National Heart Centre Receives Coveted JCI Accreditation.

By Dr Tan Teing Ee
Consultant, Department of Cardiothoracic Surgery

After beginning preparations as early as December 2004, National Heart Centre was finally surveyed by JCI from 24-26 October 2005. We fully met 1013 of the 1033 required elements, and met partially the remaining 20. We were the first heart hospital in Asia to be officially accredited on 22 November 2005. The certification is valid for 3 years from 27 October 2005 to 26 October 2008.

What is JCI?
Joint Commission International (JCI) is an extension of Joint Commission for the Accreditation of Healthcare organisations (JCAHO). JCAHO is a body that accredits more than 90% of healthcare organisations in the United States. JCI accreditation standards are based on international consensus standards and set uniform, achievable expectations for structures, processes and outcomes for hospitals. They have accredited more than 70 healthcare organisations all over the world, and the list is growing fast.

Why JCI accreditation?
Getting JCI accreditation is part of our commitment to improving the way we deliver healthcare. JCI’s standards for hospitals clearly define the principles and processes needed to assess the key functions of acute care organisations and associated ambulatory settings.
What are the JCI standards?
It is a very comprehensive standard that comes in a thick 190-page manual. The key features are:

- It assesses the quality of patient care from the time a patient is admitted till discharge. This data can be utilised to plan and implement changes that create optimal care.
- It also assesses all aspects of management from clarity of leadership's responsibility and accountability, to critical facility managed processes and broad strategic planning.
- There are two levels of compliance. There are 197 core standards that must be totally met to achieve accreditation and an additional 368 standards that lead organisations to best practice levels. Each standard has one to five measurable elements, making a total of 1033 elements.
- It emphasises and cultivates a culture of patient safety.

There are 11 chapters to the standards:

- Access to and continuity of care
- Patient and family rights
- Assessment of patient
- Care of patient
- Patient and family education
- Prevention and control of infection
- Staff qualification and education
- Governance, leadership and direction
- Facility management and safety
- Management of information
- Quality improvement and patient safety

Preparations for the survey
The survey required a minimum of 4 months track record of compliance with the standards. We had to be ready in June even though the survey was in October. Beginning in Dec 2004, departmental leaders and the JCI committee reviewed, revised and created policies over numerous meetings after office hours in order to comply with the standards. Fortunately, we had good advice from our colleagues in CGH, SGH and AH who were successfully accredited in June/July 2005.

Part of the prep work done.
Many processes were standardised. According to JCI requirements, policies were displayed on the intranet and made easily available. Implementation of the policies was not easy. It took time for all staff (from the ground to the top) to get used to, or even accept, some of the new policies and procedures. Even visitors, medical students, contractors and other organisations had to learn and apply the new policies.

We revised and implemented new charts - clinical, nursing, anaesthetic, operation, medication records and others. Documentation was improved with the aim of improving communication between healthcare workers. Case notes were audited for appropriateness, accuracy, timeliness, legibility and authorship. Appropriate feedback to the healthcare workers was given where necessary. Pain management was improved with new charts and protocol.

Facilities were upgraded to improve safety for patient, staff and visitors. These included new exit signs, window bars to prevent suicides, new locks to medication rooms, new emergency trolleys, antiseptic handrub dispensers at every bedside and more. Additional screens were installed in many procedural waiting areas to provide more privacy. Maintenance records of all equipment were tidied up and standardised. A comprehensive fire evacuation plan was made and fire drills were carried out to ensure all staff are aware of what they should do in a fire.

We restructured and expanded the Quality Management committee to oversee all quality related issues. No fewer than 20 key quality indicators were collected and monitored in all aspects of healthcare. Lectures on JCI, patient safety and quality improvement concepts were organised.

The JCI working team with the surveyors.

