

A survey measuring the impact of
NICE guidance 49: The use of
ultrasound locating devices for placing
central venous catheters

Abacus International Survey, July 2004
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Introduction

NICE guidance 49, reviewing the use of ultrasound locating devices for guiding central venous catheter (CVC) placement, was published in September 2002. This survey, carried out over the summer of 2004, was designed to provide an indicator of the level of implementation and impact that guidance 49 has had over the last 2 years.

Objectives

1. To measure whether NICE guidance 49 has been implemented by anaesthetists across England & Wales
2. To identify whether NICE guidance 49 has brought about change in the use of ultrasound locating devices in CVC placement

Methodology

250 anaesthetists registered with the Royal College of anaesthetists were sent a postal questionnaire designed by Abacus International with input from Andrew Bodenham, Leeds teaching hospital and Peter Simpson of the Royal College of Anaesthetists. (See Appendix 1 for the full survey). Anaesthetists also registered as college tutors were selected to ensure a sample of respondents that covered a wide range of anaesthetic departments across England and Wales.

All postal responses were entered into an access database for analysis.

No statistical analysis has been conducted as this survey is simply designed to give a top line picture of the impact and implementation of guidance 49.

Of 172 responders (69%) 4 were excluded because they were unaware of guidance 49 recommendations.

87% of the respondents carried out 5 or less CVC placements per week, whilst the majority of the remaining respondents carried out 5-15 placements per week.

Results

87% of the anaesthetists sampled had read guidance 49. Of those that had not read the guidance, only 4 (17%) were unaware of the main recommendations.

Only 34% of the respondents suggested that their Trust had a framework for implementing NICE guidance. 43% of them did not know or did not answer the question.

64% of the respondents thought that the Clinical Governance lead was responsible for monitoring NICE guidance implementation and only 2% of the sample suggested that they themselves were responsible for monitoring implementation of guidance 49.

Figures 1 to 3 demonstrate that the anaesthetists sampled thought that guidance 49 was easy to understand and that it was possible to implement the main recommendations although 75% suggested that they were not easy to implement.

Figure 1: In your opinion did this guidance provide recommendations that were easy to understand?

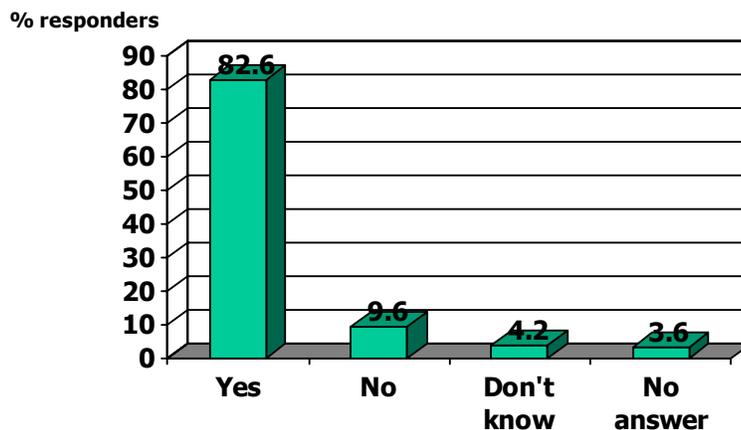
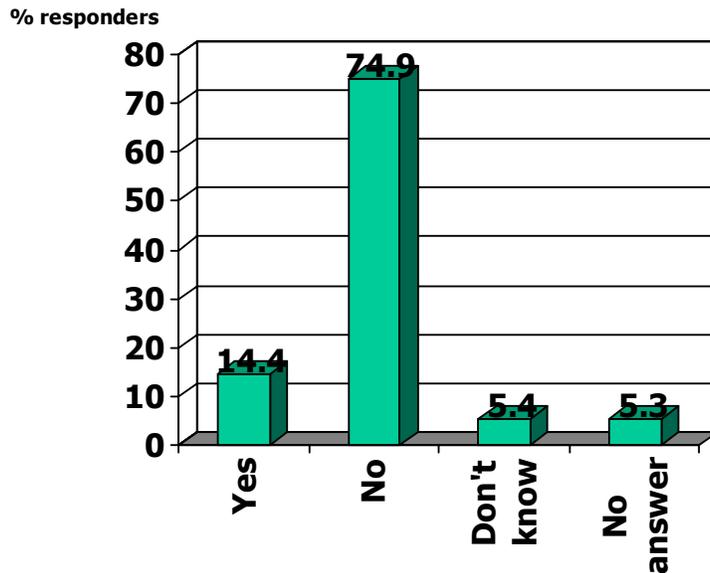


Figure 2: In your opinion did this guidance provide recommendations that could be implemented?



