norfolk Hospital, 22 December 2003. Available at: <http://www.emaxhealth.com/39/8732.html> (accessed 26 February 2007)
17. Hospital crisis as PVL bug kills tot. *The Sun*. 23 December 2006
18. Hawkes N. Baby's death linked to hospital bug. *The Times*. 23 December 2006. Home News; p22
19. Laurence J. PVL; Remember these initials: New strain of superbug targets the young, and its latest victim is an NHS nurse. *The Independent*. 18 December 2006. News; Pp1-2
20. Sheppard P. New MRSA Strain kills worker and patient. *The Daily Telegraph*. 18 December 2006. News; p7

**Here are some PVL-MRSA related headlines from eight UK national newspapers.
Can you match the headline to the newspaper?**

The Headlines

- 1 Deadly new strain of MRSA stalking healthy youngsters
- 2 Tragedy of marine killed by scratch
- 3 Bacteria tests reveal how MRSA strain can kill in 24 hours: Cases of drug-resistant PVL likely to rise in Britain. Fear that GPs will not recognise lethal infection
- 4 Superbug tragedy exclusive: one minute we were told our little Alfie was fine ... the next we were turning off his life support machine
- 5 A sober approach to MRSA
- 6 At superbug's mercy; hospitals could be overwhelmed by the flesh-eating strain of MRSA that has already claimed two lives, warns expert
- 7 NHS has war on MRSA
- 8 PVL superbug outbreak kills premature baby at hospital

The Newspapers

Guardian, Independent, The Times, Daily Telegraph, Daily Mirror, Sun, Daily Express, Daily Mail

ANSWERS

1 Daily Telegraph, 2 Daily Express, 3 Guardian, 4 Daily Mirror, 5 The Times, 6 Daily Mail, 7 Sun, 8 Independent