All staff (medical, nursing and paramedical) with patient contact were BCLS certified. All staff working in ICU or involved with emergencies were ACLS certified. CME for all staff had to be planned and documented. A new policy with stricter credentialing and privileging criteria for medical staff was implemented. Criteria for granting of clinical privileges to doctors were set down, and these privileges had to be reviewed every 3 years by a credentialing board. Monitoring of their clinical outcomes was streamlined and the results monitored closely by the Quality Management committee.

A new patient information leaflet outlining their rights and responsibilities was created. Consent taking was improved, with addendums, and emphasis was made in providing the patient with adequate knowledge to make an informed decision.

Intranet security was tightened, with auto log offs and screen savers that locked the computer when they are not in use. Stricter controls were implemented to maintain the privacy of patient medical records.

There were also other changes that were made, too many to list here. Suffice to say, it was an organisational change and everyone was involved.
The survey

The surveyors finally came on the 24 to 26 of October 2005. We had Dr Marion Snowden and RN Donna Woodkey-Oinsmore for the survey. They were very pleasant, and eager to teach concepts of quality improvement to anyone who would listen.

In that very packed two and a half days, they reviewed our policies and confirmed their implementation by asking questions of the ground staff later. They randomly picked closed medical records for review. They met with the leaders, infection control staff, information technology staff, quality improvement committee and human resource departments. They asked to see minutes of meetings, personnel files, charts, maintenance records, contracts with external agencies, and many other documents. They visited the inpatient wards, the cardiovascular laboratories, the operation theatre, the clinics, rehabilitation centre, and the other cardiac laboratories. Anyone could be randomly interviewed during these visits (including patients). A nurse was asked to demonstrate how they administer medication. They were allowed to open any door and drawer, and inspect any room they deem fit. They were very sharp and thorough. They literally inspected everything from the floor to the roof, sometimes even above the ceiling boards. They would ask for a case sheet of an inpatient and trace all the processes that the patient goes through, from admission to discharge.

They were keen to share their experiences at the numerous other hospitals they have surveyed and suggested several good practices that we have subsequently implemented.

At the end of the survey, we knew we had passed. They had found only instances of partial compliance. We met 98.06% of the standards. This is the beginning of our journey towards quality healthcare. We will be re-surveyed in 3 years time. The next time, we will require a one-year track record instead of 4 months.

Conclusion

It has been quite an experience for National Heart Centre. We have learnt to look at healthcare from the patients’ point of view. We have put in place processes that will improve the quality of care. The safety climate of the organisation has changed and will improve in the future. We can confidently say that we are providing patient care that meets international standards, and that we will continue to improve.
NHC GP Heart Care - Symposium On Heart Failure

Held on 15th October 2005 at the Grand Copthorne Waterfront Hotel, the 8th National Heart Centre GP Heart Care Symposium was well received by some 170 family physicians. The symposium was part of a regular series of CME programme organised by NHC, aimed at updating GPs in the latest facets of cardiac care.

This time round, the symposium centred on the theme of ‘Heart Failure’, the commonest cardiac cause for hospital admissions. The 2-hour symposium began with an overview of the cardiovascular continuum, where heart failure is the end-point. Evidence-based medical therapies were expounded, followed by treatment options with devices (biventricular pacemakers, implantable defibrillators). Advanced surgical techniques were also introduced to the audience.

Finally, our guest speaker, Dr Clarice Hong gave valuable practical tips on counselling strategies in dealing with cardiac patients. The symposium closed with real-life case studies, which illustrated the practical aspects in the treatment of heart failure patients.

The speakers from NHC included Senior Consultants Dr Terrance Chua, Dr Bernard Kwok and Dr Tan Yong Seng, Consultant Dr Hsu Li Fern, and Associate Consultant Dr Ching Chi Keong. Dr Clarice Hong, the guest speaker, is a practising psychiatrist & psychotherapist at Raffles Hospital.

Are You At Risk Of Heart Attack? - An English Public Forum by NHC

National Heart Centre (NHC) collaborated with Health Promotion Board (HPB) to organise an English public forum “Are you at risk of heart attack?” on 20 October 2005. The event, held at the HPB premise, attracted around 150 participants.

