

## **Centers for Disease Control – Guidelines for the Prevention of Intravascular Catheter-Related infections - 2011.... Considerations for change in the New Zealand Healthcare setting**

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The Centers for Disease Control and Prevention (CDC) has been in existence since 1946 with humble beginnings on one floor of a building in Atlanta, Georgia, previously named Communicable Disease Center. The initial focus of the group was Malaria control in war-affected areas of America; with many of the initial staff employed were entomologists and engineers. Funds were spent on obtaining trucks, sprayers and shovels. Over 6.5 millions American homes were sprayed against mosquitoes in the early years.

CDC celebrated its 60<sup>th</sup> birthday in 2006, and is now considered a leader in public health globally for the prevention and control of infectious diseases, injuries, workplace hazards, disabilities and environmental health problems. The center conducts research and develops action-orientated recommendations, provides a system for health surveillance to monitor and prevent disease outbreaks, as well as keeping national health statistics.

Today CDC focuses on five strategic areas:

1. Supporting state and local health departments
2. Improving global health
3. Implementing measures to decrease identified leading causes of death
4. Optimizing health surveillance and epidemiology
5. Reforming health policies. [www.cdc.gov/about/history/ourstory.htm](http://www.cdc.gov/about/history/ourstory.htm)

Guidelines for the prevention of intravascular catheter related infections have been produced by CDC to aid in the reduction of intravascular catheter related blood stream infections (CR-BSI). The first guidelines were produced in 1996, revised in 2002 and again in 2011. These guidelines are refined based on additional research providing valid and reliable recommendations.

The CDC guidelines define a Central Line Associated Blood Stream Infection (CLABSI) as a primary blood stream infection (BSI) in a patient that had a central line within the 48- hour period before the development of the BSI and is not bloodstream related to an infection at another site. CLABSI definition is typically used for surveillance purposes. However, since some BSIs are secondary to other sources other than the central line (e.g., pancreatitis, mucositis) that may not be easily recognized, the CLABSI surveillance definition may overestimate the true incidence of a catheter-related blood stream infection (CR-BSI). A CR-BSI is a clinical definition, used when diagnosing and treating patients, that requires specific laboratory testing to identify the catheter as the source of the BSI.

New Zealand (NZ) health care practitioners involved in insertion, care and monitoring of intravascular devices should refer to these guidelines because of the research and rigorous editing by many societies in the USA. The 2011 guidelines are available for

download from [www.cdc.gov/hicpac/BSI/BSI-guideline-2011.htm](http://www.cdc.gov/hicpac/BSI/BSI-guideline-2011.htm) and a link is available from the Intravenous Nursing New Zealand website [www.ivnnz.co.nz](http://www.ivnnz.co.nz)

There are improvements and additional recommendations in the 2011 version. CDC informs us that the 2011 guideline will now replace any previous version. There are too many recommendations to describe in this article. Included are additions of more categories of evidence that have increased strength and many recommendations have category 1A, strongly recommended, and supported by researched evidence.

All types of catheters are identified and categorized, with recommendations for care and the use of add-on devices discussed. Recommendations for dwell times have extended in some areas. Some ongoing questions about filters, single use, dedicated lines and anti-coagulation remain un-resolved with little or weak evidence identified.

When utilizing this 2011 guideline we do need to add a NZ context. Healthcare practitioners need to discuss the usefulness and ease of application to the NZ setting, how the guidelines influence practice in NZ and discuss cost implications the recommendations may have to a state funded service. The discussion needs to be multi-disciplinary and inclusive of all healthcare groups paying attention to the patient outcomes of the NZ population.

In March 2011, Morbidity and mortality weekly report (MMWR) posted findings of a report where research has suggested an improvement over time, influenced by the CDC 2002. The research's aim, to identify the total number of Central line – associated blood stream infections (CLABSIs) within the US from ages >1 year in all settings.

Key points of the research identified:

- CLABSIs remain a very serious healthcare associated infection (HAI), however, are preventable infections.
- CLABSIs are preventable when health care professionals use the CDCs guidelines.
- CLABSIs in patients in hospital ICU settings have been reduced by 58% in 2009 when compared with 2001 statistics. A lot of CLABSIs still occur in other places including outpatient settings.
- In 2008, an estimated 37,000 CLABSIs occurred in haemodialysis patients. These numbers could reduce if healthcare practitioners caring for haemodialysis patients consider use of arteriovenous fistula or arteriovenous grafts instead of central venous catheters.