Figures 4 to 7 demonstrate polarized views regarding the main recommendations by NICE. 41% respondents disagreed or strongly disagreed with the recommendation that 2-D imaging ultrasound should be the preferred method for insertion of CVC into the internal jugular vein. However, 36% agreed or strongly agreed. There was similar disparity around the recommendation that 2-D imaging ultrasound should be considered in most clinical circumstances where CVC insertion is necessary electively or in emergency. 35% disagreed and 43% agreed.

As to be expected most people agree with the recommendation that all those involved in CVC placement using 2-D ultrasound imaging should undertake appropriate training to achieve competence.

Only 4% respondents disagreed with the recommendation that audio-guided doppler ultrasound is not recommended for CVC insertion.

Figure 4: Do you agree with the recommendation that 2-D imaging ultrasound is the preferred method for insertion of CVC into the internal jugular vein?

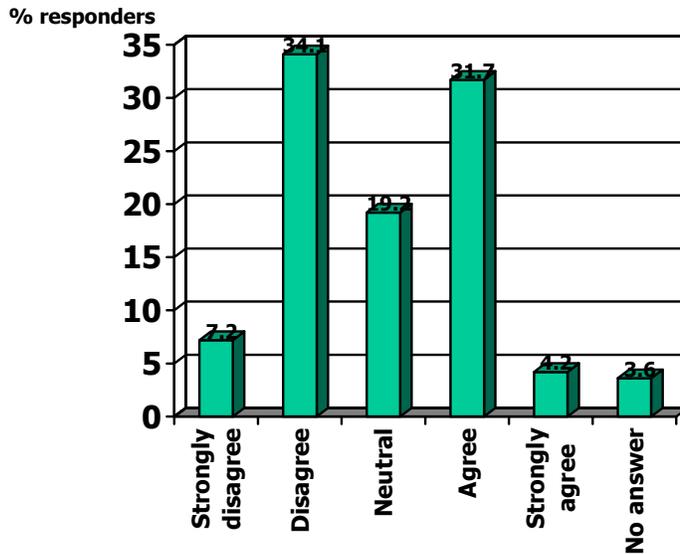


Figure 5: Do you agree with the recommendation that 2-D imaging ultrasound should be considered in most clinical circumstances where CVC insertion is necessary electively or in emergency?

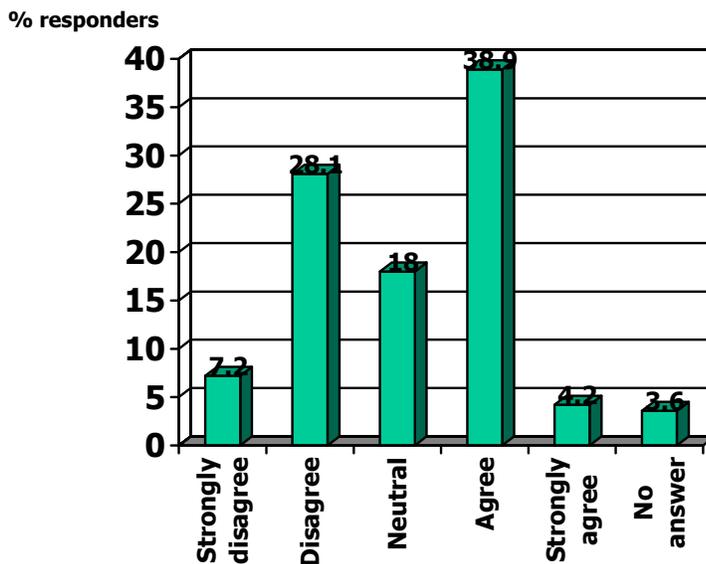


Figure 6: Do you agree with the recommendation that all those involved in CVC placement using 2-D ultrasound imaging should undertake appropriate training to achieve competence?