NHC Senior Consultant Dr Felix Keng, Associate Consultants Dr Dinesh Nair and Dr Paul Chiam, and Registrar Dr Peter Ting from the Department of Cardiology formed the panel that afternoon.

The topics touched on included the risk factors of heart disease, how to take early intervention and secondary prevention to reduce the risk factors, recognising the symptoms of a heart attack and keeping abreast of the different forms of treatment (medical and interventional) available.

Additional highlights of the forum were a complimentary health screening for all participants and free entry to HPB’s Health Zone.
Value of Health Screening

By Dr Paul Chiam, Associate Consultant, Department of Cardiology

The purpose of health screening is to identify diseases in “well” persons through history, physical examination, and tests when necessary.

We all know that screening tests should be cost effective, easily available, reproducible and accurate, and that the diseases screened for should be serious, early detection would lead to a better outcome.

However, not all health screening leads to better clinical outcomes, as no test is 100% sensitive or specific. False positive tests (wrongly concluding that a disease is present when actually not) will generate anxiety and need for further tests, with the attendant risks and costs. False negatives (wrongly concluding that a disease is absent when actually present), conversely, may give a false sense of security. Screening therefore should be based on evidence, and be associated with improved clinical outcomes or a change in behaviour / lifestyle leading to improved outcomes.

Health screening usually starts with a detailed history and physical examination. They are part of the initial consult, and do not involve additional cost or risk to the patient. A cardiovascular risk profile (eg 10-year risk of cardiovascular event- high, moderate, low risk) can be estimated using the Framingham risk score. This has been shown to predict likelihood of future events and can serve as an impetus for behavioural change.

Subsequent tests eg electrocardiogram(EGG), chest x-ray(CXR), lipid profile and treadmill stress ECG (TMX) help bolster the risk profile, and are unlikely to drastically change the cardiovascular risk already ascertained through the history and physical exam.

Apart from the ECG and CXR, the fasting lipid profile and fasting glucose are amongst the most useful screening tests. A significant proportion of the population would have silent dyslipidemia and / or diabetes mellitus. Early detection and treatment (lifestyle or drugs) would have an impact on future event rates as demonstrated in primary prevention trials eg West of Scotland Coronary Prevention Study (WOSCOPS) and STOP-NIDDM etc. WOSCOPS showed that primary prevention with pravastatin reduced myocardial infarction (MI) and death from cardiovascular causes in men with hypercholesterolemia compared to placebo. STOP-NIDDM demonstrated that acarbose could reduce conversion of impaired glucose tolerance to overt Type 2 diabetes compared to placebo.

The Ministry of Health, Singapore recommends a fasting lipid profile and fasting plasma glucose at age 40 (or younger in those with comorbidities or certain family history), and if optimal, every 3 years subsequently.

Other tests like the full blood count, renal function and liver function tests are less useful on a general population basis, though they may occasionally pick up some abnormality, since the incidence of such abnormalities in the asymptomatic population is very low to begin with.

The TMX is most suited for those in the moderate risk category with atypical chest pains. With a sensitivity and specificity of only 60-70%, the TMX is not useful in situations with a high or low pre-test probability of ischaemic heart disease, because it does not significantly change that pre-test probability.

However, most patients presenting for cardiovascular health screening would want a TMX performed. It has been shown that those with a normal result and a good workload (Bruce protocol Stage 3 or more) have a low yearly event rate.

