RA, QA, AND SUPPLY CHAIN ISSUES IN THE FAST GROWING ASIAN MEDICAL DEVICE MARKETS

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Presented by Ames Gross, President
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Overview of Asia
# Asia Economic Statistics (2016)

<table>
<thead>
<tr>
<th></th>
<th>Per capita GDP</th>
<th>Per capita GDP growth</th>
<th>GDP (PPP)</th>
<th>Real GDP (PPP) Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>$8,000</td>
<td>6.4%</td>
<td>$21.3 trillion</td>
<td>6.7%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>$42,330</td>
<td>1.5%</td>
<td>$427 billion</td>
<td>1.9%</td>
</tr>
<tr>
<td>India</td>
<td>$1,590</td>
<td>6.6%</td>
<td>$8.7 trillion</td>
<td>6.8%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>$3,350</td>
<td>3.5%</td>
<td>$3 trillion</td>
<td>5%</td>
</tr>
<tr>
<td>Japan</td>
<td>$34,530</td>
<td>1.4%</td>
<td>$4.9 trillion</td>
<td>1%</td>
</tr>
<tr>
<td>South Korea</td>
<td>$27,220</td>
<td>2.2%</td>
<td>$1.9 trillion</td>
<td>2.8%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>$9,770</td>
<td>3.5%</td>
<td>$863 billion</td>
<td>4.2%</td>
</tr>
<tr>
<td>Philippines</td>
<td>$2,900</td>
<td>4.3%</td>
<td>$801 billion</td>
<td>6.8%</td>
</tr>
<tr>
<td>Singapore</td>
<td>$52,890</td>
<td>0.8%</td>
<td>$486 billion</td>
<td>2%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>$22,450</td>
<td>2%</td>
<td>$1.1 trillion</td>
<td>1.4%</td>
</tr>
<tr>
<td>Thailand</td>
<td>$5,810</td>
<td>2.5%</td>
<td>$1.2 trillion</td>
<td>3.2%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$2,110</td>
<td>5.5%</td>
<td>$594 billion</td>
<td>6.4%</td>
</tr>
<tr>
<td>United States</td>
<td>$56,120</td>
<td>1.8%</td>
<td>$ 18.6 trillion</td>
<td>1.6%</td>
</tr>
<tr>
<td>European Union</td>
<td>$32,020</td>
<td>1.9%</td>
<td>$19.2 trillion</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: World Bank and other PBM sources
## Size of Medical Device Markets (2016)

<table>
<thead>
<tr>
<th>Region</th>
<th>Market Size (US$)</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>$140 billion</td>
<td>3%</td>
</tr>
<tr>
<td>EU</td>
<td>$130 billion</td>
<td>2%</td>
</tr>
<tr>
<td>Japan</td>
<td>$27 billion</td>
<td>1.5%</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>$34 billion</td>
<td>20%</td>
</tr>
<tr>
<td>Latin America</td>
<td>$12 billion</td>
<td></td>
</tr>
</tbody>
</table>

### Asian Medical Device Markets

<table>
<thead>
<tr>
<th>Country</th>
<th>Market Size (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>$22 billion</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>$850 million</td>
</tr>
<tr>
<td>India</td>
<td>$3.5 billion</td>
</tr>
<tr>
<td>Indonesia</td>
<td>$780 million</td>
</tr>
<tr>
<td>Korea</td>
<td>$3.9 billion</td>
</tr>
<tr>
<td>Malaysia</td>
<td>$1 billion</td>
</tr>
<tr>
<td>Philippines</td>
<td>$300 million</td>
</tr>
<tr>
<td>Singapore</td>
<td>$530 million</td>
</tr>
<tr>
<td>Taiwan</td>
<td>$2.5 billion</td>
</tr>
<tr>
<td>Thailand</td>
<td>$850 million</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$630 million</td>
</tr>
</tbody>
</table>

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*Global Medical Device Markets Diagram:*
- **U.S.**: 41%
- **EU**: 38%
- **Asia Pacific**: 10%
- **Japan**: 8%
- **Latin America**: 3%
Asian Medical Device Market Trends

Figure 1: Asia’s emerging markets’ healthcare expenditures are forecast to grow two to three times faster than the global average.