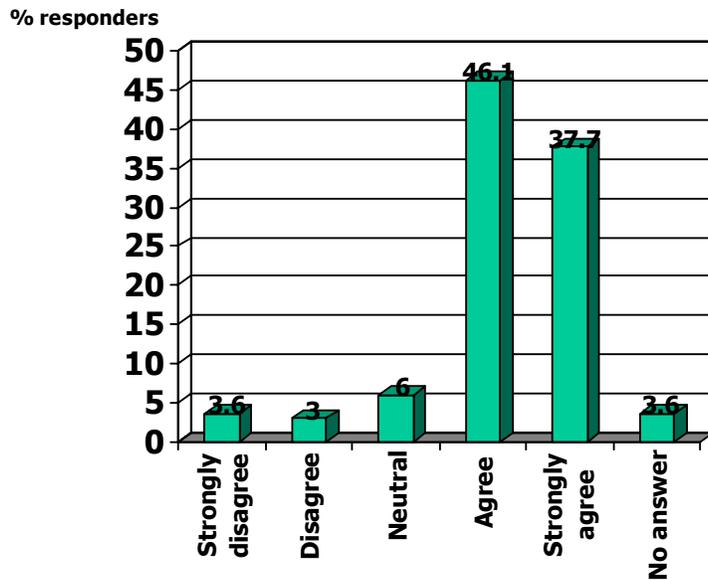


Figure 7: Do you agree with the recommendation that audio-guided doppler ultrasound is not recommended for CVC insertion?

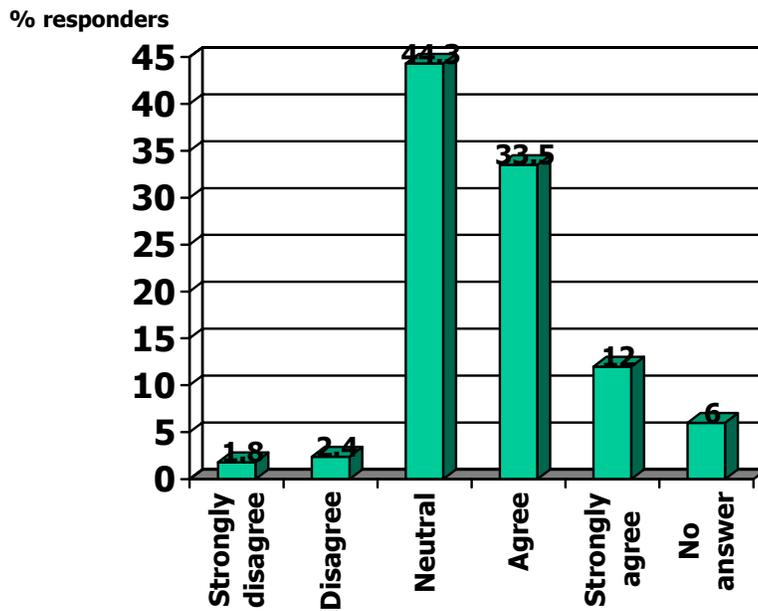


Table 1: For each insertion method please estimate how much use has changed since guidance was published

Insertion method	Large decrease	Small decrease	No change	Small increase	Large increase	No answer
Landmark method	8.4%	21.6%	66.5%	1.8%	0.6%	1.1%
2-D imaging	0.6%	0%	46.7%	33.5%	15%	4.2%
Doppler	1.2%	1.2%	81.4%	3%	0.6%	12.6%

One would anticipate an increase in the use of 2-D imaging ultrasound at the expense of other methods if NICE guidance recommendations were to be implemented. To some extent Table 1 demonstrates this with 49% respondents suggesting an increase in the use of 2-D imaging and 30% suggesting a decrease in the use of the Landmark method. However, large proportions of respondents reported no change in the use of the various methods. A closer analysis of the data showed that 67% of those that disagreed with the main recommendation preferring 2-D ultrasound had not changed their use of this technology. This compares to 73% of those who had agreed with guidance having increased their use (35% had significantly increased use). It appears that concurrence with guidance recommendations is a driver of implementation and change.