In conclusion, regular health screening for the heart may identify health risks early and preventive measures such as healthy lifestyle habits can be adopted to minimise any cardiovascular risks one may have. With early detection and proper medical guidance, heart disease can be treated or even prevented.
NHC offers two Cardiac Health Screening packages that comprise the following investigations and medical consultation:

**CARDIAC HEALTH SCREENING - $550 +**
- **Medical History Taking**
  Assessment and documentation of current medical condition, past medical and family history
- **Physical Examination**
  Includes examination of heart, lungs and abdomen, and assessment of the body to detect for any abnormalities
- **Chest X-Ray**
  To detect for lung and heart diseases
- **Electrocardiogram (ECG)**
  Records the electrical activity of the heart. It can detect areas of ischaemia (muscle deprived of oxygen) and/or damaged tissue in the heart
- **Treadmill Stress Test**
  Helps to detect coronary artery disease and determine physical fitness level
- **Full Blood Count**
  Haematology screening to measure cell counts for red blood cells, white cells and platelets
- **Urea / Electrolyte and Creatinine (U/E/Cr)**
  Kidney function screening, which includes measurements of the levels of sodium, potassium, chloride, bicarbonate and creatinine in the blood
- **Lipids Profile**
  Measurement of total cholesterol, high-density lipoprotein (HDL) cholesterol, triglyceride and low-density lipoprotein (LDL) cholesterol levels in the blood
- **Liver Function Tests**
  Measurement of the blood levels of albumin, total protein, total bilirubin and liver enzymes such as, alkaline phosphatase, Alanine Transaminase (ALT) and Glutamic Pyruvic Transaminase (GPT)
- **Lipoprotein (a) [Lp (a)]**
  A marker for increase risk of heart disease
- **Uric Acid**
  Measurement of uric acid level. An elevated level may indicate presence of gout
- **Thyroxine Free Serum/ Thyroid Stimulating Hormone (Free T4/TSH)**
  Blood test to detect problems affecting the thyroid gland
- **Homocysteine**
  Measurement of the amount of homocysteine (an amino acid) in the blood, which is linked to increased risk for heart disease
- **C Reactive Protein**
  Specific protein test, which is a marker of inflammation and the risk of heart disease
- **Apolipoprotein A & B (Apo A & B)**
  A group of proteins found in blood and lymph that are combined with fats or other lipids such as cholesterol. Lipoproteins are important for the transport of lipids in the blood and lymph
- **Urine FEME**
  Microscopic urine examination for presence of albumin, blood and sugar
- **Medical Report / Counselling**
  Discussion of test results and appropriate health advice will be given to the individual.

**EXECUTIVE CARDIAC HEALTH SCREENING - $750 +**
- **Medical History Taking**
  Assessment and documentation of current medical condition, past medical history and family history
- **Physical Examination**
  Includes examination of heart, lungs and abdomen, and assessment of the body to detect for any abnormalities
- **Chest X-Ray**
  To detect for lung and heart diseases
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The National Heart Centre Cardiac Health Screening not only helps in the prevention and detection of heart disease, it also helps determine an individual’s health and fitness level. We adopt a proactive approach to health management; to identify cardiovascular health issues, thereby reducing the risks to future heart problems.

NHC’s patients benefit by having direct access to NHC’s panel of multi-disciplinary specialists and clinical support services. Furthermore, NHC is able to arrange for your cardiac health screening to be done by a cardiologist, upon request.

For further enquiries or to make an appointment, please call 6236 7438.

* Optional Calcium Scoring test can be done at an additional charge of $389
** Package excludes specialised investigations, home medication/drugs and supplies.
The American Heart Association Scientific Sessions 2005 was held at the Dallas Convention Center, Texas, USA, from 13-16 November 2005. National Heart Centre received top honours when one of its abstracts entitled 'Large Scale Expansion of Human Cardiomyocyte-Like Cells for Cell Therapy', was one of five poster finalists in the Basic Science category “Stem/Progenitor Cells in Cardiac Repair”.

The authors report that adult human bone marrow mesenchymal stem cells can be differentiated into cardiomyocyte-like cells with extensive myocardial characteristics. It is their objective to identify an appropriate extracellular matrix that would promote the large-scale expansion of the cardiac-like cells for use in cell transplantation therapy.