<table>
<thead>
<tr>
<th>Year</th>
<th>Healthcare Expenditure (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>5.3</td>
</tr>
<tr>
<td>2008</td>
<td>5.8</td>
</tr>
<tr>
<td>2009</td>
<td>6.0</td>
</tr>
<tr>
<td>2010</td>
<td>6.4</td>
</tr>
<tr>
<td>2011</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Key: EMEA = Europe, Middle East, and Africa; Americas

CAGR: Composite Annual Growth Rate

Sources: Espicom; BMI; Bain analysis
Asian Medical Device Market Trends

• Explosive demand for medical devices in the Asian markets attracts Western and local medical device companies.
• Western medical device companies’ increasing sales to Asia with basic models and lower costs of their top of the line Western products.
• Western device companies are sourcing/manufacturing in Asia more.
• Many more local Asian medical device manufacturers now in business making more sophisticated products with components of better quality as demand increases in the region and globally. More Asian device manufacturers compete with West.
Japan’s Device Market

• Still the biggest device market
• Maybe easier to enter than 5 years ago
  – Like state of the art Western product (especially if they can reduce overall costs)
  – Somewhat easier registration than before
• Question: does new technology get reimbursed fairly?
  – Japanese only use reimbursed medical devices, very little self pay
Japan

• Long-term outlook, takes time to build relationships of trust
• Quality is key; sloppiness will not work
• Competition in Japan is fierce
• Do a thorough investigation before registering in Japan
Japan: Market Research Must Be Conducted Prior To Product Registration

• Oftentimes, the international sales and marketing executive within a device company will request that their regulatory professionals register the device in Japan without any further information about the product’s prospects for sales or growth in the Japanese market.

• Conducting serious independent research on the Japanese market for each product, including an analysis of the current market size, expected growth rate, and reimbursement are crucial steps that must take place prior to the decision to register a product.
Japan:
Ensure That Japanese KOLs Are Giving Honest Feedback And Are Not Double Agents

• The opinions of Japanese key opinion leaders (KOLs) in the appropriate field for each medical device should be included in the initial market research. However, simply asking for the opinions of Japanese doctors after giving a product demonstration is often not enough to gauge their true thoughts.

• Japanese KOLs are almost always very polite to foreigners and will give positive comments about the medical device product.

• It is a good idea to have a local Japanese executive conduct extensive in-person interviews with the KOLs in their native language in order to obtain their genuine feedback. KOLs are important for product registration.
Clinical Trials in Japan

• Formal consultation sessions
• Have you gone to PMDA clinical trial consultation session(s)?
• Which CRO has done device trials?
• Key investigator/KOL most important
• Doctors in Japan still “God-like”
• Maybe a Japanese distributor or other Japanese company will pay for the clinical trials if they think your product is a “winner”
Japan: Product Registration

- To register a medical device in Japan, a foreign manufacturer needs to submit a complete dossier that includes an application with attachments and a Summary Technical Document (STED).
- In addition to this dossier, a Quality Management System (QMS), and Foreign Manufacturer Registration (FMR) are required.
- Who should be local agent in Japan: your own office in Japan, your distributor, or an independent third party in Japan DMAH/MAH
Japan: New Regulatory Issues

• November 24, 2014 new regulations
• The Pharmaceutical Affairs Law (PAL) became the Pharmaceutical and Medical Device Act (PMD Act).
• More products approved by third party certification.
• QMS inspection has been simplified – conducted according to product groups, not individual products.
• FMR simplified – changed from license and accreditation to just registration; key is GM of main manufacturing facility.
• Cellular and tissue products – less upfront clinical trials.
• Software stand alone now.
Japan: 
Maximizing Reimbursement Is Critical For The Success Of Product Sales In Japan

• Japan has universal healthcare for all its citizens, and almost all devices are only bought when the product or procedure is reimbursed.

