

# FOCUS

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# FOCUS

With our focus keenly placed on a clearly articulated vision, a well-defined mission and a set of deep-rooted core values, the **Health Sciences Authority** steadfastly continues to deliver on our commitments to our many stakeholders.

Lying at the heart of all we do is an unwavering focus on three priorities: achieving scientific excellence, promoting public health and safety, and driving efficiency and innovation. These comprise the very core of our endeavours in regulating health products, securing our nation's blood supply and serving the administration of justice through our capabilities in forensics and applied sciences. Our focused and disciplined approach is also positively expressed in the way we conduct ourselves and work with our customers, counterparts and community.

By staying true to the key tenets upon which our organisation was founded, we have grown from strength to strength. Today, we are better positioned than ever to meet the challenges of the future with renewed confidence and tenacity to look farther and aim higher. This firm focus will sustain our success as we advance as a leading innovative authority championing national health and safety.

## OUR VISION

To be the leading innovative authority protecting and advancing national health and safety

## OUR MISSION

- To wisely regulate health products
- To serve the administration of justice
- To secure the nation's blood supply
- To safeguard public health

## OUR CORE VALUES

- **Service to the Nation**  
We are part of the Singapore Public Service, committed to integrity, excellence and efficiency.
- **Passion for Excellence**  
We aim to be the best in all that we do.
- **Develop Our Community**  
We value our people and build trusted teams.
- **Inspire Trust**  
We act with credibility, professionalism and integrity, to instill public trust and confidence.
- **Live Innovation**  
We seek constantly to improve and transform.

### **A Statutory Board of the Ministry of Health**

The Singapore Public Service: Integrity, Service, Excellence

# OUR ACCOLADES

## ORGANISATIONAL EXCELLENCE

**The Public Service Milestone Award**  
*2010*

**Singapore Quality Class**  
*since 2009*

**People Developer Standard Certification**  
*since 2002*

**Singapore Innovation Class**  
*first public healthcare agency to be endorsed*  
*2003*

**Singapore H.E.A.L.T.H. Gold Award**  
*since 2008*

**Public Service Award for Organisational Excellence**  
*2006*

**Meritorious Defence Partner Award**  
*since 2005*

**Meritorious Home Team Partner Award**  
*since 2008*

**Community Chest Awards**  
*since 2003*

**Singapore Family Friendly Employer Award**  
*2004*

**ISO 9001:2000**  
Information Management Department  
Corporate Headquarters  
*2007*

# OUR ACCOLADES

## PROFESSIONAL EXCELLENCE

### HEALTH PRODUCTS REGULATION GROUP

#### **ISO 9001:2008**

Tobacco Regulation Unit  
*March 2010*

### BLOOD SERVICES GROUP

**American Society for Histocompatibility and Immunogenetics (ASHI)**  
*August 2008*

#### **AABB Accreditation**

*first national blood service in Asia to be accredited*  
*May 2006*

**Certified On-the-Job Training Centre**  
*December 2005*

**Regional Quality Management Project Training Centre of the Western Pacific for Transfusion Medicine**  
*since 2002*

**World Health Organization Collaborating Centre for Transfusion Medicine**  
*since 1992*

### APPLIED SCIENCES GROUP

#### Forensic Medicine Division

**National Association of Medical Examiners (NAME)**  
*first agency outside North America to be accredited*  
*September 2005*

**Commendation for Significant Contribution in Helping Singapore Overcome SARS**  
*March – May 2003*

**Accreditation of Laboratory for Pathology Training by The Royal College of Pathologists of Australasia**  
*since 1999*

**Forensic Science Division, Illicit Drugs & Toxicology Division  
and Biology Division**

**Excellence for Singapore Award**  
*1999*

**American Society of Crime Laboratory Directors /  
Laboratory Accreditation Board (ASCLD/LAB)**  
*since June 1996*

**Pharmaceutical Division and Food Safety Division**

**Public Service Award for Organisational Excellence**  
*July 2003*

**Singapore Quality Class**  
*since August 2002*

**ISO/IEC 17025 Accreditation under Singapore Accreditation Council  
– Singapore Laboratory Accreditation Scheme (SAC-SINGLAS)**  
*since 1997*

**Pharmaceutical Division**

**World Health Organization Collaborating Centre for  
Tobacco Testing and Research**  
*since June 2009*

**World Health Organization Prequalified Quality Control Laboratory**  
*since June 2009*

**EC-ASEAN Leading Country for Colorants and Tretinoin Analysis  
in Cosmetic Products**  
*since 2004*

**World Health Organization Collaborating Centre for  
Drug Quality Assurance**  
*since February 1993*

**Food Safety Division**

**EC-ASEAN Reference Laboratory for Mycotoxins Analysis**  
*since June 2004*

**World Health Organization Collaborating Centre for  
Food Contamination Monitoring**  
*since July 1992*

# CHAIRMAN'S FOREWORD

The Health Sciences Authority witnessed another eventful and fulfilling year in 2009.

Internally, we have transformed our organisation to be more effective, efficient and enterprise-oriented through a series of comprehensive process reviews that have led to structural changes. Externally, we have implemented a range of strategies which have enabled us to more productively deliver on our mission of safeguarding public health. Cumulatively, these strides forward put us in a better position to meet the expectations of our varied stakeholders.

We are now structured to make us a more integrated organisation to take advantage of synergies of expertise. We are more responsive to client needs whilst maintaining our role as the national guardian for health products safety. Enhancements have been constantly made to our frameworks and policies so that they are kept sufficiently robust yet flexible enough to meet the demands of our ever-changing operating environment. We are more efficient in our processes through bottom-up empowerment and leadership accountability.

We are actively seeking a higher ground for being a thought leader nationally and globally in regulatory strategies and policies. Our pipeline of research initiatives across our various expertise areas in transfusion medicine, the applied and regulatory sciences also offer great potential for more breakthrough solutions for us to work better and smarter. The newly formed HSA Academy has been established to coalesce our institutional efforts in strategic thinking and policy formation.

Through all these changes, we continue to strengthen our efforts to elevate professional competencies so that we execute our regulatory and scientific functions with the most advanced technologies and approaches.

**“To maintain our momentum, we will move forward with boldness to take greater and informed strides; and be more innovative, entrepreneurial and agile as we continue to serve our nation.”**

Professor Edison Liu



Our focus to be a developer does not stop at our own shores. Recognised for our world-class capabilities, HSA is now closely affiliated with, and many of our competencies are accredited by, some of the best institutions in the world. We have been the organiser, active facilitator, and contributor on many established platforms and fora – both at home and on the international stage. This participation has given us many opportunities to be a leading voice in global developments in health products regulation, bloodbanking and transfusion medicine, forensics and analytical sciences.

All this would not have been possible without a concerted focus in applying the highest scientific, professional and ethical standards in everything we do. Focus, as this ninth Annual Report is aptly titled, is indeed an indispensable ingredient of our success.

HSA will be celebrating our 10<sup>th</sup> year as a guardian and champion for national health and safety in 2011. Because the stakes are so high in undertaking these very important roles, we cannot afford to let the focus on our vision waver. To maintain our momentum, we will move forward with boldness to take greater and informed strides; and be more innovative, entrepreneurial and agile as we continue to serve our nation.

The leadership and staff of the HSA have been remarkable in their energy and commitment to the organisation and to their mission for the nation. I am most privileged to be a part of this community.

A handwritten signature in black ink, appearing to read "Edison Li". The signature is fluid and cursive, with a large, stylized "L" at the end.

**Professor Edison Liu**  
Chairman

# CEO'S MESSAGE

A review of our activities and achievements in 2009 provides a meaningful round-up of our organisation's development and transformation journey during the first decade of the 21<sup>st</sup> Century. But it also primes us for the launch of the next phase of HSA's development.

Our focus on science-led and science-driven excellence and innovation has helped ensure that all our contributions over the past year reflect our commitment to our vision of protecting and advancing national health and safety.

We made headway in our efforts to establish a robust regulatory framework for emerging and existing health product categories with the phased rollout of the Health Products Act. Keeping in close touch with businesses and our service partners allowed us to improve our service management orientation and create better value for our stakeholders. To provide greater assurance to consumers, our vigilance and enforcement efforts remain unabated as we sought to promptly identify and mitigate risks associated with the use of potentially harmful products. A major business process reengineering exercise resulted in significant process and organisational changes to better position our regulatory arm for the challenges ahead.

Our aspirations in achieving optimal management of our national blood supply were taken to new levels of excellence during the year. New protocols were introduced to further enhance the safety of our blood supply and process reviews were undertaken to improve efficiency. We were also able to offer critical laboratory support to hospitals in new areas, enabling clinicians to provide patients with new life-saving treatments. Another development was the expansion of our cell therapy facility. This boosts our capacity to carry out more clinical projects that can potentially yield groundbreaking treatments for cancers and immune disorders. To prepare operationally for the future, we have started exploring establishing fixed satellite blood collection sites outside of our main site.

The past year also saw the strengthening of our national regulatory laboratory and forensic capabilities through the use of cutting-edge technology and research. Many of these outcomes include interdisciplinary perspectives, promising greater accuracy, rigour and reliability to our clients. The Chemical Metrology Laboratory became fully operational during the year as well, enabling us to effectively pioneer this critical new field in Singapore. We have also been actively addressing resource and process issues to better respond to stakeholder requirements and feedback.

HSA continued to grow in international stature and reputation. We are now a part of an extensive and expanding global network comprising established and renowned regulatory agencies, scientific bodies and professional organisations that share our mission and value our expertise. The newly formed HSA Academy will be a key enabler in advancing our thought leadership and professional and scientific innovation. It will spearhead the creation of new networking platforms, prompt exploration of innovative approaches and frameworks in our areas of regulatory and scientific expertise, and also cultivate a more vibrant research culture within HSA.

**“HSA is now a more effective and efficient organisation – one that is successfully and sustainably able to deal with change, deserving of the trust that our stakeholders place in us.”**

Dr John Lim



Since 2006, we have embarked on a series of organisational initiatives to streamline and integrate our structures and procedures. These transformational review projects have been aimed at strengthening our organisation and systems to enhance efficiencies, ensure sound governance and better serve our stakeholders. We were gratified that these contributed to HSA’s integrated assessment and successful recognition as a Singapore Quality Class, People Developer and Innovation Class organisation.

The final steps in these process reviews will be completed this year. Our focus will then be on implementing the recommendations, consolidating the organisation and advancing in our mission. HSA is now a more effective and efficient organisation – one that is successfully and sustainably able to deal with change, deserving of the trust that our stakeholders place in us.

Our world today is more volatile and unpredictable than it was when HSA was formed. We are operating in an increasingly intertwined complex environment. We must therefore be able to nimbly manoeuvre changes and challenges with new models and mindsets, and continually be prepared for the unexpected. While doing so, we embrace our core values and stay focused on living out our responsibilities as a protector of national health and safety.

HSA will celebrate its 10<sup>th</sup> Anniversary in 2011. This milestone carries with it a great sense of opportunity and optimism as we survey familiar as well as new frontiers. We will continue to focus on strengthening our fundamentals through synergistic innovation, and exploring newer and more creative ways to work across our professional groups and with our partners. This will enable the whole to achieve far more than our individual parts can in themselves.

We look forward to ongoing guidance and good counsel from our parent Ministry and the HSA Board, increasing and fruitful collaborations with our counterparts and industry, and greater scaling of scientific and professional heights by all HSAians. The future beckons and it looks bright.

A handwritten signature in black ink, appearing to be 'John Lim', written over a light blue horizontal line.

**Dr John Lim**  
CEO

# HSA BOARD

AS AT AUGUST 2010



**Chairman**

01

**Professor Edison Liu**

Executive Director  
Genome Institute of Singapore

**Board Members**

02

**Professor Alastair Campbell**

Director  
Centre for Biomedical Ethics  
Yong Loo Lin School of Medicine  
National University of Singapore

03

**Dr Chong Yoke Sin**

Chief Executive Officer  
Integrated Health Information  
Systems Pte Ltd

04

**Dr Lee Chien Earn**

Deputy Director of Medical Services  
(Healthcare Performance Group)  
Ministry of Health

05

**Dr Jennifer Lee**

Senior Consultant  
Primary & Community Care Division  
Ministry of Health

06

**Mdm Liew Wei Li**

Principal  
Xinmin Secondary School

07

**Dr John Lim**

Chief Executive Officer  
Health Sciences Authority

08

**Mr Clifton Tan**

Director of Finance & Administration  
Estee Lauder Cosmetics Pte Ltd

09

**Professor Walter Tan**

Medical Director  
Raffles Hospital

10

**Ms Serene Wee**

Chief Executive  
Singapore Academy of Law



# HSA BOARD COMMITTEES

AS AT AUGUST 2010

## Audit Committee

- |                        |          |
|------------------------|----------|
| • Ms Serene Wee        | Chairman |
| • Dr Lee Chien Earn    | Member   |
| • Professor Walter Tan | Member   |
| • Mr Clifton Tan       | Member   |

## Staff Establishment Committee

- |                               |          |
|-------------------------------|----------|
| • Dr Jennifer Lee             | Chairman |
| • Professor Alastair Campbell | Member   |
| • Mdm Liew Wei Li             | Member   |

## Finance Committee

- |                     |          |
|---------------------|----------|
| • Dr Chong Yoke Sin | Chairman |
| • Dr Jennifer Lee   | Member   |
| • Dr Lee Chien Earn | Member   |

## BOARD UPDATES

The HSA Board was re-appointed by the Minister for Health for a period of three years with effect from 1 April 2010.

We extend a warm welcome to our new Board Member, Mr Clifton Tan. Mr Tan is currently the Director of Finance and Administration at Estee Lauder Cosmetics Pte Ltd.

We look forward to the continued guidance and support of our Board, as we continue to grow as an organisation in our pursuit to be the leading innovative authority protecting and advancing national health and safety.

# HSA EXECUTIVE COMMITTEE (EXCO)

AS AT AUGUST 2010



01

**Dr John Lim**

- Chief Executive Officer
- Group Director (covering) Health Products Regulation Group

02

**Dr Diana Teo**

- Group Director Blood Services Group
- Chairman Professional Board

03

**Dr Paul Chui**

- Group Director Applied Sciences Group
- Division Director Forensic Medicine Division Applied Sciences Group

04

**Dr Christina Lim**

- Deputy Group Director Health Products Regulation Group

05

**Dr Lam Kian Ming**

- Division Director Corporate Development & Operations Division Corporate Headquarters
- Director HSA Academy Corporate Headquarters

06

**Ms Doreen Loh**

- Division Director Human Capital & Legal Division Corporate Headquarters

07

**Ms Maureen Goh**

- Quality Service Manager
- Director Quality Management Department Corporate Headquarters

# CORPORATE GOVERNANCE STATEMENT

The HSA Board and Senior Management Team are committed to maintain a high standard of corporate governance and advocate the recommendations set out by the Code of Corporate Governance. The Board believes that good governance is essential in enhancing corporate performance and accountability, ensuring transparency and protecting stakeholders' interests at all times. Our stakeholders include the Ministry of Health, Ministry of Finance, other government agencies, the healthcare industry, our clients, our suppliers and the public at large.