Figures 8 to 11 demonstrate that NICE recommendations relating to structural and administrative processes are not in place. Less than a third of anaesthetists felt that there was a structured approach to CVC placement in their department and very few had been put in place as a result of guidance. Less than a quarter of respondents suggested that there were patient information retrieval systems in place.

Figure 8: Do you consider a structured approach to CVC insertion to be in place in your department?

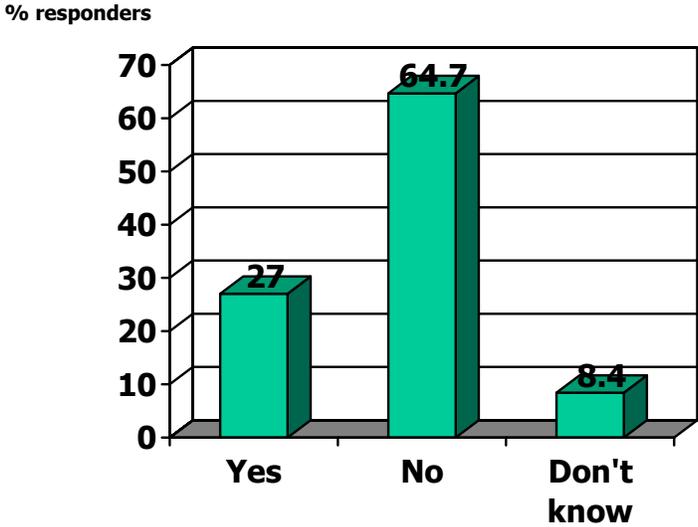


Figure 9: If a structured approach to CVC insertion is in place in your department has this been introduced because of NICE guidance?

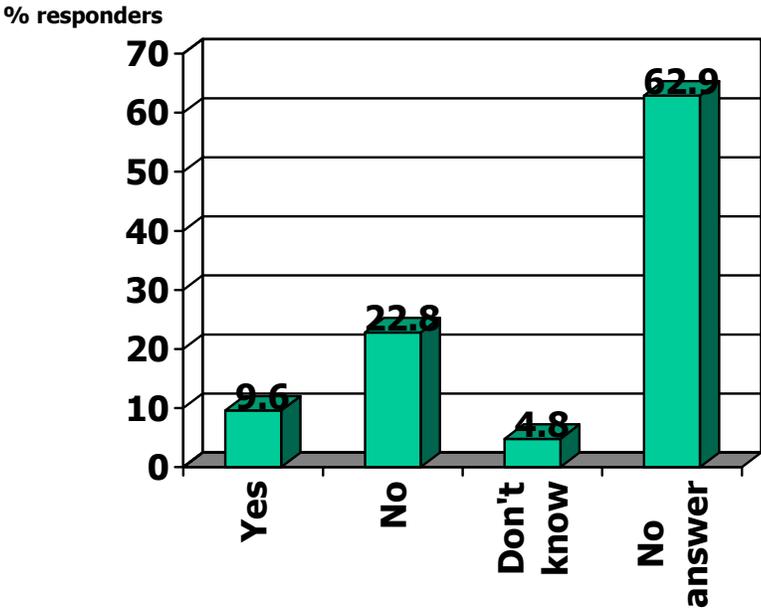


Figure 10: Do you have a mechanism for retrieving information on whether patients have had CVC insertion electively or as an emergency?