Mesenchymal stem cells were isolated from the sternum of 30 patients undergoing coronary artery bypass grafting. They were removed of ‘contaminating’ blood cells and induced to become cardiac-like cells with the use of a proprietary cardiomyocyte induction medium. The cardiac-like cells were then cultured on various extracellular matrices to identify which matrix was ideal for their proliferation.

Collagen V was the only one of 9 extracellular matrices tested to support the large-scale expansion of these cell types.

The authors also observed that Collagen I, the predominant form of collagen in the heart, did not support the cardiac-like nature of these cells. Collectively, these findings merit significance, as the high yield of cardiac-like cells would be potentially useful in cell-based therapies for cardiac patients.

Dr. Winston Shim, Staff Scientist at the National Heart Centre and Head of the Stem Cell Laboratory described the experience most succinctly, “All eyes will be on the research done at our Research Unit...” Indeed, the poster received centre stage in the poster sessions when distinguished scientists from well-established laboratories across the globe, were drawn to the research findings. The authors enjoyed a vibrant exchange of scientific concepts as colleagues and competitors alike, provided constructive feedback and shared their perspective on the science behind the research. There is pride in knowing that the presentation has passed the rigorous critique of distinguished clinicians and scientists within the field and voted a finalist in this very prestigious basic cardiovascular science meeting.

Ms. Genevieve Tan did us proud as the presenting author for the abstract. She is a graduate student at the National University of Singapore and is also a Research Officer at the National Heart Centre’s Research & Development Unit.
The project “To Reduce Length of Stay of Elective Patients,” submitted by the nursing team from Ward 44, clinched the runner-up position in the Technical Service Improvement category at the Asian Hospital Management Awards (AHMA) 2005.

AHMA, now in its fourth year, is an accepted hospital management awards programme for the Asia Pacific region. The awards recognise and honour healthcare institutions in Asia that carry out best practices in hospital management. The winners for 2005 were announced during the Gala Dinner Ceremonies on 30 September 2005 at the Prince Hotel in Kuala Lumpur, Malaysia.

Being selected as runner-up is recognition that our entry was among the best in the Technical Service Improvement category in the region.

Ward 44’s entry had previously won the Bronze Award at the National IQC Convention earlier in March 2005.

The National Heart Centre wishes to congratulate the team on their achievement.

Our nursing team from CTICU did us proud by clinching the Silver award at the National Innovation and Quality Circles (IQC) Convention held at Spring Singapore on 25 August 2005. Their project was on designing a Heart Hugger to provide support for obese post-cardiac surgical patients, to minimise the risks of sternal wound breakdown and pain.

The current Heart Hugger prescribed to patients is considered expensive at $120 each and each time the Heart Hugger needs to be purchased, an appointment has to be made between the patient’s relative and the vendor for payment.

The new Heart Hugger created by the CTICU team is readily available in-house and costs only $10.75 each. Most importantly, this new sternal gadget is more comfortable and user-friendly as compared to the older version.

The National Heart Centre wishes to congratulate the CTICU team on their accomplishment.
Through this regular monitoring of outpatients, clinicians can identify health trends early and institute early treatment to reduce/prevent hospitalisations and emergencies. The system also aids to refine outpatient’s medication dosage for disease management between medical appointments. Overall, depending on the health status of the patient, clinicians can be updated and provide timely intervention, instead of discovering patient’s health problems at the next medical appointment. The patient can rest in confidence that his condition is well monitored even when he is away from our healthcare facilities.

Telecare is also particularly useful for our overseas patients, and patients who travel frequently where scheduling regular physical review visits may be difficult. For the pilot trials, there are some overseas patients participating.

The project was sponsored by SingHealth’s Innovative Technology Application Group (ITAG) fund and developed in-house by ITAG/InfoTech staff. The ITAG fund is a SingHealth development fund through which clinicians can receive funding to collaborate with ITAG staff to develop and pilot innovative information technology applications in healthcare. This project is a fine example of collaborative teamwork between clinicians and IT staff in SingHealth to promote better patient care and clinical outcomes.
National Heart Centre Partners NTU to Facilitate Commercialisation of Biomedical Technology

Nanyang Technological University (NTU) and the National Heart Centre (NHC) have agreed to work on furthering research and development of cardiovascular technology, with the goal of turning such research into new and better biomedical devices that will improve patients’ lives.