This statement outlines the main corporate governance practices of the organisation that are in place.

## **The Board**

The Board comprises the Chairman and its members, who are appointed by the Minister for Health for a 3-year term. It aims to meet every two months to set strategic directions and formulate policies, assuming the role of monitoring and reviewing of policies leading to HSA's improved management and performance.

## **Board Members' Remuneration**

HSA follows the Government's Directorship and Consultancy Appointments Council (DCAC) guidelines in determining the remuneration of the Board Members.

## **Notice and Declaration of Directorships and Interest in Shares and Debentures**

Board Members are required to declare their directorships in various organisations and their interests in shares and debentures in various corporations. Board Members deemed to be interested in any such transactions made during the meetings are reminded and required to declare their interest; they are to refrain from any deliberation made when such an interest has been declared.

## **Accountability and Audit**

HSA's Senior Management Team is accountable to the Board. In return, the Board is accountable to the Minister for Health. To allow the Board to discharge their duties adequately, Senior Management and staff are required to provide periodic updates and answer any queries that the Board may have on the operations and planning of the organisation.

For Accountability purposes, the Board has established the following sub-committees:

**(a) The Audit Committee**

This Committee assists the Board to review and assess the adequacy of internal accounting controls and financial reporting controls. It meets at least twice a year with the Management and auditors to determine the scope of the external and internal audit and to review the findings of its appointed auditors.

**(b) The Staff Establishment Committee**

The Staff Establishment Committee assists the Board in reviewing the adequacy of manpower numbers and budgets to meet operational needs and major Human Resource Policies regarding compensation. It oversees some staff matters such as the appointment of senior management positions.

**(c) The Finance Committee**

This Committee assists the Board in ensuring that financial resources are managed and utilised prudently and in the most effective and efficient manner, contributing towards the organisation's overall mission.

**Communication with Stakeholders**

The Professional Groups conduct regular consultations with the industry and their clients, seeking to keep them informed of new directions and regulations, and to listen to their concerns. HSA publishes an Annual Report to meet statutory requirements and to provide information to our stakeholders.

In addition, regular updates on matters of interest to our stakeholders are posted on our Internet website. Our Quality Service Manager promptly handles all feedback and queries received from interested parties.

**Code of Business Conduct**

The Board, officers and employees are required to observe and maintain high standards of integrity, and are in compliance with the law and government regulations, and organisation policies.

**Risk Management**

The Management is continually reviewing and improving the business and operational activities to identify areas of significant business risks as well as appropriate measures to control and mitigate these risks. The Management also reviews all significant control policies and procedures and highlights all significant matters to the Board and the Audit Committee.

# ORGANISATION CHART

AS AT AUGUST 2010

**HSA Board**

**Chief Executive Officer**

## Corporate Headquarters

### Divisions

- Corporate Development & Operations
- Human Capital & Legal

### Departments

- Corporate Communications
- Quality Management
- Professional Quality
- Strategy & Business Transformation

### HSA Academy

## Health Products Regulation Group

### Divisions

- Pre-marketing
- Vigilance, Compliance & Enforcement
- Audit & Licensing

## Blood Services Group

### Divisions

- Blood Supply
- Patient Services

## Applied Sciences Group

### Divisions

- Forensic Medicine
- Forensic Science
- Illicit Drugs & Toxicology
- Biology\*
- Pharmaceutical
- Food Safety
- Chemical Metrology

\* From 16 July 2010

# PRINCIPAL OFFICERS

AS AT AUGUST 2010

## CORPORATE HEADQUARTERS

Chief Executive Officer  
**Dr John Lim**

## CORPORATE DEVELOPMENT & OPERATIONS DIVISION

Division Director  
**Dr Lam Kian Ming**

## FINANCE

Director  
**Ms Grace Chan**

## INFORMATION MANAGEMENT

Director  
**Chan Chin Wai**

Deputy Director  
**Santhanam Srinivasan**

## FACILITIES MANAGEMENT

Director  
**Chua Hong Tong**

Deputy Director  
**Ms Lynette Goh**

## HUMAN CAPITAL & LEGAL DIVISION

Division Director  
**Ms Doreen Loh**

## HUMAN CAPITAL MANAGEMENT

Director  
**Ang Hock Kheng**

## LEGAL

Head  
**Ms Linda Chen**

## CORPORATE COMMUNICATIONS DEPARTMENT

Director (covering)  
**Dr Lam Kian Ming**

Director (from 26 August 2010)  
**Adrian Chia**

## QUALITY MANAGEMENT DEPARTMENT

Director / Quality Service Manager (till 1 August 2010)  
**Ms Maureen Goh**

Quality Service Manager (from 2 August 2010)  
**Professor Bosco Chen Bloodworth**

## PROFESSIONAL QUALITY / WORKPLACE SAFETY AND HEALTH DEPARTMENT

Director  
**Professor Bosco Chen Bloodworth**

## HSA ACADEMY

Director  
**Dr Lam Kian Ming**

## HEALTH PRODUCTS REGULATION GROUP

Group Director (covering)  
**Dr John Lim**

Deputy Group Director  
**Dr Christina Lim**

Senior Advisor  
Health Products Regulation Group  
**Yee Shen Kuan**

Advisor  
International Collaboration  
**Mrs Marie Tham**

Advisor  
Administration and Pharmacoeconomics & Drugs Utilisation Unit  
**Mdm Suwarin Chaturapit**

Advisor  
Complementary Health Products  
**Ms Chu Swee Seng**

## GROUP DIRECTOR'S OFFICE

Director  
Policy, Legislation & Operations  
**Dr Daniel Tan**

Director  
Project Management Office  
**Tan Yong Kiang**

Deputy Director  
Policy, Legislation & Operations & Project Management  
**Ms Lee Hui Keng**

Deputy Director  
Service Management,  
International Collaboration & Policy  
**Ms See Yen Theng**

## PRE-MARKETING DIVISION

Division Director (covering)  
**Dr Christina Lim**

## PHARMACEUTICALS & BIOLOGICS BRANCH

Acting Director  
**Dr Lou Huei-Xin**

## GENERIC & BIOSIMILARS BRANCH

Acting Director  
**Dr Sannie Chong**

Senior Group Regulatory Consultant  
**Tam Kai Tong**

## MEDICAL DEVICE BRANCH

Director  
**Ms Joanna Koh**

## CLINICAL TRIALS BRANCH

Acting Director  
**Foo Yang Tong**

## COMPLEMENTARY HEALTH PRODUCTS BRANCH

Acting Director  
**Ms Lee Puey Ngee**

Deputy Director  
Chinese Proprietary Medicines Unit  
**Victor Wong**

## AUDIT & LICENSING DIVISION

Division Director & Director,  
Quality Assurance Office  
**Sia Chong Hock**

## AUDIT BRANCH

Acting Director  
**Ms Jessica Teo**

Deputy Director  
Good Manufacturing Practice & Licensing Unit  
**Ng Liong Thiam**

Deputy Director  
Certification Unit  
**Dr Lai Weng Fai**

Deputy Director  
Overseas Audit Unit  
**Boon Meow Hoe**

### **VIGILANCE, COMPLIANCE & ENFORCEMENT DIVISION**

Division Director  
**Ms Chan Cheng Leng**

#### **VIGILANCE BRANCH**

Acting Director  
**Ms Dorothy Toh**

#### **COMPLIANCE BRANCH**

Director  
**Ms Joanna Koh**

#### **ENFORCEMENT BRANCH**

Acting Director  
**Ms Ruth Lee**

Deputy Director  
Operations Support Unit  
**Ms Ling Boon Lee**

Deputy Director  
Investigation & Operations  
**R Sivalingam**

Deputy Director  
Investigation  
**Kong Leong Heng**

Deputy Director  
Tobacco Regulation Unit  
**Norman Chong**

### **BLOOD SERVICES GROUP**

Group Director  
**Dr Diana Teo**

#### **GROUP DIRECTOR'S OFFICE**

Director  
Blood Service Operations  
**Ms Koh Geok Tin**

Senior Manager  
Capability Development &  
International Collaboration  
**Ms Leou Kwee Kim**

Senior Manager  
Quality  
**Ms J Thilakavathi**

### **BLOOD SUPPLY DIVISION**

Acting Division Director  
**Dr Tan Hwee Huang**

Acting Branch Director  
Blood Resources  
**Ms Toh Ching Lian**

Laboratory Director  
Blood Supply Management  
**Ms Sally Lam**

Senior Laboratory Manager  
Blood Supply Management  
**Ng Kok Quan**

### **PATIENT SERVICES DIVISION**

Division Director  
**Dr Mickey Koh**

Laboratory Director  
Immunohaematology &  
Cell Therapy Support  
**Dr Marieta Chan**

Senior Laboratory Manager  
Immunohaematology &  
Cell Therapy Support  
**Ms Phang Chew Yen**

### **APPLIED SCIENCES GROUP**

Group Director  
**Dr Paul Chui**

#### **GROUP DIRECTOR'S OFFICE**

Senior Scientific Advisor  
**Professor Bosco Chen Bloodworth**

### **FORENSIC MEDICINE DIVISION**

Division Director  
**Dr Paul Chui**

#### **PROFESSIONAL PRACTICE BRANCH**

Branch Director  
**A/Professor Gilbert Lau**

#### **FORENSIC MEDICINE OPERATIONS BRANCH**

1 Branch Director  
**Dr Cuthbert Teo**

2 Branch Director  
**Dr George Paul**

### **FORENSIC SCIENCE DIVISION**

Division Director  
**Dr Michael Tay**

Laboratory Director  
Forensic Chemistry &  
Physics Laboratory  
**Ms Lim Chin Chin**

### **ILLICIT DRUGS & TOXICOLOGY DIVISION**

Division Director & 1 Director,  
Analytical Toxicology Laboratory  
**Dr Lui Chi Pang**

Laboratory Director  
Illicit Drugs Laboratory  
**Dr Angeline Yap**

2 Director  
Analytical Toxicology Laboratory  
**Dr Yao Yi Ju**

### **BIOLOGY DIVISION (from 16 July 2010)**

Division Director & Laboratory Director,  
DNA Database Laboratory  
**Mrs Tan Wai Fun**

Laboratory Director  
DNA Profiling Laboratory  
**A/Professor Christopher Syn**

### **PHARMACEUTICAL DIVISION**

Division Director & Laboratory Director,  
Pharmaceutical Laboratory  
**Ms Low Min Yong**

Laboratory Director  
Cosmetics Laboratory and  
Cigarette Testing Laboratory  
**Ms Cheah Nuan Ping**

### **FOOD SAFETY DIVISION**

Division Director & Laboratory Director,  
Food Safety Laboratory  
**Ms Joanne Chan**

### **CHEMICAL METROLOGY DIVISION**

Division Director & Laboratory Director,  
Chemical Metrology Laboratory  
**Dr Lee Tong Kooi**

ADVANTAGE  
ASSURANCE  
ASPIRATION  
ACCURACY

RATION ADVANTAGE  
LIBRARY ASPIRATION  
ACCURACY

ADVANTAGE  
**ADVANTAGE**  
ADVANTAGE



# GE

## CORPORATE HEADQUARTERS

HSA's Corporate Headquarters (HQ) provides the leadership, support and governance to enable our organisation to succeed as a world-class thought leader and torchbearer for public health and safety.

This involves creating a workplace where systems and processes are highly efficient, integrated and synergised, and where all staff members can maximise their potential. We coordinate, consolidate and cultivate the capabilities and expertise across HSA by providing strategic direction and valuable support to the professional groups as they continue to fulfill their core scientific and regulatory functions. This creates a conducive culture and invigorating environment that fuels innovation, values partnerships and celebrates excellence.

Through this, HSA and HSAians are empowered to explore new horizons as we deliver on our commitments and mission.



## REVITALISED AND READY

The Corporate HQ conducted our Business Process Reengineering (BPR) exercise from mid October 2009 to May 2010. These structural changes will enable Corporate HQ to better fulfill our service, leadership and governance roles, add greater value to the interfaces with our professional groups, and drive synergies in a more innovative manner across the whole of HSA. The BPR will also introduce tangible and practical solutions that will improve the effectiveness and efficiency in the way we work and serve our customers.

We are now focusing on consolidating, implementing and following through on the various findings and recommendations arising from the BPR project. To enhance organisational synergy and teamwork, colleagues from the professional groups will also be involved in this phase.

## COMING TOGETHER TO STAY PREPARED

The outbreak of Influenza A (H1N1-2009) in late April 2009 presented us with a new challenge in fulfilling our fundamental mission of safeguarding public health.

For quick decision making and coordination, we immediately convened a Crisis Core Group, chaired by our CEO, and a wider Operations Group comprising colleagues from the professional groups and functional departments.

A host of precautionary measures were initiated across the organisation to protect the safety of all visitors and HSAians, while ensuring minimal disruptions to our operations and customer service. These were adjusted accordingly as more knowledge on the severity of the virus became available.

While the virus has so far proven to be less virulent than originally feared, we are still very mindful of the need to remain vigilant at all times. Our experience with the H1N1 episode has allowed us to test our crisis and continuity plans, and improve our processes so that we can ramp up again quickly should a need arise.

## BEING EXCELLENT THE HSA WAY

HSAians celebrated our achievement of the 3-in-1 Integrated Assessment Certification [Singapore Quality Class (SQC), People Developer and Singapore Innovation Class] in 2009. We were heartened to receive the Public Service Milestone Award more recently in May 2010. This award recognises public agencies that have achieved business excellence standards and have met the qualifying criteria of SQC and 2 Class-level standards. The conferment of these national awards not only provides testament to our approach and commitment in driving organisational excellence and innovation, but also encourages us to strive for even better performance going forward.

### Exceptional Service for All

With a comprehensive Service Excellence Framework already developed and being rolled out progressively, we are now better positioned to deliver the outcomes our customers are looking for. This framework focuses on the key factors in driving service competency and culture, and sets forth the foundation blocks in building strong customer relationships and enhancing customer satisfaction. Our service training curriculum has been customised for colleagues across our professional groups. This will equip them with skills to meet the unique needs of their respective customers.