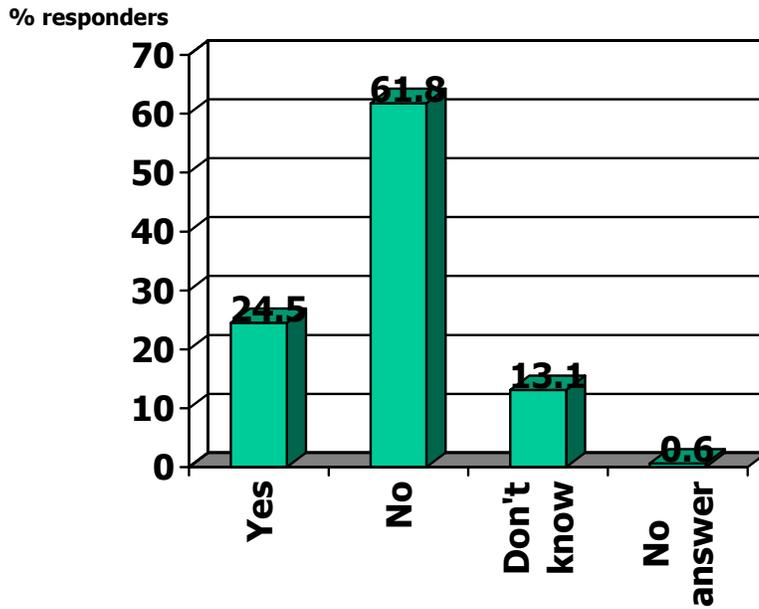
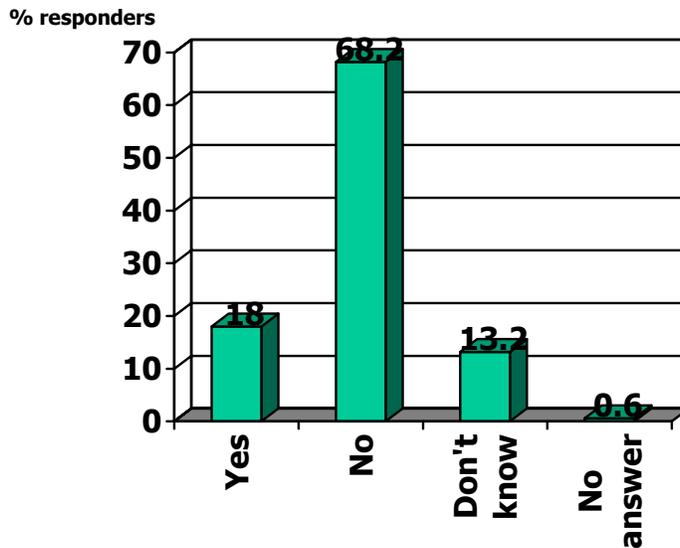


Figure 11: Do you have a mechanism for retrieving information on whether patients have had CVC insertion guided by 2-D ultrasound?



Training in the use of ultrasound in CVC placement is an important aspect of NICE guidance 49 and yet Figure 12 demonstrates that two thirds of the anaesthetists in this sample rate the level of training provided as poor or non-existent. Table 2 suggests that a higher proportion of training provided by the ultrasound manufacturers is rated as good compared to any other provider of training.

Figure 12: Please rate the level of training provided for medical staff on local 2-D ultrasound guided CVC insertion

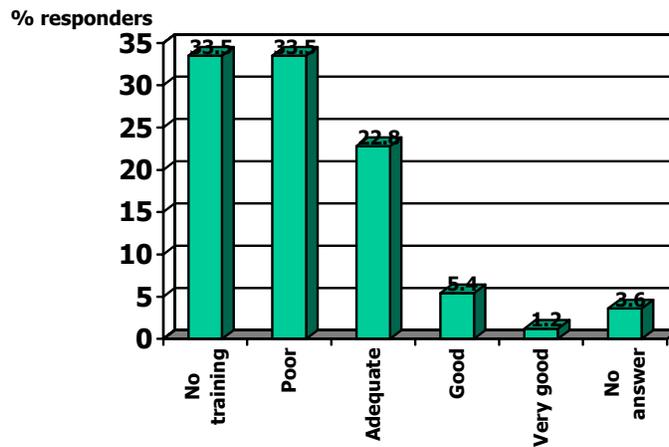
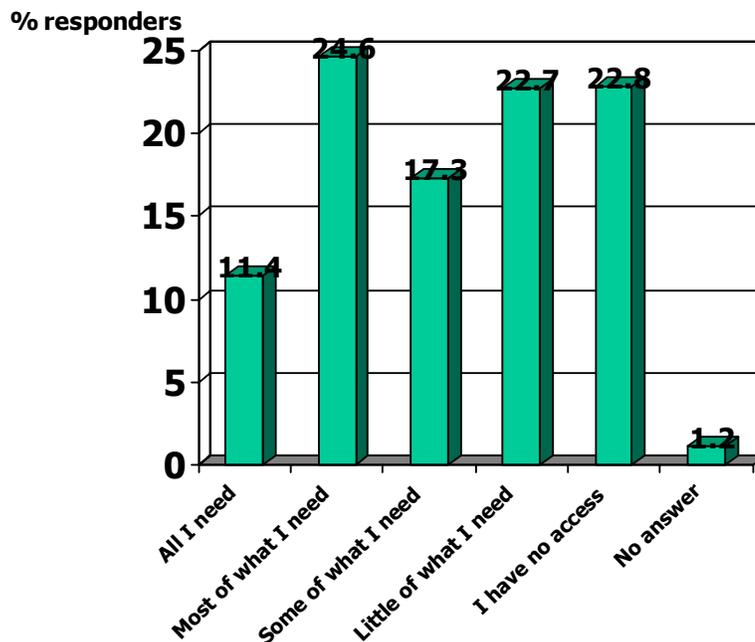