Conclusions suggest the above findings equate to 6,000 saved and \$414 million (US) excess health care cost. This still assumes that each CRBSI carries a cost of \$16,550 (US) and mortality up to 25%. The cumulative excess health-care related cost of all CLABSI prevented in the ICU setting could reach \$1.8 billion (US) and estimated lives saved as high as 27,000.

These reductions have happened in ICU settings because of a coordinated effort by state and federal agencies, professional societies such as Healthcare Research and Quality (AHRQ), IHI saving lives campaign and Stop BSI campaign

[www.cdc.gov/mmwr/preview/mmwrhtml](http://www.cdc.gov/mmwr/preview/mmwrhtml)

Additional guidelines and research needs development to support groups such as haemodialysis patients and others in the out of hospital setting. CDC suggests that these infections are a major cause of hospital admissions and mortality.

The 2011 guidelines seem more simplified for the reader. Again those who should be influenced by the guidelines are those who insert, maintain and provide quality assurance systems for institutions caring for patients with all intravascular catheters. Influence should extend to the wider group such as health care managers, CEOs and those who allocate resource and the patient who self cares.

The 2011 guideline continues to provide the same 5 major areas of influence:

1. Education of health care professionals who insert and care for intravascular catheters.
2. Identifies the use of maximal sterile barrier precautions during central venous catheter insertions.
3. Recommends the use of >0.5% chlorhexidine skin preparation with alcohol for antisepsis.
4. Stresses the avoidance of routine replacement of central venous as a strategy to prevent infection.
5. Advises using antiseptic/antibiotic impregnated short-term central venous catheters and chlorhexidine impregnated sponge dressing if the rate of infection is not decreasing despite adherence to other strategies.

The guideline also emphasizes that prevention can be improved on, by the development of care-bundles. These ensure all aspects of catheter care are included as well as education and documentation. Reporting of these 5 major areas are benchmarks for quality assurance and performance improvement. These could be similar to those suggested by the Institute of Health improvement in the work they are doing toward save 5 Million Lives campaign [www.ihl.org/IHI/Topics](http://www.ihl.org/IHI/Topics)

Although these guidelines are written primarily for the USA audience it is acknowledged that these guidelines will influence global efforts for the prevention of catheter related infections particularly in countries such as Australia and New Zealand. For example, the 2011 CDC guidelines will have influence on both the Intravenous Nursing New Zealand Inc (IVNNZ Inc.) draft 'Infusion Standards of Practice' and the Australians Commission on Safety and Quality investment in the ANZICs central line associated blood stream infection prevention projects. There are pockets of good work being done in NZ developing care bundles to optimize the way we look after central venous catheters and add-on devices. We are hopeful that these will be shared with all groups in NZ.

Certainly IVNNZ Inc. is looking at working with Australian partners and industry to commit to a better understanding of the CDC guidelines and how the many recommendations can add value to local prevention efforts. This will start with a webinar presentation proposed for Friday 30<sup>th</sup> September 2011 to discuss the following:

- An overview of NZ trends in intravascular catheter-related infection monitoring and prevention.
- Applying Infusion Nurses Society (INS) and CDC recommendations outside of the USA – Should we, Can we?.
- Application of the 2011 CDC guidelines to the draft standards for intravascular therapy that IVNNZ Inc. are currently compiling

The CDC 2011 guidelines and recommendations do have a place in the NZ health care setting. The healthcare practitioners that are tasked with developing

intravascular infection preventative guidelines need to understand the content, recommendations and categories of evidence CDC provide in detail. This guideline can then be used effectively as a foundation document for future local guideline development inclusive of central venous catheters, haemodialysis grafts and fistula, in fact any intravascular care bundle. New Zealand healthcare practitioners need to consider our unique requirements, cultures and people we care for with this development. Communication, sharing of ideas and locally developed tools, are keys to the development of robust guidelines for NZ.

#### References

1. Australian Commission on Safety and Quality in Healthcare  
<http://www.safetyandquality.govt.au> accessed on 2/5/2011
2. Center of Disease Control and Prevention  
<http://www.cdc.govt.com> accessed on 30/5/2011
3. Institute for Healthcare Improvement  
<http://www.ihl.org/IHI/Topics/CriticalCare/IntensiveCare/Changes/ImplementtheCentralLineBundle.htm> accessed on 2/5/2011
4. Intravenous Nursing New Zealand  
<http://www.ivnnz.co.nz/news/Updated-information-on-CVC-CRI> accessed on 6/6/2011
5. Vital Signs: Central Line –Associated Blood Stream Infections --- United States, 2001,2008, and 2009 (MMWR)  
<http://www.cdc.govt/vitalsigns>