To reinforce the customer service culture at HSA, we held our very first Customer Service Day in February 2010. Through his inimitable wit and humour, local celebrity Hossan Leong provided tips on how we can all play a part in delighting our customers. In the spirit of recognising and rewarding excellent service, we saluted 19 of our very own service stars at the HSA Outstanding Service to Customers Awards.

But it was not just internal recognition that our service stars received during the year. Several of them were also given the thumbs-up for their stellar service at the national level. Four HSAians were awarded the Excellence Service Award (EXSA) in 2009 for their exemplary contributions and commitment to exceptional service. Doing HSA very proud were Gold award winners Enrolled Nurse Ms Candy Galang and Assistant Regulatory Executive Mr Tan Eng Kiat, as well as Senior Forensic Scientists Ms Chia Poh Ling and Ms Vicky Chow who clinched the Silver awards. Mr Tan also received the PS21 Star Service Award at the Excellence in Public Service Awards ceremony in May 2010.

## MAKING IT WORK BETTER

Our latest IT Master Plan which allows us to continually realign our infocomm needs and projects to support existing and new business strategies was approved in May 2009. One of the key initiatives under this plan is the Server Rooms Consolidation & Technology Transformation (SCOTT) project. It will build an environmentally-friendly and resilient data centre as well as Gigabit Ethernet network infrastructure that will promote cost and operating efficiencies.

The Standard ICT Operating Environment (SOEasy) began its rollout across the organisation during the year. This government-wide initiative standardises and consolidates all desktops, messaging and online collaborative tools and network environments across public agencies. It is intended to reduce the time needed to deploy new information and communication technology services (ICT) and improve our ability to respond to ICT security threats. SOEasy will be progressively implemented across HSA in phases, and all existing IT systems will be upgraded accordingly, to ensure compatibility with the new environment.

We also successfully launched CREST (Common REsource SysTem), in collaboration with four other government agencies. It is an integrated system covering end-to-end processes to support outcome-driven human resource, finance and administration policies.



New applications were also adopted and integrated to contribute to better customer service delivery standards and strengthen our public communications channels. We enhanced and upgraded our online Pharmaceutical Regulatory Information System (PRISM), to keep pace with our new regulatory frameworks for certain product groups and increased usage.

We also launched an illegal health products database on our website as part of our public education efforts. This is a search engine developed in-house that aims to create greater awareness amongst consumers on the various types of illegal health products that have been identified locally.

Together with Ministry of Health Holdings, we began work on a new Unique Health Product Identifier (UHPI) System which aims to develop and design a code that will be used at the national level to uniquely identify a drug or medical device. The project will potentially bring wide-reaching benefits across the healthcare sector. It will enable HSA to track regulatory processes more accurately, facilitate easier monitoring of adverse drug reactions and enable faster and targeted product recalls. A common tag can also help healthcare institutions promote safer drug prescription and facilitate better inventory control. From a national perspective, a single identifier will support comprehensive national pharmaco-economic studies and studies on drug prescription and usage patterns to fine-tune healthcare policies.

Our excellence in IT management was recognised externally too. The Mortuary@HSA's Forensic Integrated Operations Network Applications (FIONA) system was a finalist at the MIS Asia IT Excellence Awards 2009 under the Best Business Enabler category. The annual awards recognise the original and creative use of technology to help organisations attain their business goals.

## REVIVING UP OUR INNOVATION ENGINE

At HSA, we place great importance in fostering and harnessing innovation in a synergistic manner. This is why we are constantly pursuing ways to translate the diversity of expertise and capabilities within our organisation into new projects, programmes and policies that will put us in an even stronger position to move ahead.

The HSA Innovation Day, themed "Innovation through Collaboration and Synergy", was held in September 2009. The purpose of the event was to help HSAians better appreciate their personal and collective strengths and to build value innovation through sharing, team learning and partnerships. Highlights of the day included talks, videos and an exhibition showcasing how value-adding suggestions and innovative projects have helped us work smarter. An awards ceremony was also organised to recognise individuals who actively contributed fresh suggestions during the year. Teams whose contributions made a significant impact to our corporate objectives and our community also received awards.

A pilot run of the Appreciative Inquiry Approach to Innovation was introduced during the year. Through this, HSAians will learn to view innovation not merely from a problem solving angle but also be equipped with the right skills to uncover opportunities and reinvent ourselves as we move ahead together as an organisation.

## OUR PEOPLE, OUR GREATEST ASSET

Being a HSAian has always been about working in a stimulating and challenging, yet supportive and caring environment. Our people practices are designed around attracting and selecting the best talent. These are in turn complemented by the talent management and succession planning frameworks that are being defined and enhanced to develop and motivate our staff to achieve their potential and aspirations. We are a learning organisation empowered to build a competent, resilient and engaged workforce.

” We are a learning organisation empowered to build a competent, resilient and engaged workforce. “

#### **Developing a Dynamic Team**

As a People Developer organisation, nurturing our talent ranks highly in our list of priorities. HSAians are given ample opportunity for knowledge and skills enhancement through a series of comprehensive training and development programmes. These include in-house developed programmes, customised external training courses, overseas study trips and scientific journal clubs.

Several onsite training initiatives were cancelled in light of the H1N1 outbreak, so e-learning programmes were organised to ensure the continuous transition of staff development. These offered training in soft skills (e.g., customer service and financial management), business process programmes and IT courses.

The HSA Professional Board, established in January 2009 under the chairmanship of Dr Diana Teo, Group Director for Blood Services, made good progress in its role to drive excellence in professional staff development.

In addition to mapping the development paths for our professional schemes of service, the Professional Board has drawn up a Code of Professional Conduct to commit all our professional staff to the highest standards of ethical conduct. This Code of Conduct, which flows from our vision, mission and core values, will be embedded in our corporate culture which will in turn help to further strengthen our good corporate governance practices.

#### **All Systems Go!**

With the new CREST system, our Finance and Human Resource systems are now better integrated, allowing us to achieve greater productivity and operational efficiency across HSA. CREST's self-service features enable us to enjoy easy access to personal salary information and conveniently track our claims reimbursements, leave applications and training records.



#### **Defining the HSA Difference**

Our unique perspectives and diverse experiences are united through our corporate core values. They enable us to have a singular focus and shared passion by influencing and reinforcing not just our work principles, but also the work environment and culture we seek to offer every HSAian.

A series of experiential workshops were organised to encourage us to reflect on what our core values meant to us. Many colleagues found that these values resonated with us deeply as individuals and as a team – guiding us in our decisions and actions, challenging us to always aim higher and inspiring us to live up to the standards we have set ourselves. We are also heartened to learn that a recent Organisation Capability Survey showed that HSAians felt and shared a strong sense of common destiny. Many recognised this as an important factor contributing to the organisation's performance.

We introduced a Revised Code of Business Conduct in early 2010. This set of shared principles encourages us to live out our core values, and shapes the way we conduct ourselves and our business.



### **Building a Caring Community**

Apart from programmes to help our staff develop in their professional capacities, we also provided resources to help them succeed personally. A Parental/Elder Care leave benefit was initiated to support colleagues who needed time away from work to take their elderly loved ones for medical consultations.

Testament to the close working relationship between our management and staff union to ensure a conducive working environment so all HSAians can give of their best at work, a new collective agreement was signed between our leadership and representatives from the Amalgamated Union of Statutory Board Employees on 1 November 2009.

We believe that HSA work experience should create fulfilment that goes beyond just meeting the most challenging work targets. Many exciting events packed our recreational calendar during the year, to energise and cater to HSAians with their many different interests. These activities included invigorating sports workouts, art and design classes, lifestyle and wellness workshops and also bread and pizza making sessions. We also had a wonderful time of fellowship and recharging at in-house parties to celebrate special occasions such as our anniversary, the New Year and National Day.

### **FOSTERING SAFETY AND HEALTH AT WORK**

As a champion for public health and safety, HSA is also committed to protecting the well-being of our staff members. During the year, we introduced several practical measures to emphasise the importance of personal and professional responsibility in making HSA a safe and healthy workplace.

To ensure that our Workplace Safety and Health (WSH) management system remains relevant with the current legislation and industry practices, we developed a new centralised platform to track and surface any non-conformances to the management. This unbiased and objective reporting system on WSH will further improve safety and health standards across the organisation.

We also developed a Centralised WSH Risk Management model in the course of the year. Previously, WSH-related risks were identified and managed at the individual group and division level. This new improved model provides a more comprehensive and holistic understanding of all significant WSH hazards within the organisation and their mitigating measures, and thus contributes to the building of a stronger safety culture.

At the national level, we actively contributed as members of the Workplace Safety and Health Council's Healthcare (Practices) Committee. The Council, which comprises industry practitioners, aims to provide guidance for companies and organisations to comply with the new national workplace safety and health framework developed by the Ministry of Manpower (MOM). We assisted in the development and revision of the Workplace Safety and Health Guidelines (Healthcare), and through these efforts facilitated the implementation of good safety measures across the healthcare sector.

A key priority in the year ahead is to propose refinements to our WSH Management System based on the Bizsafe standards set by MOM. This will be implemented across the organisation and will allow us to benchmark ourselves more effectively against industry best practices. Work is also underway to develop a new liquid biowaste treatment system that meets the requirements of our professional groups. When put in place, this environmentally friendly initiative will streamline the biowaste treatment process and also reduce costs.

## **DOING GOOD – AND DOING IT WELL!**

While we work to protect and promote public health and safety, we also strive to go beyond our day to day business to give back to the community. Our Corporate Social Responsibility framework, called CARE (Community Action, Responsible for our Environment), encourages efforts and participation in three main areas: staff volunteerism, preservation of our environment and cultivating a community-caring culture.

In 2009, HSAians gave generously to various causes. We supported the Singapore Red Cross in three blood donation drives and on its Flag Day, raised funds through pledge card collections for the Handicaps Welfare Association and organised a jumble sale with proceeds going to the Lions Befrienders. We also continued to do our bit for the environment through our daily recycling and electricity conservation practices, as well as a beach clean-up initiative.





## OUR PARTNERSHIP WITH THE PUBLIC

Our partners in the community and media play a critical role in supporting us in our mission. During the year, we continued to engage consumers by providing prompt, straightforward and authoritative information on safety concerns relating to specific health products through news releases, alerts and advisories. We also worked closely with our media partners to disseminate details on illegal products, recalls as well as tips on how they can use health products responsibly.

Our other expertise areas in blood services and applied sciences enjoyed positive media coverage as well. These included stories on the behind-the-scenes efforts in ensuring the safest possible blood supply for the nation, as well as articles on our cutting-edge capabilities in the emerging field of cell therapy to develop new treatments. The involvement of our forensic professionals in providing expert views to support investigations in several prominent cases was also reported. These news features helped to better explain our work to the public, and the relevance of our role as a trusted and responsive authority.

## THE LAUNCH OF A NEW CHAPTER

2009 saw the establishment of the HSA Academy, a set-up poised to spur our next phase of growth and propel us to be a centre of excellence in the field of biomedical sciences.

The Academy will add value to HSA in several important areas. By engaging leading experts and key stakeholders through think tank sessions, we aim to build thought leadership in our various fields of expertise. This will enable us to generate potential solutions to some of the most pressing issues our professional groups face, influence international thinking and guidelines, and galvanise our international reputation.

In addition, the new set-up will look into sharpening synergies across HSA to facilitate better utilisation of resources, encourage sharing of best practices, and promote knowledge management. Collectively, these roles will drive us forward in our mission and catalyse our efforts towards being the organisation we are striving to become.

### Making Good Progress

The HSA Academy has already established several key frameworks and processes since its inception. We developed a framework that includes ethics oversight of research activities. Having a Memorandum of Understanding with the Domain Specific Review Board of the National Healthcare Group, ethical oversight of human biomedical research has been enhanced. An internal process is being defined to better track, manage and monitor the status of research projects within the organisation, and to oversee the administration of funding sources.

Working closely with the Vigilance Branch of our Health Products Regulation Group, we presented two key training activities during the year. The first was an 11-series pharmacogenomics course for our colleagues to better understand the application of genetic and genomic knowledge to improve regulatory decisions on drug efficacy and safety. This was followed by a basic pharmacovigilance training programme for both internal and regional regulatory professionals in May 2010. The event, which was organised in partnership with the World Health Organization (WHO) and the Uppsala Monitoring Centre, was held in Singapore for the first time.

With inputs from our Blood Services Group colleagues, we completed a compilation of the presentations made by experts during the Singapore-WHO workshops on the Management of National Blood Programmes which were held over three years. This document, to be published by the WHO, will serve as a useful reference tool for professionals involved in the management of blood services.

” 2009 saw the establishment of the HSA Academy, a set-up poised to spur our next phase of growth and propel us to be a centre of excellence in the field of biomedical sciences.▲▲

#### **Growing as a Globally Networked Regulator**

In July and November 2009, we lent our support to the Asia Healthcare Forum in Singapore. This is an initiative organised by the Economic Development Board to provide a platform for policymakers, academia and industry players to examine key challenges facing the healthcare sector in Asia today and to explore how Asia can potentially play a transformative role in global healthcare.

We co-hosted a simulation workshop with the Massachusetts Institute of Technology’s New Drug Development Paradigms (NEWDIGS) consortium from 31 May to 4 June 2010. A goal of this workshop was to identify how new models for progressive authorisation are tested and executed as part of the demonstration phase of NEWDIGS. A group of thought leaders was invited to share their insights and inputs which we believe to be particularly valuable as we considered scientifically and ethically rigorous approaches to evaluating specific new regulatory paradigms.

In July 2010, we supported a session of expert international panelists for a discussion on “A Regional Framework for the Ethics of Research in Traditional Medicine” at the 10<sup>th</sup> World Congress of Bioethics. Going forward, the collection of ethical views and guidelines gleaned from across the region could be framed into regional recommendations for ethics in the design and conduct of traditional medicine research.

A major upcoming highlight for the year is the 14<sup>th</sup> International Conference of Drug Regulatory Authorities (ICDRA), which we will be co-hosting with the WHO from 30 November to 3 December 2010. Since 1980, the ICDRA has been providing drug regulatory authorities of WHO Member States with a forum to meet and discuss ways to strengthen efforts to harmonise regulation and improve the safety, efficacy and quality of medicines globally. This year’s event will provide opportunities for drug regulators and stakeholders to share and discuss current and topical issues of global concern. These include the H1N1 influenza situation, counterfeit medicines and access to quality drugs.



ASSURANCE  
**ASSURAN**  
ASSURANCE



# ICE

HEALTH PRODUCTS  
REGULATION GROUP

The Health Products Regulation Group works steadfastly to ensure that health products in Singapore meet internationally benchmarked standards of safety, quality and efficacy.