Table 2: Quality of training rated by provider

	No training	Poor	Adequate	Good	Very good	No answer
College	63.5%	14.4%	3%	1.2%	1.8%	16.1%
Trust	55.7%	17.4%	9.6%	4.8%	1.2%	11.4%
Manufacturers	28.1%	19.8%	22.8%	13.2%	1.2%	15%
Other	38.3%	1.8%	6%	2.4%	4.8%	44.9%

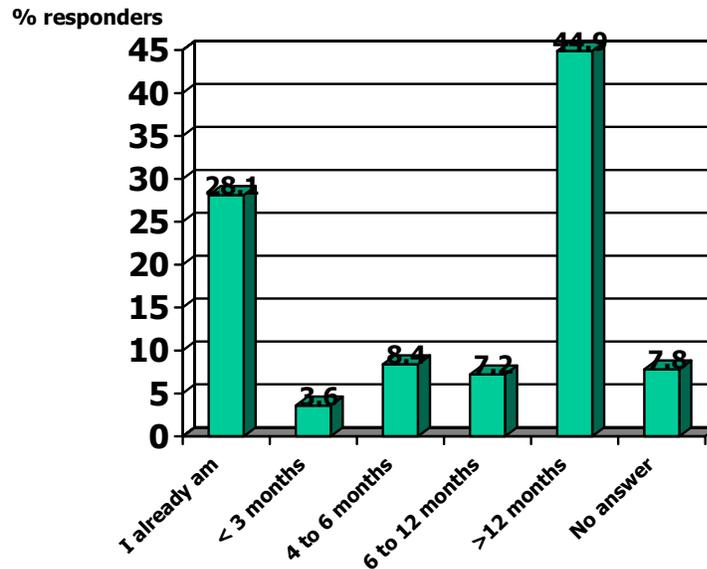
An important aspect of NICE implementation is having the appropriate resources in place. In this case access to, or funding for, the appropriate ultrasound equipment. Figure 13 shows that 36% of the anaesthetists surveyed had all or most of what they need. However 46% had little or no access to the ultrasound technology that they would need to implement this guidance.

Figure 13: Which phrase best fits your Trusts provision of ultrasound machines that you currently have access to?



NICE guidance should be "implemented" within three months of publication of recommendations. Two years after the publication of guidance 49, only 28% of the anaesthetists surveyed considered themselves compliant with guidance (Fig 14). Nearly a half of respondents suggested that it would be longer than 12 months before they are compliant with NICE guidance. A further analysis of the data showed that 43% of those who agreed with the main recommendations were already compliant with guidance compared to only 11% of those who disagreed. Similarly, 57% of those who disagreed with guidance would take longer than 12 months to be compliant compared to only 35% of those in agreement.

Figure 14: How long will it take until you are in a position to be compliant with the NICE guidance for placing CVCs?



Summary and Conclusions

This survey of anaesthetists was carried out approximately 2 years after NICE guidance reviewing the use of ultrasound locating devices for guiding central venous catheter placement was published. Enough time has elapsed to enable implementation of guidance recommendations. Although other disciplines are involved with CVC placement, the anaesthetist plays an important role and so responses across 172 different Trusts should provide a reasonable understanding of the state of implementation of guidance 49.