• It is crucial to evaluate the cost and timeframe for obtaining maximum reimbursement for a medical device when determining whether to enter the Japanese market.

• One important point to note is that if the reimbursement code in Japan for an improved device is associated with an older existing technology, the reimbursement amount may be too low for the company’s product sales in Japan to be profitable.

• While higher reimbursement codes can be set for newer technologies (codes C1 and C2), getting this level of reimbursement can be very difficult and require a lot of time and negotiation.
# Japan Pricing and Reimbursement

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td><strong>(Inclusive)</strong> Included within the technical fee. No separate reimbursement is made for the device itself. Product examples: gloves, gauze, sutures</td>
</tr>
<tr>
<td>A2</td>
<td><strong>(Designated inclusive)</strong> Technical fee granted for use of the device or class of devices. No separate reimbursement is made for the device itself. Product examples: MRIs, CTs, and most types of capital equipment</td>
</tr>
<tr>
<td>B</td>
<td><strong>(Individual evaluation)</strong> “Me-too” products that are similar to other products on the market. As a result, these products fit into existing technical fee and STM reimbursement categories. Product example: CoCr hip stem</td>
</tr>
<tr>
<td>C1</td>
<td><strong>(New function)</strong> New products based on existing products/therapies.</td>
</tr>
<tr>
<td>C2</td>
<td><strong>(New function and New technology)</strong> New products that result in a new therapy or procedure. No predicate product or treatment exists.</td>
</tr>
<tr>
<td>F</td>
<td>Products that do not match the reimbursement system in place or are not suitable for insurance coverage</td>
</tr>
</tbody>
</table>
Japanese Device Reimbursement

• R-zone over 700 categories (4%) difference between actual purchasing price and reimbursement price
• FRP for about 120 categories; 1.3 times average of 4 western countries (new and existing devices)
• High Technology Assessment (April 2018); incremental cost effectiveness ratio but still unclear waiting for most details
China

- Big market and opportunity for growth
- However, registration is getting a lot harder
- Copying is rampant
- More copying is being done, small Western companies do not get Chinese patents and do not have deep pockets to go to the Chinese court.
- Never can do enough due diligence
- Chinese investors/licensing may work
Chinese Medical Device Registration

• Issued October 1, 2014
• Getting a lot tougher and longer for approvals (New regulations October, 2014)
• New standards released
• Testing delays (only 10 centers); testing fees waived: good/bad
• Supplementary reviews requested by the CFDA
• Will clinical evaluation reports (CER) work?
• Class 2 and 3 medical devices need local clinical trials if not on exempt list; new exempt list too
• Approval in county of origin still required (can you make in EU)
China: Type Testing

- For Class 2 and Class 3 devices, CFDA will request samples for type testing. For Class 1 products, CFDA will accept a company’s foreign report.
- Testing centers will test all specification items listed in the Product Technical Specifications (which is drafted by the company.)
- For each specification item, testing centers will utilize the testing method described in the Product Technical Specifications.
- While conducting the tests, CFDA now requests that testing centers provide comments on the company’s drafted Product Technical Specifications.
- The comments from the testing center should be submitted together with the testing report to avoid repeats and additional testing, which occurs frequently, leading to long delays in the registration process.
China:
Registration Timeframe for Imported Class II and III Devices with Local Clinical Trials

Before Application is Submitted

Documents, Samples Preparation, and Shipment

Sample testing at a CFDA certified testing center in China

Clinical trial conducted in a CFDA certified clinical center in China

Collect all data listed below and submit the application to the CFDA
- Technical Files
- Legal Documents
- Sample Testing Report
- Clinical Data

Around 3 months

Around 6 months

Depending on the protocol 12-18 months

Around 2-3 months
China: Registration Timeframe for Imported Class II and III Devices