Tapping on the power of the latest breakthroughs in science, we focus on designing sound regulatory policies that will have a positive, cascading effect on consumers and businesses whose products we regulate. Our active contributions to various global and regional fora demonstrate that our philosophies are robust yet versatile enough to be applied across different disciplines.

Through partnerships, and with passion and purpose, we sustain the momentum in driving HSA towards our goal in becoming a visionary and trusted champion of public health and safety.



## REENGINEERED TO REACH HIGHER

The Group successfully completed our Business Process Reengineering review in December 2009. This exercise was designed to achieve greater productivity and synergies, improve efficiencies, enhance customer responsiveness and develop a stronger pro-enterprise orientation within the Group.

A Group restructuring was a key initiative under the review. This saw the rationalisation of responsibilities across the Group and the formation of new business functions. A new Generics & Biosimilars Branch will focus specifically on regulating generic drugs while a Compliance Branch was set up to provide a seamless transition as products move into the market and a stronger post-marketing compliance is necessary for the protection of the safety of the public. We also created new roles in Policy Legislation & Operations, and Project Management and established a Quality Service Office to conduct internal quality checks. To strengthen our communication channels with our industry stakeholders, we formed a Service Management Office staffed by officers with in-depth knowledge in regulatory matters.

## MAKING HEADWAY AS A RESPONSIVE REGULATOR

The Health Products Act (HPA) was first passed in February 2007 with the intent of regulating the manufacture, import, supply, presentation and advertisement of health products. It is an omnibus legislation which serves to amalgamate regulatory controls under the Medicines Act and Poisons Act as well as regulate new product groups not covered under these legislations.

Medical devices were the first group of health products to be progressively regulated, with Phase 1, which covered passive controls such as recording requirements and adverse event reporting, taking effect in November 2007. Cosmetic products were the next group to be regulated, with the implementation of the ASEAN Cosmetic Directive in 2008.

In 2009, we pushed ahead with Phase 2 of the medical devices regulatory framework, which requires product registration and dealers licensing for Class C and D devices. Phase 3, which necessitates product registration and dealers licensing for Class A devices, is targeted for rollout after 2010. The full legislative controls for medical devices will be in place with the completion of this final phase.

Work is underway to develop a holistic Complementary Health Products (CHP) regulatory framework to regulate such products and their dealers. The proposed framework, which takes into consideration regulatory and industry trends, will consolidate current controls of Chinese Proprietary Medicines, traditional medicines, health supplements and other complementary products.

” Our ultimate goal is to encourage compliance with the new frameworks, based on the common understanding that both regulators and industry must be responsible in doing what is best for public health and safety. “

We made good progress in our preparation for the transfer of the Medicines Act and Poisons Act controls to an activity-based licensing system under the HPA. During the year, we conducted reviews of the regulations and processes for medicinal products in clinical trials, product registration, dealers licensing, vigilance and compliance and enforcement.

To support our stakeholders and partners as they make transitions through the upcoming regulatory changes, we organised many focus group sessions and workshops to keep them well informed and engaged. Our ultimate goal is to encourage compliance with the new frameworks, based on the common understanding that both regulators and industry must be responsible in doing what is best for public health and safety.

#### **Inroads in Novel Product Regulation**

We are gearing up our capabilities to regulate significantly manipulated and higher risk Cell and Tissue Therapy (CTT) products and the premises processing these products. The regulatory framework for CTT under the Medicines Act is expected to come into effect during the later part of the year. To date, we have already provided inputs on the licensing terms and conditions issued under the Private Hospitals and Medical Clinics Act. We have also identified appropriate Good Manufacturing Practice (GMP) standards and reviewed the inspection processes for higher risk CTT facilities.

#### **A Closer Overview of Clinical Trials**

A Good Clinical Practice inspection framework was put in place for clinical trials that have obtained a trial certificate from HSA. This framework was developed to better safeguard the rights, safety and well-being of trial subjects. It will also empower us to verify the quality and integrity of the clinical trial data submitted, and to assess that trials comply with the applicable regulations and guidelines. The scope of inspection will initially focus on trial sites, and subsequently Phase I units, sponsors and/or contract research organisations.

#### **Global Recognition for Good Laboratory Practices**

Singapore achieved the OECD MAD (Organisation for Economic Co-Operation and Development Mutual Acceptance of Data) status with effect from 12 January 2010, with an established national Good Laboratory Practices (GLP) compliance framework in place. This ensures that the non-clinical data for medicinal products generated from GLP-compliant facilities are credible and reliable, and allows such local data generated to be recognised and accepted by regulators internationally. HSA will continue to work closely with SPRING Singapore to conduct GLP facility inspections and study data audits.





“ We understand the competitive and challenging business environment our industry partners are operating in. Our priority is therefore to continuously seek better ways to make transacting with us a hassle-free experience, and deliver more value whenever and however we can to businesses. ”

## A KEEN AWARENESS OF INDUSTRY NEEDS

We understand the competitive and challenging business environment our industry partners are operating in. Our priority is therefore to continuously seek better ways to make transacting with us a hassle-free experience, and deliver more value whenever and however we can to businesses.

Keeping the communication flowing between ourselves and businesses helps facilitate the understanding of our existing and upcoming regulatory requirements, and the reasons for having them. Many face-to-face meetings, focus group discussions and dialogues were held in the course of the year. These included our first dialogue session with major dealers of traditional Indian and Malay medicines to feedback their concerns on our proposed CHP regulatory framework and the first bilingual industry workshop to update Mandarin-speaking representatives from cosmetic companies on the implementation of the ASEAN Cosmetic Directive.

To ensure that our policies and practices are designed around the needs of businesses, we actively sought input from our stakeholders to constantly improve our pro-enterprise orientation. The Guidance on Registration of Similar Biological Products in Singapore was issued in August 2009. This document clarifies the process for companies filing submissions for the registration of biosimilars by explaining the technical requirements and procedures.

We streamlined our document submission processes and workflows to offer businesses greater flexibility, convenience and time-savings. Among the noteworthy measures is a Progressive Payment Scheme under which evaluation fees are paid in installments as a product advances to the next stage of evaluation.

To improve our customers' experience when transacting with us electronically, we also made enhancements to our online licensing systems. These improvements include applications to allow businesses to track the evaluation stages of their products and the automatic renewal of licences. Additionally, tobacco licence applicants can now use a standardised Unique Entity Number to apply for different licence types across different government agencies.

Telepharmacy was officially introduced in 2002 to facilitate the sale of Pharmacy-Only Medicines from approved pharmacies in Singapore. Last year, telepharmacy was extended to Prescription-Only Medicines (POM) for pharmacies that met additional regulatory and pharmacy practice requirements, as laid out in the Guidelines for Telepharmacy jointly developed by the Pharmaceutical Society of Singapore, HSA and the Singapore Pharmacy Council. This initiative has exploited the use of technology to the best effect and has facilitated greater access to Pharmacy-Only Medicines and POM, offering consumers greater convenience.

## ALWAYS ALERT

Our Adverse Drug Reaction (ADR) Monitoring Programme, through which a network of healthcare professionals actively reports unwanted effects observed in clinical practice to HSA, is steadily gaining momentum. It will go a long way in helping us identify safety signals from the local use of marketed products more efficiently. In 2009, the success of the monitoring programme enabled Singapore to move up two spots from 10<sup>th</sup> position to 8<sup>th</sup>, in the World Health Organization (WHO)'s ranking of ADR reports submitted. The number of local spontaneous ADR reports we reviewed increased from 3,155 in 2008 to 3,715. About 49% of these were serious. We also detected four adulterated products through these reports.

Several precautionary steps were taken in the course of the year to minimise consumers' access to potentially risky products. For example, we suspended the sale of Raptiva® (efalizumab) due to serious adverse effects of potentially fatal progressive multifocal leukoencephalopathy (PML) associated with its use. Several traditional medicines found to be adulterated by western drugs were detected and withdrawn from the market as well. These included "Air Ikan Haruan", "Delima Raja Urat", "Cao Gen Bai Lin Wan" [草根百齡丸] and "Huo Luo Jing Dan" [活絡金丹]. We also initiated a programme in collaboration with our parent Ministry and the Health Promotion Board (HPB) to encourage the responsible safe use of the weight-loss medicine, phentermine.

In addition, we issued safety updates for medicinal products, which included oseltamivir, oral sodium phosphates and interaction between clopidogrel and proton pump inhibitors. The Risk Management Plans for 11 products were also reviewed. These included Xolair®, Revlimid® and Tredaptive®.

In the year ahead, a common vigilance function will be set up to strengthen the post-marketing surveillance of health products in Singapore. Its key accountability will be to coordinate follow-up actions required to address and mitigate identified risks to public health.



“The H1N1 pandemic came upon us unexpectedly last year, and we responded swiftly to the new challenges associated with the need for therapeutic interventions.”

## CHECKS AND BALANCES

The H1N1 pandemic came upon us unexpectedly last year, and we responded swiftly to the new challenges associated with the need for therapeutic interventions.

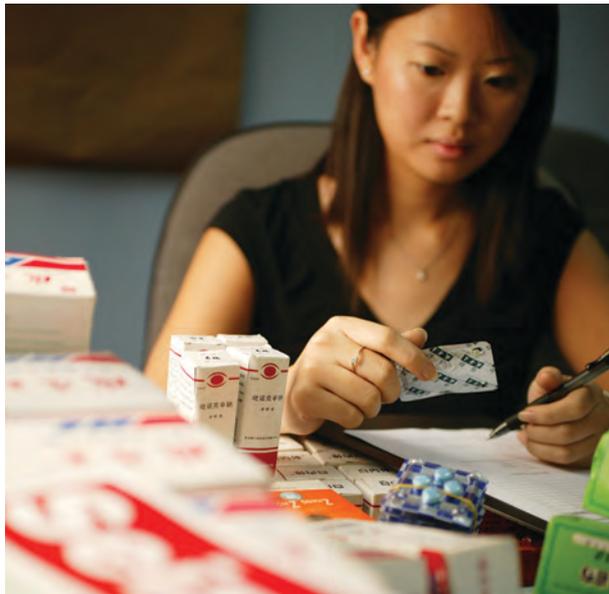
In October 2009, we approved the use of two H1N1 pandemic vaccines, Panvax® and Pandemrix®, in adults above 18 years of age. The Panvax® vaccine was progressively made available for use in young adults and children in November and December, after we reviewed the safety of the vaccine for these age groups. As trials were still ongoing during the pandemic situation, we applied a “rolling submission” approach to the evaluation process whereby new safety and efficacy data were reviewed as and when they became available. To mitigate the risks, enhanced pharmacovigilance measures were put in place to monitor the safety of these vaccines.

We established a National Immunisation Registry of patients exposed to the vaccine in Singapore, which enabled the health authorities to keep track of the number of doses of H1N1 vaccine administered and calculate the incidence rate of adverse events that occur. Together with our parent Ministry and the HPB, we worked with medical professionals to actively solicit and track adverse events temporally associated with the H1N1 vaccine. We disseminated prompt vaccine safety information to them and required them to submit the particulars of patients vaccinated as well as vaccine batch details, so that vaccine batches could be easily identified in instances of batch-related quality issues.

A sentinel site was set up at KK Women’s and Children’s Hospital to actively monitor vaccine adverse events (VAE) in children and pregnant women. This served as a data collection point for these special patient groups, where staff were involved in identifying adverse events related to the vaccine and following up with affected patients. A separate Neurology Expert Committee comprising experienced paediatric and adult neurologists was also convened to adjudicate the VAEs and provide causality assessment of the cases received. A checklist of Adverse Events of Special Interest was developed and adapted to suit the local context, which served as a useful reference for the vigilance team when assessing adverse event reports.

We kept in close touch with the public during the vaccine rollout to address concerns on its use and effectiveness. A comprehensive mix of channels was employed to increase awareness and confidence on the robustness of our post-marketing surveillance system in monitoring the safety of the vaccines. We communicated our findings, efforts and messages through our website, media stories, as well as an enquiry hotline manned by our parent Ministry. Our vaccine safety signals were also shared with the WHO and other agencies including Australia’s Therapeutic Goods Administration (TGA) as part of the joint international monitoring efforts.





## BOLD ACTIONS

The year in review saw no let up in our efforts to protect the public from health products which could endanger their health and safety. Export controls were tightened for codeine cough preparations from July 2009 after consignments that had supposedly been exported out of Singapore were found to be in the possession of unlicensed suppliers. Any licence holder who intends to sell a consignment of this product to be exported from Singapore will now need to obtain authorisation from HSA.

Through our Product Quality Surveillance Programme, we overtly and covertly acquired product samples from local manufacturers, importers, wholesalers and retailers for testing. The 2,029 samples tested included registered Western Medicines, Chinese Proprietary Medicines, traditional medicines, health supplements and cosmetic products. Of these, 21 were found to be non-compliant to safety and quality standards. All affected batches were recalled from the local market.

We remain committed to combating counterfeits and other illegal health products, conducting some 1,500 investigations, some in partnership with our enforcement partners including the Singapore Police Force and Singapore Customs. In total, we seized about 19.1 million units of illegal health products (comprising dosage forms of tablets, capsules, liquids and creams) from our operations.

Apart from carrying out checks at physical premises, we were also on the lookout for illegal health products in cyberspace, collaborating with local website administrators as well as overseas counterparts. We represented Singapore in Operation Pangea II, an effort coordinated by INTERPOL and WHO's International Medical Products Anti-Counterfeiting Taskforce (IMPACT). This operation was held from 16 to 20 November 2009 and involved regulators from 24 countries. It sought to clamp down on Internet sales of counterfeit and illegal health products by leveraging on coordinated international enforcement activities to convey important public health messages against these products on a global scale.

We also participated in Operation Storm II, which targeted the manufacture and distribution of counterfeit medicines in Southeast Asia. This activity was held between July to November 2009, and served as a platform for collaboration between the regulatory authorities from eight Southeast Asian countries.

The synergies between HSA's regulatory and applied sciences arms were certainly reinforced through this operation. All products seized by our enforcement colleagues were promptly sent to our forensic laboratories for testing. With expertise in both areas readily available in-house, we were able to reach firm conclusions and make appropriate decisions expeditiously. A Storm network has since been formed in collaboration with INTERPOL and the WHO's Western Pacific Regional Office to improve and shape joint anti-counterfeit enforcement actions.

The war against illegal health products must be fought on multiple fronts. Apart from stricter laws and more aggressive enforcement and surveillance programmes, we believe that public education is another powerful strategy to tackle the matter. During the course of the year, we developed a public database containing information and photographs of illegal health products that have been seized or tested to contain adulterants. This search engine, which can be accessed on our website, currently features 200 products and will be regularly updated.