Under the partnership, NTU School of Materials Science and Engineering (MSE) will develop biomedical technology and its related devices, on which NHC will then conduct clinical trials. Following successful trials, commercialisation of the devices is expected.

Professor Freddy Boey, Dean, NTU’s School of Materials Science and Engineering, said, “In Singapore, the biomedical sciences industry has been identified as a key growth engine for the economy. By offering combined R&D and clinical services, the two organisations could help attract international biomedical companies to Singapore and support the country’s push to be a biomedical hub.”

“By coupling NTU’s proven expertise in developing biomedical technology and devices, with NHC’s capabilities and facilities for conducting clinical trials, we are now able to offer the industry a partnership that facilitates the development of new products that will benefit patients.”

Associate Professor Koh Tian Hai, Medical Director, NHC, commented, “In the field of Cardiology, technology has begun to play an increasing role in many of the treatments we use today. Research Units such as our Research and Development Unit and the NTU’s School of MSE play pivotal roles in the synchrony and integration of biology, technology and most importantly information, for the rapid development of such technology for our patient’s benefit.”

He continued, “I am extremely pleased that such collaboration is thriving locally as this will only serve to promote the image of Singapore as a biomedical hub with a broad range of expertise, including developmental and translational cardiovascular research.”

The partnership between the two organisations was formalised on 19 September 2005 under a memorandum of understanding signed by Associate Professor Koh Tian Hai, Medical Director, NHC and Professor Freddy Boey, Dean, NTU’s School of Materials Science and Engineering.

79 Staff Bag EXSA Awards

79 staff from the various departments of National Heart Centre (NHC) were awarded the Excellent Service Award (EXSA) in 2005, taking home a total of 5 Star Awards, 31 Gold Awards and 43 Silver Awards under the Healthcare category.

Launched in 1994 by the Standards, Productivity and Innovation Board (SPRING Singapore), EXSA is a national award that recognises individuals who have delivered outstanding service. It seeks to develop service models for staff to emulate, create service champions and professionalise services.

The large number of recipients from NHC this year is a testament of our commitment to achieve service excellence, which helps to distinguish ourselves from the competition.

The editorial board would like to commend all winners on their achievements.
# National Heart Centre Medical Directory

## DEPARTMENT OF CARDIOLOGY

### Deputy Director & Senior Consultant

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### Senior Consultants

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## DEPARTMENT OF CARDIOTHORACIC SURGERY

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<td>Dr Tan Yong Seng</td>
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<td>Selena Chew</td>
<td>64367581</td>
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### Consultants

<table>
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<tr>
<th>Name</th>
<th>Specialty</th>
<th>Secretary</th>
<th>Contact No.</th>
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<tr>
<td>Dr Lim See Lim</td>
<td>Cardiac Surgery (Adult), Heart/Lung Transplant, Mechanical Heart Device</td>
<td>Clara Zhang</td>
<td>64367598</td>
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<tr>
<td>Dr Tan Teong Be</td>
<td>Cardiac Surgery (Adult), Heart/Lung Transplant, Mechanical Heart Device</td>
<td>Clara Zhang</td>
<td>64367598</td>
</tr>
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### Associate Consultants

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<th>Specialty</th>
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<tbody>
<tr>
<td>Dr Choo Tat Toong Victor</td>
<td>Cardiac Surgery (Adult)</td>
<td>Clara Zhang</td>
<td>64367598</td>
</tr>
<tr>
<td>Dr Lim Yong Phang</td>
<td>Cardiac Surgery (Adult and Paediatric)</td>
<td>Clara Zhang</td>
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