After Application is Submitted

1. Registration Application Submission to the CFDA
   - 5 working days
   - Documents supplement

2. Preliminary Review by the Acceptance Office of the CFDA
   - 3 working days
   - Supplement notice issued to applicant

3. Technical Review by the Center for Medical Device Evaluation (CMDE)
   - 60-90 working days

4. Supplement Dossier Preparation
   - Maximum 1 year*

5. Further Technical Review by the CMDE
   - 60 working days (Class 2)
   - 90 working days (Class 3)

6. CFDA Final Review and Granting of Registration Approval
   - 30 working days
China: Clinical Trials

• For Class II and III medical devices, more local clinical trials will be required for product approval

• There is a device list for exemption:
  1. Exemptions will apply if the manufacturing process is mature and the working mechanisms are clear
  2. The safety and efficacy can be proved by non-clinical evaluations
  3. The safety and efficacy can be approved via clinical trials or data from similar products

• Manufacturers that are applying for registration of one of these now-exempted medical devices would be able to submit a written application to the CFDA to receive an exemption from undertaking clinical trials in China
China: Clinical Trials

- CFDA Notice 2014 No.14, announced a batch of Class III devices which require CFDA approval of local clinical trials, before kicking off the study.
- International and domestic CROs
- Monitor and audit trials locally for best results
China Pricing and Reimbursement

• Pricing
  – Oftentimes follows the national price list, but now is determined more and more by the provincial pricing bureaus (need to go province by province)

• Reimbursement
  – Mostly for procedures with domestically made products. If patient wants a foreign stent, they must pay extra cost out of pocket
  – Adjunct devices are normally not reimbursed
The Overall Market Access Process In China For Imported Medical Device Products After Product Approval

- A complex, lengthy, and uncertain process
- First started in the late 90's, and has been upgraded over the years in an effort to ensure transparency, minimize corruption, and bring down the cost to the payer and to the patient
- Since late 2014, more significant changes and experimentations throughout the country have led to huge uncertainties.
Disposables And Implantables Have Come Down In The Last Couple Of Years

Case study – GanSu Province Purchase Prices for Stent Products (2015)

<table>
<thead>
<tr>
<th>Number</th>
<th>Product Catalogue Code</th>
<th>Product Sub-type</th>
<th>Product Name / Brand</th>
<th>Manufacturer</th>
<th>Manufacturing Location</th>
<th>Price (RMB)</th>
<th>Price (RMB)</th>
<th>Compared to 2008 National Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1451</td>
<td>08104301</td>
<td>Stent, coated with rapamycin and derivatives</td>
<td>Lepu (Beijing)</td>
<td>Beijing</td>
<td>10,800</td>
<td>9,100</td>
<td>~15% reduction</td>
<td></td>
</tr>
<tr>
<td>945</td>
<td>08104301</td>
<td>Stent, coated with rapamycin and derivatives</td>
<td>EXCEL</td>
<td>Shangdong JW</td>
<td>10,900</td>
<td>9,100</td>
<td>~15% reduction</td>
<td></td>
</tr>
<tr>
<td>349</td>
<td>08104301</td>
<td>Stent, coated with rapamycin and derivatives</td>
<td>Shanghai MircoPort</td>
<td>Shanghai</td>
<td>10,800</td>
<td>9,100</td>
<td>~15% reduction</td>
<td></td>
</tr>
<tr>
<td>352</td>
<td>08104301</td>
<td>Stent, coated with rapamycin and derivatives</td>
<td>Shanghai MircoPort</td>
<td>Shanghai</td>
<td>11,000</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>513</td>
<td>08104302</td>
<td>Stent, coated with Taxol</td>
<td>YINYI (垠艺)</td>
<td>Liaoning Province</td>
<td>11,000</td>
<td>9,100</td>
<td>~15% reduction</td>
<td></td>
</tr>
<tr>
<td>610</td>
<td>08104301</td>
<td>Stent, coated with rapamycin and derivatives</td>
<td>ENDEAVOR</td>
<td>Medtronic</td>
<td>16,500</td>
<td>10,100</td>
<td>~30% reduction</td>
<td></td>
</tr>
<tr>
<td>1387</td>
<td>08104100</td>
<td>Stent, non-drug-coated</td>
<td>R-STENT</td>
<td>OrbusNeich</td>
<td>13,600</td>
<td>N/A</td>
<td>local made new product at RMB7,200 in GanSu 2015 Catalogue</td>
<td></td>
</tr>
</tbody>
</table>