#### **Strengthening and Supporting National Policy on Tobacco Control**

To more effectively encourage our youth to be smoke-free, we worked with the HPB to review the mandatory face-to-face smoking cessation counselling programme for underage smoking offenders. The programme was replaced by a less confrontational online intervention programme in May 2009 to educate offenders on the harmful effects of smoking. As part of regular ground surveillance activities, enforcement action was also taken against 57 retailers who sold tobacco products to underage smokers.

We also played a pivotal role in supporting HPB in the legislative amendments to the Smoking (Control of Advertisements and Sale of Tobacco) Act and its subsidiary legislations. The legislative changes include extending the legislation to cover all forms of tobacco products, removing exemptions for tobacco sponsorship and congratulatory messages, banning misleading labelling on tobacco packaging and lowering the tar and nicotine yield limits of cigarettes.

The Smoking (Control of Advertisements and Sale of Tobacco) (Amendment) Bill was passed in Parliament on 19 July 2010 and we will continue to work with the HPB on the amendments to the subsidiary legislations and ensure the additional measures are sustainably enforced accordingly.

## **TAKING OUR PLACE ON THE GLOBAL STAGE**

We brought our expertise in health product regulation to bear on prominent platforms, actively providing insights and sharing our lessons learnt on the full spectrum of our work. Reflecting our growing stature as a trusted authority, we were given many opportunities to actively contribute to the enhancement of public health and safety standards globally and regionally through our participation in various meetings, working groups and committees.

We attended the Pharmaceutical Inspection Co-operation Scheme (PIC/S) Committee meeting in Uppsala, Sweden, in November 2009. In conjunction with the session, a new Executive Bureau was elected and expanded to include more countries across all continents. A HSA representative currently sits in this expanded Executive Bureau as an Alternate Member, creating another avenue for us to make a greater impact on the global front.

Other achievements include our participation in several working groups under the WHO International Regulatory Cooperation for Herbal Medicines. These avenues allowed us to share our expertise in areas such as the identification of adulterated products through laboratory testing, evidence for health-based claims for CHP and vigilance for herbal medicines.



”Reflecting our growing stature as a trusted authority, we were given many opportunities to actively contribute to the enhancement of public health and safety standards globally and regionally through our participation in various meetings, working groups and committees.“

Closer to home, we represented Singapore as Chair of the 9<sup>th</sup> Asian Harmonization Working Party (AHWP) Technical Committee Meeting. This was held in Hong Kong from 4 to 7 November 2009. Among other things, the meeting agreed on the setting up of a legal entity for administering AHWP activities and the general principles for an acceptable medical device nomenclature system. Singapore also accepted the Global Medical Device Nomenclature Agency’s invitation to join its Policy Advisory Group and Board of Trustees.

We participated in several meetings under the umbrella of the Western Pacific Regional Forum for the Harmonization of Herbal Medicines. During the sessions, we presented on the safety concerns on innovative products, adulteration of herbal medicines, our ADR monitoring system, and updates on the regulation of CHP in Singapore.

In August 2009, we organised the APEC Life Sciences Innovation Forum VII meeting in Singapore. Apart from advocating regulatory harmonisation within the APEC region, this annual forum serves to promote policy discussions among government agencies, the industry and academia.

We hosted and organised the 25<sup>th</sup> ASEAN Working Party in Pharmaceuticals Development (AWGPD) in November 2009. The main objectives of AWGPD are to strengthen pharmaceutical sectors in all member states, to ensure the sufficient and regular supplies of effective and safe essential drugs of acceptable quality and to facilitate the development of a viable pharmaceutical industry in the region.

We also participated actively in the ASEAN Traditional Medicines Health Supplements Product Working Group (TMHS PWG), focusing on projects on the harmonisation of various TMHS technical and regulatory requirements.

Together with the WHO and the Uppsala Monitoring Centre, we hosted a 5-day Basic Pharmacovigilance Training Course from May to June 2010. Traditionally conducted in Uppsala, Sweden, the course was held in Singapore for the first time. The purpose of this training event was to provide participants from the ASEAN countries with the relevant skills and knowledge to sharpen the pharmacovigilance capabilities in their respective countries. It offered a curriculum that was tailored to the needs of the attendees and featured various local and international pharmacovigilance experts.





## PRODUCTIVE PARTNERSHIPS AND ALLIANCES

The dramatic changes sweeping across the biomedical sciences landscape underscores the importance of forging firm friendships. Simpler, smarter solutions to many of the greatest challenges we face today can only be realised through partnerships and regulatory networks.

2009 saw HSA collaborating closely with several like-minded partners to advance the sharing of resources and knowledge in our regulatory responsibilities. The year started on a high note for us as Chair of the ASEAN Sectoral Mutual Recognition Agreement (MRA) Taskforce for GMP Inspection. The ASEAN MRA on GMP Inspection of Manufacturers of Medicinal Products was signed by all 10 ASEAN Economic Ministers on 10 April 2009 in Pattaya, Thailand. This is the first ASEAN MRA to be signed under the Pharmaceutical Product Sector and is one of the deliverables in the Roadmap for Integration of the ASEAN Healthcare Sector. With the signing of this MRA, the manufacturing standards of medicinal products will be mutually-recognised across ASEAN.

Our worksharing arrangement with our consortium partners – Australia’s TGA, Swissmedic and Health Canada – was strengthened during the year as well. We collectively developed a Benefit Risk Assessment Template together with the Centre for Medicines Research International. This initiative seeks to understand how different agencies draw different conclusions when evaluating the same application data. The template allows the benefits and risks of each application to be presented in a structured and consistent manner, therefore providing increased transparency in decision making.

We also conducted a parallel evaluation for a product manufacturing site change with Swissmedic. The purpose was to harmonise the ways in which process variations were evaluated following approval of a drug, with the long-term goal of establishing work-sharing processes between the consortium parties. An application for the addition of a new manufacturing site for Avastin® (bevacizumab) was selected as the test case.



The strong rapport with our GMP worksharing partners, namely Australia's TGA, Health Canada, Swissmedic and Medsafe New Zealand was demonstrated through a number of mutual collaboration activities and multi-agency joint GMP inspections. An SOP on exchange of information has been established and a consolidated database of common GMP facilities in non-MRA third countries has also been developed. These initiatives will help prevent duplication of audits, promote the exchange of GMP inspection reports and assist in identifying future opportunities for joint inspections.

## **MAKING NEW DISCOVERIES**

We recognise that our ability to fulfill our regulatory responsibilities more effectively will depend on how we can innovatively stay ahead. This is why we have been investing in research projects that can transform the promise of science into tangible benefits for public health and safety.

We are collaborating with the National University Hospital and Singapore General Hospital on a research project investigating the pharmacogenetics of serious drug-induced skin rash and liver injury. One of the deliverables of this project is the development of a repository of blood and DNA samples from patients from various ethnic groups who have experienced serious ADRs. The information can potentially be used to conduct pharmacogenetic association studies and help doctors identify a subset of patients who are more susceptible to a serious ADR. The treatment plans for such patients can then be adjusted for better clinical outcomes.

Another ongoing research collaboration with the National University of Singapore's Pharmacy Department aims to develop a sensitive, cost effective and practical in vitro method to assess the inherent properties and toxicity of the natural ingredients found in complementary and alternative medicines possibly linked to ADRs. This will boost our testing capabilities, augmenting our current detection of adulterants, toxic alkaloids and excessive toxic heavy metals in such products.

”Simpler, smarter solutions to many of the greatest challenges we face today can only be realised through partnerships and regulatory networks.“

# KEY STATISTICS



**155**

New Product Licences Issued



**5,349**

Registered Medicinal Products



**8,926**

Chinese Proprietary Medicines Listed



**131,000**

Cosmetic Products Notified Under ACD



**3,830**

Product Registration Applications for Medium & High Risk Medical Devices (Classes B,C & D)



**2,862**

Product Registration Applications for Low Risk Medical Devices (Class A)



**262**

Clinical Trials Certificates Granted\*



**2,254**

Medical Advertisement Permits Issued



**525**

Site Audits Conducted for Good Manufacturing & Good Distribution Practices



**5,576**

Premises, Dealers, Importers & Exporters of Health Products Licensed/Certified#



**1,175**

Authorisation Letters for Travellers Bringing Personal Medications into Singapore



**21,641**

Spontaneous Adverse Drug Reaction Reports Received\*



**19.1 million**

Units (Tablets/Capsules/Liquids/Creams) Seized



**5,850**

Tobacco Retail Outlets Licensed



**6,716**

Underage Youth Smokers Caught

All statistics accrued are for the period from 1 April 2009 to 31 March 2010, unless otherwise stated.

\* from 1 January to 31 December 2009

# includes new, renewal and amendment applications

# PRE-MARKET ACTIVITIES

## EVALUATION, LICENSING & CERTIFICATION

### Drugs & Biologics

New Product Licences Issued	155
Innovators' Products	
• Chemicals	71
• Biologics	24
Generic Products	60
Variations in Product Licences	
• Chemicals	2,668
• Biologics	410
Registered Medicinal Products	
• Prescription-Only Medicines (71.19%)	3,808
• Pharmacy-Only Medicines (12.11%)	648
• General Sale List Medicines (16.69%)	893
Import of Medicinal Products for Re-export	3,330
Import of Medicinal Products on Named-Patient Basis	5,359
Authorisation Letters for Travellers Bringing Personal Medications into Singapore	1,175

### Chinese Proprietary Medicines (CPM)

Number of Product Listing Applications Received	492
Total Number of CPM Listed	8,926
Number of Rejected Applications	13
Number of Licensed CPM Importers	172
Number of Licensed CPM Manufacturers	25
Number of Licensed CPM Re-packers	27
Number of Licensed CPM Wholesalers	244

### Cosmetic Products

Number of New Notifications	49,950
Number of Re-notifications	81,050
Total Number of Cosmetic Products Notified	131,000
Cosmetic Products Recalled	425
Letters of Free Sales for Export	20

### Health Supplements

Enquires on Classification, Import & Sales Requirements	6,989
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### Medical Advertisements

Medical Advertisement Permits Issued	2,254
• Western Medicines	33%
• Chinese Proprietary Medicines	20%

### Compliance with GMP & GDP – Premises, Dealers, Importers & Exporters

Premises, Dealers, Importers & Exporters Licensed/Certified*	5,576
Manufacturers/Assemblers Licences Issued*	260
Wholesale Dealer's Licences Issued*	1,144
Import Licences Issued*	1,055
Export Licences Issued*	174
Pharmacy Certificates Issued*	723
Form A Poisons Licence Issued*	1,769
Form C Poisons Licence Issued*	-
Certificate of Pharmaceutical Products	326
Good Manufacturing Practice (GMP) Certificates Issued	40
Good Distribution Practice (GDP) Certificates Issued	3
Free Sale Certificates	24
Statement of Licensing Status Issued	4
GMP Clearance for Overseas Manufacturers	54

\* includes new, renewal and amendment applications

### Clinical Trials (from 1 January to 31 December 2009)

Clinical Trials Certificates* Granted	262
• Phase I	54
• Phase II	61
• Phase III	108
• Phase IV	39
Clinical Trials Applications Approved	175
Clinical Trials by Therapeutic Areas	
• Oncology	34%
• Clinical Pharmacology	19%
• Cardiology	6%
• Neurology	-
• Gastroenterology/Hepatology	5%
• Ophthalmology	5%
• Endocrinology & Metabolism	5%
• Others	22%
Initial Reports of Adverse Drug Reactions	2,802
Follow-up Reports of Adverse Drug Reactions	5,087

\* a Clinical Trial Certificate is issued for each participating site in a clinical trial  
NB: More than one suspected drug may be implicated in an ADR report.

### Tobacco Products & Advertisements

Tobacco Retail Outlets Licensed	5,850
Tobacco Importers/Wholesalers Licensed	63
Exemptions for Advertisement Issued	122

# POST-MARKET ACTIVITIES

## Investigation, Surveillance & Prosecution

Total Number of Units Seized*	19.1 million
Complaints Received	1,516
Prosecution Cases Completed	52
Offenders Sentenced to Imprisonment	27

\* comprising dosage forms of tablets, capsules, liquids and creams

## Adverse Drug Reactions (ADR) Monitoring (from 1 January to 31 December 2009)

Total Number of Spontaneous Reports of Suspected ADRs to All Health Products*	21,641
ADR Reports from Government Clinics & Public Institutions	47.9%#
ADR Reports from Public Hospitals	39.2%#
ADR Reports from Private Hospitals & Clinics	7.4%#
ADR Reports from Pharmaceutical Companies	5.4%#
ADR Reports from Community Pharmacies	0.03%#
ADR Reports Associated with Pharmaceutical & Biological Products	90.6%#

\* pharmaceuticals, complementary medicines and cosmetics

# based on 3,687 ADR reports analysed

## Top 10 Drugs Suspected of Serious ADRs

Active Ingredient	No. of Reports*
01 Atenolol	205
02 Simvastatin	199
03 Hydrochlorothiazide	174
04 Amlodipine	117
05 Diclofenac	114
06 Naproxen	86
07 Docetaxel	75
08 Metoclopramide	75
09 Coamoxiclav	73
10 Cotrimoxazole	70

\* More than one suspected drug may be implicated in an ADR report.

### Top 5 System-Organ Classes\* Affected by ADRs

System-Organ Class	No. of Reports
01 Skin & Appendages	1,398 (22.2%)
02 Body as a Whole	979 (15.5%)
03 Respiratory System	630 (10%)
04 Nervous System	581 (9.2%)
05 Gastrointestinal System	467 (7.4%)

\* The system-organ class refers to the adverse reaction terminology developed by the WHO.  
NB: More than one ADR term may be described in an ADR report.

### Tobacco Regulation

Total Cigarettes Seized	16,795
Complaints of Offences Received	1,122
Underage Youth Smokers* Caught	6,716
Retailers Caught Selling Tobacco to Underage Youth	57
Compounding Cases Completed	6,438
Prosecution Cases Completed	358

\* persons under 18 years of age

### Medical Devices

Number of Product Registration Applications for Medium & High Risk Medical Devices (Classes B, C & D)	3,830
Number of Product Registration Applications for Low Risk Medical Devices (Class A)	2,862
Number of Manufacturer's Licence Applications	20
Number of Importer's Licence Applications	205
Number of Wholesaler's Licence Applications	201
Field Safety Corrective Actions (FSCA)*	397
Reported Adverse Events Relating to Medical Devices	144

\* FSCA are actions taken by the medical device manufacturer to ensure public safety when using a medical device (e.g., product recalls).