The majority of our sample of anaesthetists had read guidance 49 (87%) and only 4 individuals were unaware of the main recommendations.

Only one third of the respondents were aware that there was a framework within their Trust for implementing NICE guidance and two thirds suggested that the Clinical Governance lead had the responsibility for monitoring NICE guidance implementation.

Most (83%) felt that the guidance recommendations were easy to understand and were possible to implement but three quarters suggested that implementation was not easy.

When asked whether they agreed with the main recommendations, opinions were polarized. It appears that there are advocates of 2-D imaging ultrasound who agree with NICE that this should be the preferred method for CVC insertion and others who disagree (41% disagreed and 36% agreed).

As expected, most anaesthetists agreed that everyone involved in CVC placement using ultrasound should undertake appropriate training. However, two thirds of them rated the level of training provided for medical staff on 2-D ultrasound guided CVC insertion as poor or non-existent. This is a good example of infrastructure issues that can hold back the implementation of NICE guidance. If a new technology is made available and is recommended by NICE, then implementation is not simply held back by lack of funding. The availability of fully trained specialists is an important factor. Interestingly in this case, the manufacturers provided the training which was rated as the highest quality. It is in the interest of the suppliers of 2-D imaging ultrasound to invest in good quality training for their customers.

Only 4% of respondents disagreed with the recommendation that audio-guided Doppler ultrasound is not recommended for CVC insertion.

From the main recommendations, one would expect an increase in the use of 2-D imaging ultrasound at the expense of the Landmark method and audio-guided Doppler ultrasound. To some extent this is demonstrated in this survey with 49% respondents suggesting an increase in 2-D imaging and 30% suggesting a decrease in the Landmark method. However, there was still a high level of "no change" responses. (67% Landmark, 47% 2-D imaging and 81% Doppler). Some of these no change responses will be because they were already complying with NICE recommendations. For example, those that had stopped using Doppler methods would have answered "no change" and yet would still be compliant with NICE guidance. We have also seen that those who disagree with recommendations were much less likely to increase use of 2-D imaging than those in concurrence (30% compared to 73%).

28% of responders suggested that they were already compliant with NICE recommendations but 45% claimed that it would take more than 12 months before they were compliant (i.e. greater than 3 years since guidance was published). Again, agreement with main guidance recommendations was a driver of likely compliance. 43% of those who agreed with guidance were already compliant compared to only 11% of those who disagreed.

We have seen that training is one of the issues holding back implementation of this guidance. The other major issue is access and funding for the necessary equipment. Only 11% anaesthetists in this sample had all the technology that they require for full implementation, although a further quarter had most of what they need. Nearly a half of all surveyed suggested that they had little or no access to the ultrasound technology required for implementation of this guidance.

Recommendations relating to structural and administrative processes were not typically in place. Less than a third of anaesthetists felt that there was a structured approach to CVC placement and very few had been put in place as a consequence of NICE. Less than a quarter had the appropriate patient information retrieval systems in place. There was also a high level of “don’t know” answers to this type of question.

In conclusion, NICE guidance 49 has had some effect on the increased use of 2-D imaging ultrasound for CVC placement. However, access to the ultrasound equipment and the necessary training is holding back full implementation.

Appendix 1: The postal questionnaire



National Institute for Clinical Excellence

This survey has been designed in conjunction with the Royal College of Anaesthetists to assess the impact of NICE Guidance 49: The use of ultrasound locating devices for placing central venous catheters (CVCs)

If your role within the trust is neither the clinical director nor college tutor, could you please forward this form to either of the above.

A. Personal Details (optional)

1. Name & Job Title _____

2. Name of trust in which you work _____

3. Could you **estimate**, by putting a tick in the most appropriate box, how many CVCs you would insert in an average weekly period?

No. of weekly CVC Insertions

Less than 5	
5 - 10	
10 - 15	
More than 15	

B. NICE Guidance Recommendations

The main recommendations are as follows:

1.1 Two-dimensional (2-D) imaging ultrasound guidance is recommended as the preferred method for insertion of central venous catheters (CVCs) into the internal jugular vein (IJV) in adults and children in elective situations.

1.2 The use of two-dimensional (2-D) imaging ultrasound guidance should be considered in most clinical circumstances where CVC insertion is necessary either electively or in an emergency situation.