Sources: 2008 National Catalogue (for Cardio Intervention; GanSu Bureau of HRSS)
Chinese Competitors: Look Out!

• Local Chinese medical devices compete with foreign-made products (Lepu, MicroPort, etc.)
• Chinese government is financially incentivizing local device companies to make innovative products
  – Chinese hospitals are encouraged to buy China-made devices
• Locally made innovative products -- fast track registration
• Chinese locally-made products compete globally with Western products in Brazil, Indonesia, etc.
• Chinese companies will acquire or invest in more Western device companies in the future
  – MicroPort purchased Wright Medical’s OrthoRecon business for almost $300 million; this is just the beginning
Taj Mahal, Agra
India: Medical Device Market

• India’s medical device market is growing faster than at any time in the last decade, with a projected growth rate of 12-16% over the next several years.

• With a population of 1.2 billion and a growing middle class, India has the potential for strong growth.

• India’s medical device market is dominated by foreign device companies, which control roughly 70% of the market.
## India:
Current List of *Notified* Medical Device Families Requiring Registration

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the Device</th>
<th>Notification Number</th>
<th>Date of Notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disposable Hypodermic Syringes</td>
<td>GSR 365 (E)</td>
<td>3-17-1989</td>
</tr>
<tr>
<td>2</td>
<td>Disposable Hypodermic Needles</td>
<td>GSR 365 (E)</td>
<td>3-17-1989</td>
</tr>
<tr>
<td>3</td>
<td>Disposable Perfusion Sets</td>
<td>GSR 365 (E)</td>
<td>3-17-1989</td>
</tr>
<tr>
<td>4</td>
<td>In vitro Diagnostic Devices for HIV, HBsAG and HCV</td>
<td>GSR 601 (E)</td>
<td>8-27-2002</td>
</tr>
<tr>
<td>5</td>
<td>Cardiac Stents</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>6</td>
<td>Drug Eluting Stents</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>7</td>
<td>Catheters</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>8</td>
<td>Intra Ocular lenses</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>9</td>
<td>IV Cannula</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>10</td>
<td>Bone Cements</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>11</td>
<td>Heart Valves</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>12</td>
<td>Scalp Vein Set</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>13</td>
<td>Orthopedic Implants</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
<tr>
<td>14</td>
<td>Internal Prosthetic Replacements</td>
<td>S.O. 1468 (E)</td>
<td>10-6-2005</td>
</tr>
</tbody>
</table>
India:
Additional List of *Notified* Medical Device Families Requiring Registration

1. Blood Grouping Sera
2. Ligatures, Sutures and Staplers
3. Intra Uterine Devices (Cu-T)
4. Condoms
5. Tubal Rings
6. Surgical Dressings
7. Umbilical Tapes
8. Blood/Blood Component Bags
India

- New medical device requirements start January 1, 2018
- Only existing families will require registration (CDSCO) through 2020
- However, may be adding families/products in future
- Manufacturing licenses for class A and B responsibility of the State licensing authorities, class C and D under CDSCO (central)
- Notified bodies will become more relevant-3 NBs already accredited
- Price Controls, watch out!
Recently, Prime Minister Narendra Modi’s Ministry of Health published a 108 page notification on medical devices in India. Significant changes to medical device regulations include:

– Device licenses will no longer expire. The manufacturer will need to pay a renewal fee every 5 years to continue marketing the product.