### Non-compliant Cases & Warnings

Product Non-compliant Cases	14
Advertisement Non-compliant Cases	4
Warning Letters Issued	2

ASPIRATION  
**ASPIRATIC**  
ASPIRATION



# ON

**BLOOD  
SERVICES GROUP**

The Blood Services Group is dedicated to securing the safety and stability of Singapore's blood supply. Our stringent quality and safety protocols are aligned with international standards, and enable us to provide the safest possible blood and blood products to meet the clinical needs of our patients.

Driven by our quest for excellence and through the use of progressive technologies, we have also expanded and strengthened our expertise in transfusion medicine, including the fields of immunohaematology and tissue typing. By teaming up with hospitals, we have been able to develop and deliver valuable treatments options to patients. An example is cell therapy, which is one of the most promising and rapidly advancing areas to treat cancers and immune disorders.

” The onset of the H1N1 pandemic in 2009 called for a swift and decisive response to ensure that the safety of our national blood supply was not compromised. “



## HANDLING THE H1N1 PANDEMIC CRISIS

The onset of the H1N1 pandemic in 2009 called for a swift and decisive response to ensure that the safety of our national blood supply was not compromised.

Precautionary measures were immediately stepped up with the Bloodbank@HSA implementing a series of risk containment and reduction measures to safeguard our national blood supply and to minimise donors’ risk of exposure to the virus. The spread of the virus was closely monitored and donor screening criteria were continually reviewed based on the best available information to ensure the safety of our national blood supply.

The outbreak was also an opportune time to not only activate our pandemic preparedness plans but to test the robustness of our existing business continuity plans as a critical service provider. We conducted a staff segregation exercise at the height of the outbreak to stress test and finetune our contingency plans and SOPs that have been put in place. These preparedness and continuity plans were implemented smoothly, with no disruptions to our critical functions. We were also able to meet our service standards to our donors in protecting their safety.

## NEW PROCESSES AND SPACES

We underwent a Business Process Reengineering review exercise from September to October 2009. This looked into streamlining work processes for us to achieve greater efficiency and productivity and also to deliver better service to our various customer groups. The exercise also allowed us to optimise our manpower needs over the next few years as we grow our activities and further develop our capabilities. Several areas for improvement were identified during the review and have been translated into detailed action items, to be consolidated and implemented over the next few years.

Beyond work processes, we also optimised our work environment during the year. To promote more synergies at work, all four Blood Donor Testing Laboratories were relocated and housed in one open-concept laboratory in a space reconfiguration exercise. This new design allows for new testing systems to be easily incorporated in the future.



## EXTRAORDINARY SUPPORT FROM OUR DONORS

In 2009, we achieved a record of 105,921 blood donations – with 62,116 donors making 95,676 whole blood and 10,245 apheresis donations.

A key factor contributing to this success is our close partnership with the Singapore Red Cross, which is into its ninth year. As the National Blood Donor Recruiter, the Singapore Red Cross has been rolling out many creative programmes to attract and retain donors over the years. More recently, it embarked on a new donor recruitment strategy to enlist the support of corporate and community organisations to host regular fixed mobile blood collection drives at their premises. This not only offers donors greater convenience as they can now donate blood regularly at more locations but also generates greater publicity to encourage more to contribute to this meaningful cause.

Our blood donors were recognised for their support of the National Blood Programme at the World Blood Donor Day celebrations on 13 June 2009. Together with their families, 10,000 blood donors were treated to a full day of fun at the Jurong Bird Park. More than 1,600 champion donors who reached significant milestones in their donation histories were honoured at the event. Also recognised for their crucial role in ensuring stability in our national blood supply were 53 bloodmobile organisers.

Having been accredited by AABB (formerly known as the American Association of Blood Banks) since 2006, we worked hard to maintain this recognition during the year in several ways. These included providing continuous training for professional staff as well as introducing innovations and improvements in our processes – all with the aim of sustaining the highest possible levels of blood banking and donor care.

We optimised our collection efficiency through the increased collection of double unit plateletpheresis and also enhanced the accuracy of our pre-donation haemoglobin testing. This will help contribute towards further protecting the health and safety of donors by ensuring that their haemoglobin levels are sufficient for them to make donations.

In line with our pledge to serve our donors better, we extended the last appointment time for plateletpheresis donors on Fridays. Additional appointment slots were also created to cater to donors' requests to visit the blood bank later in the afternoons or evenings.

For the benefit of our donors and to meet the increasing need for blood from hospitals, we will be progressively opening more fixed satellite blood collection sites at various locations around the island. The operating hours of these alternative blood collection sites will complement that of Bloodbank@HSA, so that donors can enjoy greater convenience and flexibility when scheduling their appointments. We are also currently exploring the feasibility of replacing the existing donation record cards with electronic ones with new features.



## BOOSTS TO BLOOD SAFETY

The international spread of existing and emerging infectious diseases is a key global public health issue including the potential for transmission of infectious disease through blood transfusions.

As an added safeguard, we have introduced a pathogen inactivation method to further enhance blood safety through the use of methylene-blue treated, leuco-reduced fresh frozen plasma, funded by the Ministry of Health and launched in August 2009. Through the use of technology, plasma is treated to prevent pathogens (such as viruses, bacteria and parasites) which may be present in donated blood, from replicating. The safety and efficacy of the procedure is monitored under the National Haemovigilance Programme. This Programme, which was initiated in 2003, is an ongoing collaborative arrangement with the Hospital Transfusion Committees at our public and private healthcare institutions. It aims to gather information to assess the frequency of blood transfusion complications and to enable continued improvement efforts to be taken to reduce them.

In our continued efforts to further improve the safety of our blood supply, we will be embarking on another feasibility study on pathogen inactivation for platelets. In preparation for this, we are in the process of switching from current platelet-rich plasma based methods of platelet preparation to the buffy-coat preparation methods which will allow the provision of pooled leucocyte-filtered platelets from whole blood donations.

We are also in the process of implementing full use of the semi-automated blood processing systems to increase component processing efficiency and improve product consistency. In addition, a more sensitive automated system for donor red cell antibody screening will also be implemented to increase the detection of clinically-significant antibodies in donors' samples. This system will further enhance our blood safety protocols.

## SHARING OUR SUCCESS STORY – REGIONALLY AND BEYOND

As a World Health Organization (WHO) Collaborating Centre for Transfusion Medicine, we have been playing an active and pivotal role in promoting blood safety and quality in the Western Pacific and Southeast Asian regions.

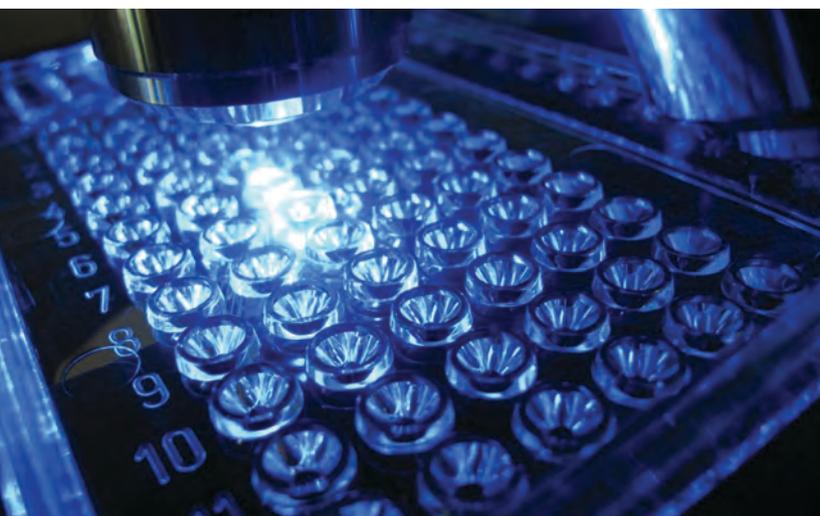
In collaboration with the Singapore Ministry of Health, Ministry of Foreign Affairs and WHO, we conducted the 3<sup>rd</sup> Singapore-WHO Workshop on the Management of National Blood Programmes from 27 to 31 July 2009. This workshop was the final one in a series of three annual events. Attended by participants from 15 member states in the Western Pacific and Southeast Asian regions, it focused on developing and strengthening capabilities in planning, managing and monitoring of national blood programmes. Topics discussed included quality assurance schemes, risk management, evaluation of new technologies, project and programme management, and leadership.

In September 2009, we signed an Agreement for Performance of Work with the WHO to consolidate all the materials presented at all three workshops on the Management of National Blood Programmes into a report. The main purpose of this document is to provide and assist countries, donor agencies, international organisations and others with the information they need to strengthen their capacity in education and training in all aspects of blood transfusion.

We have been a founding member of the Asia Pacific Blood Network (APBN) since 2006. Through increased cooperation and collaboration among its members, which include key blood services in Australia, China, Hong Kong SAR, Japan, South Korea, New Zealand, Taiwan and Thailand, the APBN is in a strong position to effectively influence progress towards safe and self-sufficient blood systems in the region and globally. This includes enhanced information gathering and sharing, extensive engagement in international networks, and participation in joint blood service initiatives.

In our efforts to maintain our position as a leading voice in blood banking operations in the region, we are mindful of the need to remain relevant and keep abreast of the latest developments around us. Just as much as we recognise our responsibility to help sharpen the capabilities of our counterparts who are keen to learn from us, we also had the privilege to learn much from them. During the course of the year, we conducted training programmes and hosted attachments for healthcare professionals from several countries, including Malaysia, Vietnam, India, North Korea and Mongolia. These sessions offered invaluable opportunities for the sharing of work experiences and exchange of information, which we found very insightful and enriching.





”As a reference centre for transfusion medicine, immunohaematology and tissue typing, we continued to offer specialist and clinical consultative services to our hospitals to support them in providing patients with the best possible care.“

## **SUPPORTING NEW LIFE-SAVING TREATMENTS**

As a reference centre for transfusion medicine, immunohaematology and tissue typing, we continued to offer specialist and clinical consultative services to our hospitals to support them in providing patients with the best possible care.

During the year, our doctors collaborated with the Ministry of Health and our clinical colleagues to develop a set of Clinical Practice Guidelines (CPG) on the transfusion of blood products. These guidelines outline the various aspects of safe blood transfusion appropriate to clinical needs and will help promote appropriate and optimal clinical use of blood and blood products. The CPG is expected to be published in the later half of 2010, and will be distributed to all doctors for their reference when prescribing blood products for their patients.

In the year ahead, we will also be collaborating with our hospital colleagues to pilot the use of Radio Frequency Identification Devices (RFID) for blood and blood products, with the aim of improving the management and quality control of the national blood supply.

Our laboratories provided critical support in two ABO incompatible renal transplants last year. Before such transplants can be carried out, recipients typically have to undergo many cycles of plasma exchange to remove or lower the titre of either Anti-A or Anti-B antibodies against the potential donor. The Red Cell Reference Laboratory supported the treatment by testing the Anti-A/B titre after every plasma exchange before the transplant and during the post-transplant monitoring phase as well, while the Tissue Typing Laboratory contributed by using flow cytometry for HLA antibody screening and cross matching. These services provided the support to ensure the best possible outcomes for the patients.

In October last year, the Tissue Typing Laboratory officially introduced Crossmatching by Flow Cytometry to support renal transplant programmes at our hospitals. HLA typing using molecular methods was also introduced for locus which do not have serological equivalent to be typed and this will benefit patients planning for bone marrow transplants.

Going forward, the Tissue Typing Laboratory is embarking on a feasibility study for automated DNA extraction, where a better yield of DNA concentration and purity of sample can be obtained for testing especially in sequence base typing. The Laboratory is also evaluating microarray methods for tissue typing and electronic data capture of test results of polymerase chain reactions or any serological cell reactions. These data can then be captured and archived, for potential in research to develop more advanced treatments.

Having been accredited by the American Society for Histocompatibility and Immunogenetics (ASHI) in September 2008, we remain committed to maintaining our high standards for tissue typing and transplant support activities. Preparations are now underway to complete the 2-yearly assessment which will be conducted in the later part of 2010.

” Future CTF efforts will focus on successfully implementing novel cell therapy protocols for clinical applications against devastating diseases and for advancing regenerative medicine. “

## **SIGNIFICANT STRIDES IN CELL THERAPY**

Our Cell Therapy Programme achieved a major breakthrough during the year. The existing pilot prototype facility established in 2006, which comprised two Cell Processing rooms, was expanded into a one-stop research and translational state-of-the-art Cell Therapy Facility (CTF). Four additional current Good Manufacturing Practice (cGMP) compliant clean rooms, a Quality Control Laboratory, and a self-contained Research Laboratory were constructed. The clean room area is equipped with a cascading pressure system of a highly filtered, directed air flow at 99.997% purity. The facility expansion more than doubled the existing laboratory space, which enables at least six simultaneous clinical projects to be carried out. Plans are underway for international accreditation of the facility with the aim of establishing it as a regional reference centre for new advances in cellular therapy.

Three Phase I/II clinical studies targeting haematological malignancies involving Cytokine Induced Killer (CIK) cells are still successfully ongoing in collaboration with the Singapore General Hospital (SGH). Preliminary results are encouraging with some patients continuing to remain disease-free. Additional cutting-edge projects have been initiated with various Singapore based institutions, including the Singapore Cord Blood Bank, the Singapore Heart Centre and the Singapore Immunology Network of the Agency of Science, Technology and Research (A\*STAR). The CTF regularly assists the Principal Investigators and their teams in translating their pre-clinically established project protocols into the strict and special requirements of the cGMP environment.

The Research Laboratory continues to pursue translational and molecular research projects with emphasis on Natural Killer (NK) cells to develop more powerful and robust NK cell therapy products for application in cancer patients. Different GMP-compliant long-term (several weeks) culture protocols have been compared and evaluated, during the past year, for their potential to support generation of greater numbers of superiorly potent NK killers. Discussions with SGH clinicians are in progress to further shape the most successful protocol for specific tumour targeting and prospective clinical translation.

Future CTF efforts will focus on successfully implementing novel cell therapy protocols for clinical applications against devastating diseases and for advancing regenerative medicine. Potential projects could involve national and international collaborations. These efforts form a crucial expansion of HSA's goal to improve the overall quality of healthcare in Singapore.



## KEY STATISTICS



**62,116**

Blood Donors



**95,676**

Whole Blood Donations



**10,245**

Apheresis Donations



**259,323**

Processed Blood Components



**941,981**

Laboratory Tests

ACCURACY  
**ACCURAC**  
ACCURACY





HSA's Applied Sciences Group represents the national expertise in forensic medicine and science, analytical testing, and metrology in chemistry.