1.3 It is recommended that all those involved in placing CVCs using two dimensional (2-D) imaging ultrasound guidance should undertake appropriate training to achieve competence.

1.4 Audio-guided Doppler ultrasound guidance is not recommended for CVC insertion.

4. Have you read NICE guidance No. 49: The use of ultrasound locating devices for placing central venous catheters?

Yes No

5. If No, were you aware of the main recommendations of the guidance?

Yes No

If No, you do not need to complete any further questions. Thank you for your time. Please go to the final page for details of where to send your completed questionnaire.

6. Does your trust(s) have a framework/structure for implementing NICE guidance?

Yes No Don't know

7. Who is responsible for monitoring NICE guidance implementation?

- a) Clinical governance lead
- b) Professional lead
- c) Myself
- d) Other (specify) _____

8. On the whole, in your professional opinion, did this NICE guidance (49) provide recommendations that:

a) Were easy to understand

Yes No Don't know

b) Could be implemented

Yes No Don't know

c) Were easy to implement

Yes No Don't know

9. On the whole, do you agree with the 4 main recommendations of the guidance described below?

(Please circle the most appropriate number).

a)

1.1 Two-dimensional (2-D) imaging ultrasound guidance is recommended as the preferred method for insertion of central venous catheters (CVCs) into the internal jugular vein (IJV) in adults and children in elective situations.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

b)

1.2 The use of two-dimensional (2-D) imaging ultrasound guidance should be considered in most clinical circumstances where CVC insertion is necessary either electively or in an emergency situation.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

c)

1.3 It is recommended that all those involved in placing CVCs using two dimensional (2-D) imaging ultrasound guidance should undertake appropriate training to achieve competence.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

d)

1.4 Audio-guided Doppler ultrasound guidance is not recommended for CVC insertion.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

C. Clinical Practice

10. For each of the following CVC insertion methods please estimate how much their use has changed in your professional practice since the guidance was published:

(Please circle the number that most closely matches your personal estimate).

	Large decrease	Small decrease	No change	Small increase	Large increase
a) Landmark method	1	2	3	4	5
b) 2-D imaging ultrasound	1	2	3	4	5
c) Audio guided Doppler ultrasound	1	2	3	4	5

11. Do you consider a structured approach to CVC insertion, e.g. a clinical guideline, to be in place within your department(s)?

Yes No Don't know

12. If yes to the above, have these structured approaches been introduced as a result of the guidance?

Yes No Don't know

13. Do you have a mechanism for retrieving the following information:

- a) Whether patients had their CVC insertion electively or as an emergency?

Yes No Don't know

- b) Whether patients had their CVC insertion guided by a 2-D ultrasound machine?

Yes No Don't know

D. Resourcing 2-D Ultrasound Locating Devices

14. Please rate the level of training/education provided for medical staff on local 2-D ultrasound guided CVC insertion:

(Could you please circle the number that most closely matches your personal estimate).

No training	Poor	Adequate	Good	Very good
1	2	3	4	5

15. Could you rate the quality of training in ultrasound guided CVC insertion by the following:

(Please circle the number that most closely matches your experience).

	No training	Poor	Adequate	Good	Very good
a. College	1	2	3	4	5
b. Local trust	1	2	3	4	5
c. Manufacturers	1	2	3	4	5
d. Other	1	2	3	4	5

16. Which phrase best fits your trust's provision of ultrasound machines that you currently have access to:

(Please circle the number that most closely matches your experience).

All I need	Most of what I need	Some of what I need	Little of what I need	I have no access
1	2	3	4	5

17. If you are awaiting access to this technology as part of the business planning and funding process which phrase best fits your trust's intended provision of ultrasound machines that you will have access to (in relation to compliance with the guidance):

(Please circle the number that most closely matches your estimate).

All I need	Most of what I need	Some of what I need	Little of what I need	I will have no access
1	2	3	4	5

18. How long will it take until you are in a position to be compliant with the guidance for placing CVCs:

(Could you please circle the number that most closely matches your estimate).

I already am	Less than 3 months	4 to 6 months	6 to 12 months	More than 12 months
1	2	3	4	5

Thank you for completing this questionnaire.