– Device registration approval for imported devices will take an estimated maximum of 9 months. Registration will automatically imply import license and will eliminate the 3 month wait for an import license.

– If the Ministry of Health fails to complete a regulatory process in a pre-determined amount of time, then the license will be “deemed” to be approved.

• The new regulations will come into effect January 2018.
Nizamia Hospital
Vietnam: All Imported Devices Now Require Registration

• Vietnam has new regulations that now require registration for all medical devices imported into Vietnam. Starting in 2017, all imported medical devices are required to be registered for marketing authorization licenses.
• Previously, only 24 items required registration, and the license was valid for 12 months. Now, all medical devices must be registered. The device licenses for Class A products lasts forever, and the licenses for Class B, C, and D devices last for five years.
• The import licenses of companies currently selling imported Class A medical devices will only be valid until June 30, 2017. Import licenses for medical devices in all other classes will be valid only until December 31, 2017.
• The Ministry of Health began receiving registration dossiers for Class A medical devices on January 1, 2017, and will start receiving registration dossiers for Class B, C, and D medical devices on July 1, 2017.
Reasons To Source Or Manufacture In Asia

• Some labor costs and manufacturing costs are cheaper – Vietnam, India
• Quality in Asia is quickly getting better
• Able to make high volumes with established device manufacturing bases in China
• More FDA/ISO factories in Asia now
• Device market growth is fastest in Asia; get closer to customers in Asia
  – Per capita income growth and the increasing middle class demand better healthcare
  – Increased number of hospitals/specialty health centers – new hospitals, government investing a lot in healthcare coverage (i.e. Indonesia universal coverage)
  – More device reimbursement in many Asian countries
• In some cases, it may not make sense to source or manufacture in Asia if you want to (1) sell in the U.S./EU or (2) reduce supply chain risks and/or freight costs, etc.
Sourcing in Asia

• China manufacturing costs have skyrocketed, but quality has also improved.
• It may be cheaper for commodity devices and components to be made in Vietnam and India rather than China.
• Due diligence, close and continuous follow-up, monitoring, audits, and QA will be key.
Quality Issues In China For Sourcing And Manufacturing

• We were asked by a device manufacturer to audit a Chinese factory supplier (2011)
• Goal: FDA approval for Chinese factory
• Initial inspection – factory quality standards are not very good
• Auditor must be bilingual
• New 2014-2015 Chinese regulations show improving manufacturing and quality standards
Quality Issues In China For Sourcing And Manufacturing

Initial response from Chinese factory manager:
• “She has been working with the Chinese factory’s process engineers and technical staff to come up with a batch record that contains clear and sufficient operational instruction and detailed records to be used at the time of performance. This is the highest priority. Without executable batch record, no validation can begin. The seriousness of the compliance problem at the Chinese factory cannot be overstated – no executable written procedures, including the batch instruction, or records existed at the plant. They were constantly changing process parameters without records, leading to the loss of important historical data and valuable institutional memory on manufacturing experience. We will try our best to bring them up to speed.”
Quality Issues in China for Sourcing and Manufacturing

• PBM auditor trying to improve quality:

  “I had a face-to-face discussion with the Chinese factory manager to find solutions for significant problems and to update him on the tasks we finished. After this talk, I can feel he is not 100% committed to address the identified issues in the best way; rather, he looks for second-best solutions or even excuses not to do this. He believes we are doing too many things of which the requirement is not appropriate for them. He even says the overseas purchaser may not establish a certain SOP or qualify an equipment as the Chinese factory is required.”
Quality Issues in China for Sourcing and Manufacturing

• **Response from the Chinese Manager:**
  I totally agree with your points. I will get the management to become more involved with this project. The continuous training is very important to us. I will make sure this will be enforced. The Chinese factory has also invested quite a lot in this project. We are definitely losing money due to the accommodation of the project process, QA requirement, and the resources put in, which affects our ability to run other projects. We want to move the project forward as much as you do.