Our built-in, synergistic capabilities span many scientific fields and fortify our position as a key scientific resource supporting the administration of justice in Singapore. They also empower us to boldly push the frontiers of scientific inquiry through cutting-edge research, transforming insights into practical advantages for public health.

As we continue to raise the bar of excellence in all aspects of our operations, we are cognizant that these efforts must translate into value for our many clients and stakeholders.

”In line with our commitment to constantly create better value for our stakeholders, we aspire to strengthen the interdisciplinary approach we apply to our work and grow our services so that we can offer the most rigorous and reliable solutions.“



## INFUSED WITH AN INNOVATIVE SPIRIT

During the year, we constantly challenged conventions and explored new ways to refine and improve our processes and methods. Innovation ranked high on our agenda and shone through an exciting research portfolio. In line with our commitment to constantly create better value for our stakeholders, we aspire to strengthen the interdisciplinary approach we apply to our work and grow our services so that we can offer the most rigorous and reliable solutions.

### Innovation Powered by Purpose

Our Illicit Drugs & Toxicology Laboratories were able to move in higher gear during the year with the adoption of several new initiatives. These included a more sensitive method based on Liquid Chromatography Tandem Mass Spectrometry for the detection of benzodiazepines in biological fluids and also a fast and accurate Liquid Chromatography with Time of Flight - Mass Spectrometry method for the systematic toxicological screening of drugs in biological fluids.

Urine samples sent to us for testing can now be screened for buprenorphine and monoacetylmorphine using the Microgenics CEDIA® in chemistry analyser. This screening technique, which is faster and more sensitive, enables us to significantly shorten the turnaround time, especially for urgent cases.

In addition, we also developed fast resolution liquid chromatography methods for the quantitation of controlled drugs to reduce analysis time and increase throughput.

Apart from improvements in the laboratories, we also worked with the Queensland University of Technology, Australian Federal Police, and Queensland Health Forensic and Scientific Services to develop a portable Raman Sensor for stand-off and non-contact detection of unknown chemical and biological hazards.



### **Discovering Novel Testing Options**

New tests were implemented over at our Pharmaceutical Laboratory to enhance work processes in the analysis of adulterants and poisonous substances in health supplements and herbal medicines. We are now equipped to accurately identify the presence of toxic natural alkaloids such as solanidine, solasodine and lobeline. We are now also able to conduct detailed analyses of aflatoxins in herbal medicines.

To augment its capabilities in providing regulatory testing of cosmetic products in Singapore, our Cosmetics Laboratory introduced new tests to support the analysis of 1,4-dioxane and formaldehyde in these products. We also successfully accredited a new series of prohibited colorants – Sudan I, II, III, IV and Parared.

New tests were also put in place for the analysis of Tobacco Specific Nitrosamines in mainstream cigarette smoke at our Cigarette Testing Laboratory. With this latest development, we further enhanced the Laboratory's capabilities in providing analytical and advisory services to our regulatory arm to ensure that cigarettes available locally are in compliance with current regulations.

### **Pushing the Boundaries**

Accredited to the SAC-SINGLAS since 1997, and upgraded to the ISO/IEC 17025 quality system since July 2002, our Food Safety Laboratory provides food investigation services to assist customers in food forensics. During the course of the year, we actively improved on current methodologies using state-of-the-art instrumentation including High Performance Liquid Chromatography Tandem Mass Spectrometry (HPLC Tandem MS), GC Tandem MS and hyphenated techniques such as HPLC-ICP/MS.

Three R&D projects were completed in 2009. One focused on the migration of photoinitiators in UV-inks from food contact materials into food using Ultra Performance Liquid Chromatography, while another was on the development of a method for the analysis of Polychlorinated Biphenyls in food. The third study focused on the determination of mycotoxins, nitropropanol and nitropropanoic acid in sugarcane juices. A new R&D project to survey mycotoxins content in Lingzhi and Lingzhi-related products by High Performance Liquid Chromatography is in the pipeline. Going forward, we will be developing new capabilities in the area of Food Traceability through the adoption of new technology such as Isotopic Ratio Mass Spectrometry (IRMS). These improvements will offer our clients faster turnaround time, as well as a more comprehensive service package that is also competitively priced.



### **Fresh Formulas in Forensics**

The Forensic Chemistry & Physics Laboratory successfully applied various techniques used in trace evidence analysis to examine counterfeit drugs and their packaging. These included spectroscopy and microscopy as well as principles employed in toolmarks and document examination. We also collaborated with DIR Technologies, Israel, on the development of imaging devices which have the potential for rapid screening of unknown drug samples affordably.

Additionally, we are also developing methods using IRMS to trace the origin of counterfeit drugs based on their isotope ratios of different elements. Isotope characterisation of the counterfeit drug samples will be added to a master database of counterfeit drugs encountered in the region. This searchable master database will include all investigation, chemical and physical information of counterfeit drug samples.

To meet the evolving needs of our stakeholders in the forensic and enforcement communities, we are looking into creating new capabilities in forensic audio video analysis and forensic photographic comparison.

By providing investigative leads, the national DNA database managed by the DNA Database Laboratory continues to provide critical support to the Singapore Police Force.

We also validated and incorporated two new technologies into our work procedures in 2009: the Maxwell 16 (M16) system and the Rapid Stain Identification of Human Semen (RSID-Semen) kit. The M16 system, which allows for automated extraction and purification of genomic DNA from casework samples, is a faster and safer method that also minimises human error. Apart from benefits like its increased sensitivity and specificity, the RSID-Semen kit significantly shortens the time required for semen detection, thus affording rapid turnaround of casework.

### **Levelling Up with Global Standards**

The Forensic Intergrated Operations Network Applications (FIONA) system at the Mortuary@HSA will soon be embedded with a new coding to better track morbidity and mortality statistics. The International Statistical Classification of Diseases and Related Health Problems classifies diseases and a wide variety of signs, symptoms, and external causes of injury or disease. Under this system, every health condition can be assigned to a unique category and given a code. It is published by the World Health Organization (WHO) and is used worldwide.

A new Multi-Slice CT scanner will also be incorporated into the mortuary to be used as an adjunct tool to support autopsy investigations.

### **New Pathways to Progress**

Our efforts in developing and promoting metrology in chemistry came into full swing during the year. A new laboratory was completed at The Capricorn, Singapore Science Park II in June 2009, with a special "metal-free" section created for inorganic analysis completed in September.

In partnership with the Singapore Accreditation Council, we have organised and completed a Proficiency Testing survey on local clinical laboratories.

On the international front, we are collaborating with the National Institute of Metrology, Thailand, on the analysis of health status markers in human serum. We have also signed a Memorandum of Understanding with the National Institute of Metrology, Standardization and Industrial Quality, Brazil, on the scientific and technological cooperation in chemical metrology in the areas of processed food and pharmaceuticals.

We will be co-hosting the 2<sup>nd</sup> 2010 CCQM Working Groups Meeting (Organic Analysis, Bioanalysis and Gas Analysis Working Groups) with the Agency for Science, Technology and Research (A\*STAR)'s National Metrology Centre in November 2010 in Singapore.



## MARKETING OUR EXPERTISE

Over the years, we continued to extend our scope and services in order to be a valued collaborator to our many service partners. The increased workload over the past year underscored the pivotal role we play in helping our clients meet their strategic goals and their confidence in our promise to deliver beyond expectations. We witnessed the flourishing of many positive partnerships as we strove to become more customer-focused and entrepreneurial.

During the year, we renewed our commitment to provide high quality analytical and consultancy to the Agri-Food and Veterinary Authority of Singapore (AVA) through a new tender. This will enable us to support AVA's enforcement of food safety in Singapore, while pursuing our own mission to protect public health and safety. The national water agency, PUB, also engaged our services to develop a wider scope of analytical service as well as more sensitive water testing methodologies.

Our customised crime scene field tests and evidence collection kits continued to be very well-received following their launch two years ago. More orders have been placed and to meet emerging demand, a new kit for the collection of solids at crime scenes was developed in 2009. The spotlight also fell on another in-house innovation, the Singapore vehicle paint database, which is the region's first. A collaborative effort of HSA and the Bomb and Explosives Investigation Department of the Singapore Police Force, it has won two external awards and has received much attention from the regional forensic community. With a database comprising 1,250 samples, this project will give us an added edge in hit-and-run accidents investigations and in our counter-terrorism efforts.

” We witnessed the flourishing of many positive partnerships as we strove to become more customer-focused and entrepreneurial. “

Our stable of laboratories offered a full basket of services to the Central Narcotics Bureau (CNB) to boost the enforcement of zero tolerance to illicit drugs in Singapore. We worked closely with the Bureau in the analysis of new drugs of abuse and to build national capabilities in clandestine laboratory investigation. Apart from visiting drug scenes for leads, our forensic scientists also conducted training sessions to sharpen the capabilities of CNB officers in recognising the types of useful physical evidence for their investigations and prosecution of drug-related cases.

In response to CNB’s need to associate traffickers, drug packages and drug scenes, we developed a new service capability based on the forensic comparison of trace evidence and marks on various packaging materials. These included fibre, plastic bags, straws, tapes, newspapers, cling film, heat-seal marks, as well as adhesive and other unknown materials. New tests for illicit drug compounds in foods were made available during the year as well.

In October 2009, we co-organised a 2-day Forensic Conference in collaboration with the Attorney General’s Chambers and Singapore Police Force. This public forum was attended by some 400 representatives from the legal, scientific and law enforcement communities in Singapore. HSA’s forensic experts joined their other foreign and local counterparts to share on the key role our scientists played in several high-profile criminal cases in Singapore. We also showcased our capabilities and in-house innovations in an interactive exhibition organised in conjunction with the event.





## STRENGTH BUILT FROM WITHIN

During the year, we enhanced synergy by capitalising on the extensive in-house expertise and capabilities across our labs to elevate science to an even higher level of excellence and rigour. Our constant endeavour to be a bedrock of synergistic innovation spurred us on to explore newer and better ways of doing things by combining techniques and methods across different scientific disciplines to provide more credible and powerful solutions.

The joint capabilities of our laboratories complement the efforts of our regulatory arm in HSA's anti-counterfeiting efforts in Operation Storm, a joint initiative by INTERPOL and the WHO. This was launched in 2008 to combat counterfeit drugs across eight countries in Southeast Asia. A series of intensive raids have taken place over the past two years, and our laboratories have received many samples from INTERPOL and local seizures for analysis. These included antibiotics, antimalarials, antiplatelets, antipsychotics and erectile dysfunction drugs.

Different quick screening techniques by our Forensic Chemistry & Physics and Pharmaceutical Laboratories were combined to offer greater distinguishing power for these suspected counterfeits. Forensic techniques such as trace evidence analysis were employed to examine these products and their packaging materials. These were complemented by analytical tests for active product ingredients and adulterants.

By comparing the information gathered, we are able to develop a new integrated and rigorous scientific methodology for analysing and verifying the authenticity of seized drug samples. Our ability to provide this complete and comprehensive characterisation and identification of counterfeit drugs has earned HSA the appointment as a Designated Laboratory to analyse drug samples seized from Operation Storm.

We also performed two sensitive traffic accident reconstructions for the Traffic Police, using vehicle dynamics for the very first time. Our forensic scientists examined marks on the roadway and evaluated vehicular damages in order to determine the points of impact and vehicle speeds. The use of vehicle dynamics in these two cases complements our existing capabilities in the examination of vehicular damages and trace evidence due to forceful contacts in traffic accidents.

### Combining Capabilities and Competencies

The laboratories also harnessed synergies amongst themselves to steadily expand and extend their testing proficiencies for a wide range of products from food to cosmetics.

Our Food Safety and Analytical Toxicology Laboratories jointly developed a highly sensitive method to test for cocaine in a popular energy drink, utilising advanced instrumentation, HPLC Tandem MS. Additional capabilities were eventually developed and these included the quantitation of other illicit drugs such as morphine and cannabinoids in food products. Our newly-formed Chemical Metrology Laboratory also worked with the Food Safety Laboratory on the analysis of benzoic acid and sorbic acid in curry paste.

The Illicit Drugs and Pharmaceutical Laboratories have also established techniques to aid the identification of dextromethorphan and levomethorphan in cough syrup. As part of the overall effort to monitor the safety of cosmetic products, the Analytical Toxicology and Cosmetics Laboratories are in the process of developing a GC/MS/MS testing method for tetrahydrocannabinol in shampoo.

## IMPACTING THE REGION AND WORLD

Fostering and strengthening relations with our overseas counterparts and contributing positively to the global scientific community remain a key priority for us. We are honoured to have had the opportunity to advance thought leadership and shape regional and global developments in forensics and the applied sciences through our participation on many prominent platforms. All these focal points of contact have created multiple avenues for us to not just share knowledge, but to improve our own capabilities by learning from the success of others.

We are a leading voice in the Asian Forensic Sciences Network, with Dr Paul Chui, Group Director of Applied Sciences, as President. Other HSA officers were elected to various key positions within the Network during the course of the year as well. We hold the Vice-Chairman post in the Quality Assurance and Standards Committee, chair the DNA Workgroup, and in our capacity as Chair of the Trace Evidence Workgroup, set up the Fire & Explosions subcommittee. We also worked towards improving the standards of drug testing laboratories in Asia through our involvement in the AFSN's Illicit Drugs Workgroup and the United Nations Office on Drugs and Crime.

In October 2009, our Forensic Chemistry & Physics Laboratory provided a 3-week fire debris analysis training course for a senior Qatar scientist, cementing scientific links with the Qatar Forensic Laboratory. This successful and fruitful collaboration resulted in requests for further training for Qatari scientists.

Our Pharmaceutical Laboratory was designated as a WHO Prequalified Quality Control Laboratory in pharmaceuticals on 23 June 2009, making us a part of an international team that ensures standards of quality in medicinal products procured by United Nations (UN) agencies. We will be involved with other laboratories worldwide to provide analytical testing services of priority products for treatment of HIV/AIDS, malaria, tuberculosis and in reproductive health to UN agencies. This will help ensure unified standards of quality, safety and efficacy in these products supplied under various UN programmes to countries around the world.





Apart from this appointment, we have also successfully attained the re-designation as a WHO Collaborating Centre for Drug Quality Assurance for another 4-year term from 1 March 2010. An Agreement for Performance of Work has been signed to assist WHO in developing draft monographs for International Pharmacopeia on anti-retroviral and anti-infective medicines. Nearer home, we are actively involved in the ASEAN Reference Substance Project which establishes ASEAN secondary drug reference standards for use in member countries.