• What happens after the FDA follow-up audit?
Greenfield Device Manufacturing Facility in China

General Requirements to Set Up Facility

• To set up a new manufacturing site for medical device products in China, the following basic regulatory approvals are required:

  1. Business License
  2. Medical Device Manufacturing License (along with GMP Inspection)
  3. Product Registration Certificate (for Class II & III devices) or Product Notification Record (for Class I devices)

• The application of the above mentioned licenses should be submitted sequentially. They cannot be submitted in parallel.
Medical Device Manufacturing License

• The Medical Device Manufacturing License is required for all medical device manufacturing facilities in China.

• The latest Administrative Measure for the Supervision of Medical Device Manufacturing was updated in 2014 (CFDA Order No.7).

• The manufacturing license also needs to be renewed every 5 years.

• For Class I Medical Devices, the manufacturing license is issued by the local (city level) FDA office. For Class II and III Medical Devices, the manufacturing license is issued by the Provincial FDA.
Greenfield Device Manufacturing Facility in China

Process & Timeframe for a Domestic Class III Device Manufacturing License

Application Submission to Provincial FDA

Preliminary Review by Acceptance office of Provincial FDA

Issue On-site Inspection Notice

Issue Deficiency Letter

On-site GMP Inspection

Issue Manufacturing License

Documents supplement 5 working days

30 working days

10 working days

Total:

Around 3-6 months

Plant rectification
Greenfield Device Manufacturing Facility in China

GMP Inspection

• A GMP inspection is a mandatory requirement for all Medical Device manufacturers in China.

• The latest China GMP for Medical Device products became effective on March 1st, 2015. It is equivalent to ISO 13485.

• For Class II and III Medical Devices only, on-site GMP Inspection is required before the local FDA issues the Manufacturing License.
Greenfield Device Manufacturing Facility in China

General Flowchart for Setting Up a New Medical Device Facility in China

1. Business License Application
2. Facility Construction
3. Technical Data Preparation for Product Registration and GMP
4. Product Registration/Notification
5. Manufacturing License
6. GMP Inspection (for Class II/III devices)
7. Rectification after GMP Inspection
8. Start Manufacturing
Greenfield Device Manufacturing Facility in China

• Choose the location carefully. Know the key government people at each location to maximize upfront benefits (tax rebates for picking a location, etc.)

• Same thing when picking a specific site or building

• Otherwise, NOT getting best deal

• Always plan ahead

• Acquisitions in China today too expensive
Asian Ethnic Diversity

• Japan and Korea: very homogenous; small minority populations
• China: 92% Han, Over 50 National Minority Groups for other 8%
• Singapore: 77% Chinese, 14% Malay, 8% Indian
• Malaysia: 50% Malay, 24% Chinese, 7% Indian
• Indonesia: 40% Javanese, over 300 ethnic groups for other 60%
• Thailand: Majority Thai, 14% Chinese
• Philippines: Very diverse population in terms of language, religion and ancestry
  – Tagalog 28%, Cebuano 13%, Ilocano 9%, Bisaya/Binisaya 8%, Hiligaynon Illonggo 8%
• Vietnam: over 50 ethnic groups
  – Almost 90% Vietnamese
  – Chinese (Hoa) around 1%
• India: 3 major groups
  – 72% Indo-Aryan, 25% Dravidian, 3% Mongoloid and other
Relationships of Trust Is How Business Is Done in Asia

• Relationships take time in Asia, unlike in the West.
• How do you write your emails to the Japanese?
• Do you send holiday cards and do you write handwritten messages on the holiday cards?
• Have you made an effort to understand the history and culture in the Asian countries you are working with?
• Good relationships can always deal with difficult problems. Lawyers do not dominate the regulatory and business practices in Asia, and should be used rarely.
THANK YOU FOR YOUR PARTICIPATION AND ATTENTION

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