Another affirmation of our standing as partner of choice came in the form of our Cigarette Testing Laboratory being designated as a WHO Collaborating Centre for Tobacco Testing and Research in June 2009. This appointment signifies the leading role contributed by the laboratory to WHO Tobacco Free Initiatives, particularly in the development of testing and validation methods of tobacco regulation. To take these efforts further, we have signed an Agreement for Performance of Work to assist in validating the determination of Tobacco Specific Nitrosamines using both ISO and Intense Smoking Regime. Once validated, the method will officially be used to determine these substances in tobacco products.

Our Food Safety Laboratory supports the WHO as a Collaborating Centre for Food Contamination Monitoring. The food contamination data we provide WHO enables the agency to better reinforce food safety standards for consumers across the globe. We are also the EC-ASEAN reference laboratory for mycotoxin analysis. In June 2009, we organised a 5-day practical and theoretical training workshop for participants from ASEAN national laboratories.

As a member of the ASEAN Cosmetics Committee since 2003, our Cosmetics Laboratory engaged with our counterparts on various forums during the year to provide inputs on the implementation of the ASEAN Harmonized Cosmetics Regulatory Scheme as well as the establishment of the ASEAN Cosmetics Testing Laboratory Network.

“ We are honoured to have had the opportunity to advance thought leadership and shape regional and global developments in forensics and the applied sciences through our participation on many prominent platforms. ”

# KEY STATISTICS

## FOOD SAFETY DIVISION



**39,981**

Analytical Tests for  
Laboratory Samples



**7,312**

Analytical Cases

## PHARMACEUTICAL DIVISION



**25,239**

Analytical Tests for  
Laboratory Samples



**4,295**

Analytical Cases

## FORENSIC MEDICINE DIVISION



**3,806**

Coroner's Cases



**1,890**

Coroner's  
Autopsies



**24**

Non-Coronial  
Autopsies

## FORENSIC SCIENCE DIVISION



**338**

Forensic Cases



**2,553**

Forensic  
Exhibits

## ILLICIT DRUGS & TOXICOLOGY DIVISION



**30,895**

Forensic Cases



**63,316**

Forensic  
Exhibits

## BIOLOGY DIVISION



**19,908**

Forensic Cases



**25,177**

Forensic  
Exhibits



# HSA ACADEMY

”Our research initiatives demonstrate our constant striving to chart new territory in our areas of scientific and regulatory expertise.“

The newly established HSA Academy will be a key enabler to transform our organisation as we continue to push the boundaries of scientific and professional excellence. It will be an important catalyst for HSA to move into its next phase of development, empowering us to tackle various challenges presented by rapid globalisation, exponential changes in information technology, and accelerating advances in the sciences.

A key priority for the Academy, though still in a nascent stage, will be to seek and foster greater synergies across our unique conglomeration of diverse scientific and biomedical expertise. The HSA Academy will spearhead the development of our thought leadership capabilities. It will create avenues to engage internal and external experts to discuss and debate pressing issues through think tank meetings and forums, with the aim of translating these discourses into creative solutions. These efforts are part of a wider vision of enabling Singapore to set the direction and pace for new approaches and frameworks in health products regulatory science, transfusion medicine and the applied sciences.

One of the key elements that will play a critical role in determining how well HSA continues to succeed in our ever-changing environment is how synergistically we innovate. This is why one of the key accountabilities of the HSA Academy is to help consolidate, support and develop HSA’s research capabilities.

Research is a cornerstone of innovation at HSA. It invites the realignment of our priorities, influences our decisions and improves our understanding of our work and our world. It provides better solutions and answers to the tough questions we ask ourselves on how we can work smarter and faster, and improve our operations. Whether through incremental improvements or landmark breakthroughs, research paves the way for better alternatives and new possibilities. Our research initiatives demonstrate our constant striving to chart new territory in our areas of scientific and regulatory expertise. During the past year, we have shared many of our research insights and findings through diverse prominent platforms, both at home and abroad.

For a full listing of the research initiatives that we have embarked on in FY09/10, please visit: <http://www.hsa.gov.sg/publications>

ITS FY09 FINANCIAL HIGHLIGHTS

# FINANCIAL HIGHLIGHTS FY09

## Balance Sheet

	FY09/10 \$'000	FY08/09 \$'000 (restated)	Increase/ (Decrease) \$'000	%
Property, Plant & Equipment	104,111	99,360	4,751	5
Intangibles	10,323	10,429	(106)	(1)
Current Assets	44,508	40,093	4,415	11
<b>Total Assets</b>	<b>158,942</b>	<b>149,882</b>	<b>9,060</b>	<b>6</b>
Equity	81,809	70,629	11,180	16
Long-term Loans	21,840	22,750	(910)	(4)
Other Non-Current Liabilities	13,688	17,206	(3,518)	(20)
Current Liabilities	41,605	39,297	2,308	6
<b>Total Equity and Liabilities</b>	<b>158,942</b>	<b>149,882</b>	<b>9,060</b>	<b>6</b>

## Income & Expenditure Statement

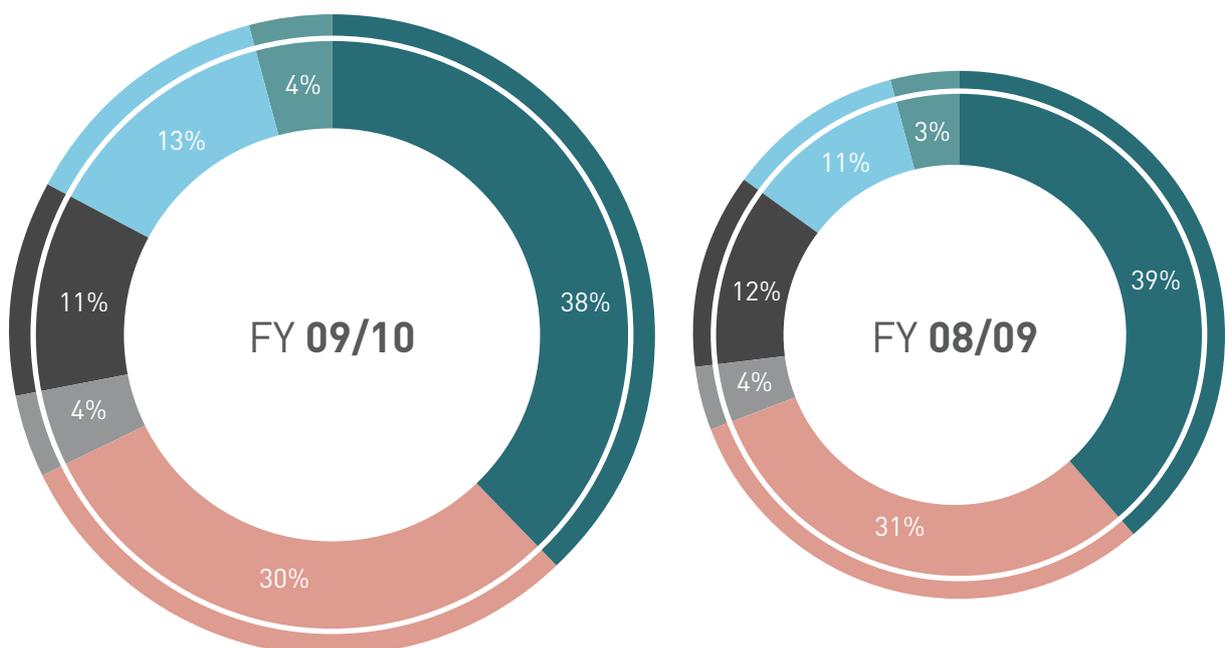
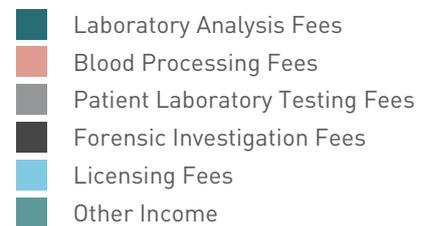
The Authority has achieved an overall net surplus of \$3.0m for FY09/10.

	FY09/10 \$'000	FY08/09 \$'000 (restated)	Increase/ (Decrease) \$'000	%
Operating Income	71,180	66,795	4,385	7
Operating Expenditure	(135,856)	(118,000)	17,856	15
<b>Deficit before Government Grants</b>	<b>(64,676)</b>	<b>(51,205)</b>	<b>13,471</b>	<b>26</b>
Government Grants	68,300	56,823	11,477	20
<b>Surplus before Contribution to Consolidated Fund</b>	<b>3,624</b>	<b>5,618</b>	<b>(1,994)</b>	<b>(35)</b>
Contribution to Consolidated Fund	(616)	(1,011)	(395)	(39)
<b>Net Surplus</b>	<b>3,008</b>	<b>4,607</b>	<b>(1,599)</b>	<b>(35)</b>

## Operating Income

The Authority earned a total operating income of \$71.2m in FY09/10, an increase of \$4.4m (7%) over FY08/09's revenue of \$66.8m.

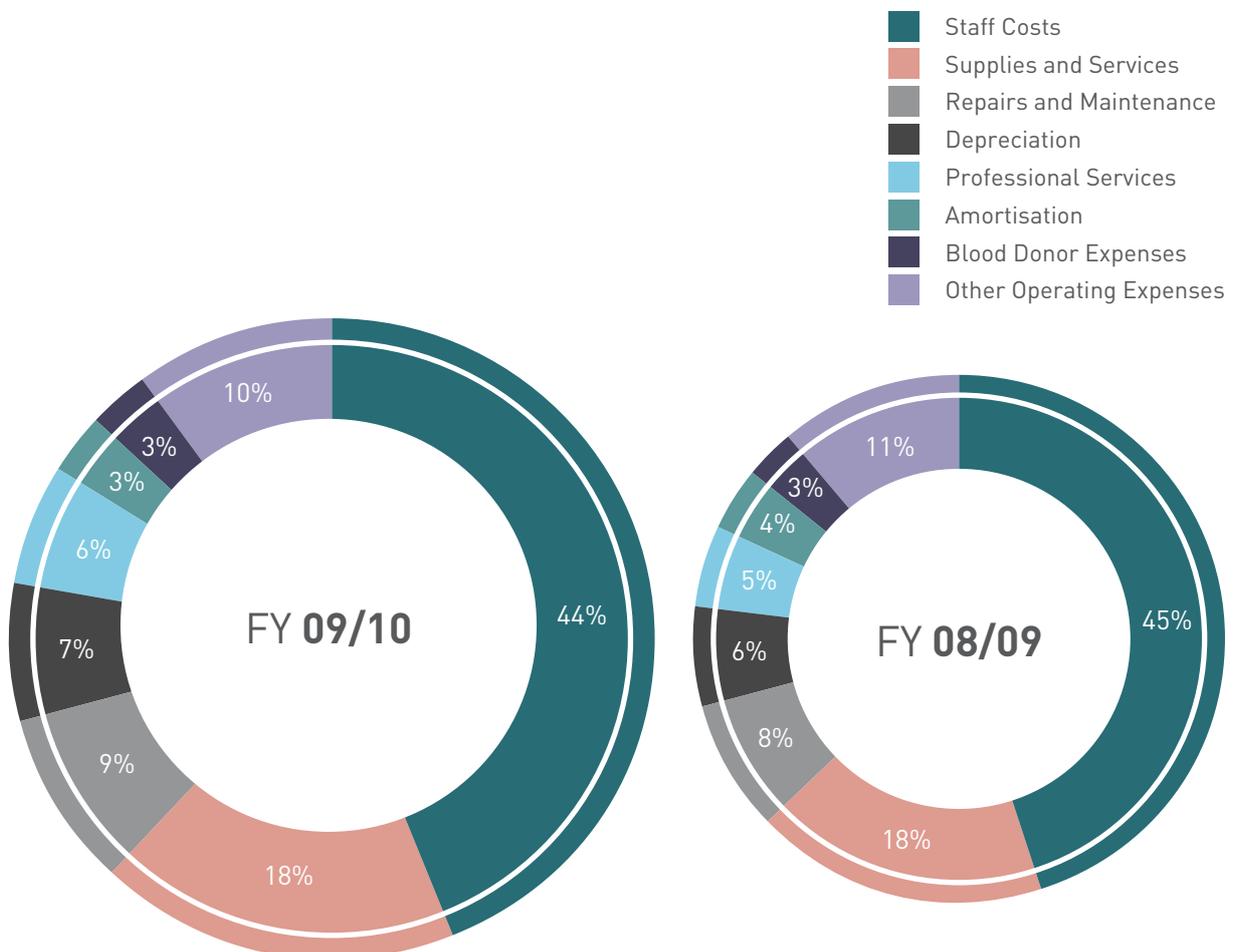
	FY09/10 \$'000	FY08/09 \$'000 (restated)	Increase/ (Decrease) \$'000	%
Laboratory Analysis Fees	26,691	25,657	1,034	4
Blood Processing Fees	21,695	20,565	1,130	5
Patient Laboratory Testing Fees	2,823	2,602	221	8
Forensic Investigation Fees	7,985	8,264	(279)	(3)
Licensing Fees	9,430	7,529	1,901	25
Other Income	2,556	2,178	378	17
<b>Total Operating Income</b>	<b>71,180</b>	<b>66,795</b>	<b>4,385</b>	<b>7</b>



## Operating Expenditure

The Authority incurred a total operating expenditure of \$135.9m in FY09/10, an increase of \$17.9m (15%) over FY08/09's expenditure of \$118.0m.

	FY09/10 \$'000	FY08/09 \$'000 (restated)	Increase/ (Decrease) \$'000	%
Staff Costs	60,389	53,969	6,420	12
Supplies and Services	24,037	21,581	2,456	11
Repairs and Maintenance	12,772	9,442	3,330	35
Depreciation	10,050	6,969	3,081	44
Professional Services	8,031	5,716	2,315	41
Amortisation	3,722	4,664	(942)	(20)
Blood Donor Expenses	3,382	3,288	94	3
Other Operating Expenses	13,473	12,371	1,102	9
<b>Total Operating Expenses</b>	<b>135,856</b>	<b>118,000</b>	<b>17,856</b>	<b>15</b>



# HSA ANNUAL REPORT 09/10

## EDITORIAL TEAM

<b>Advisors</b>	:	Dr John Lim & Dr Lam Kian Ming
<b>Managing Editor</b>	:	Lily Lim
<b>Editor</b>	:	Pearly Cheong
<b>Assistant Editor</b>	:	Lee Zhuomin
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**HEALTH SCIENCES AUTHORITY**

11 Outram Road Singapore 169078

**TEL** (65) 1800 213 0800

**FAX** (65) 6213 0839

[www.hsa.gov.sg](http://www.hsa.gov.sg)

[hsa\\_info@hsa.gov.sg](mailto:hsa_info@hsa.gov.sg)