



Development of Medication Barcode System to Ensure Patient Safety in Taiwan

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Taiwan Country Profile



- Population : **23 million**
- Hospital number: **494**
- Hospital Accreditation, since **1978**
- National Health Insurance , since **1995**
 - ◆ Coverage rate: **99%**
- Life expectancy (2011 est.)
 - ◆ Male: **75.98 years old**
 - ◆ Female: **82.65 years old**



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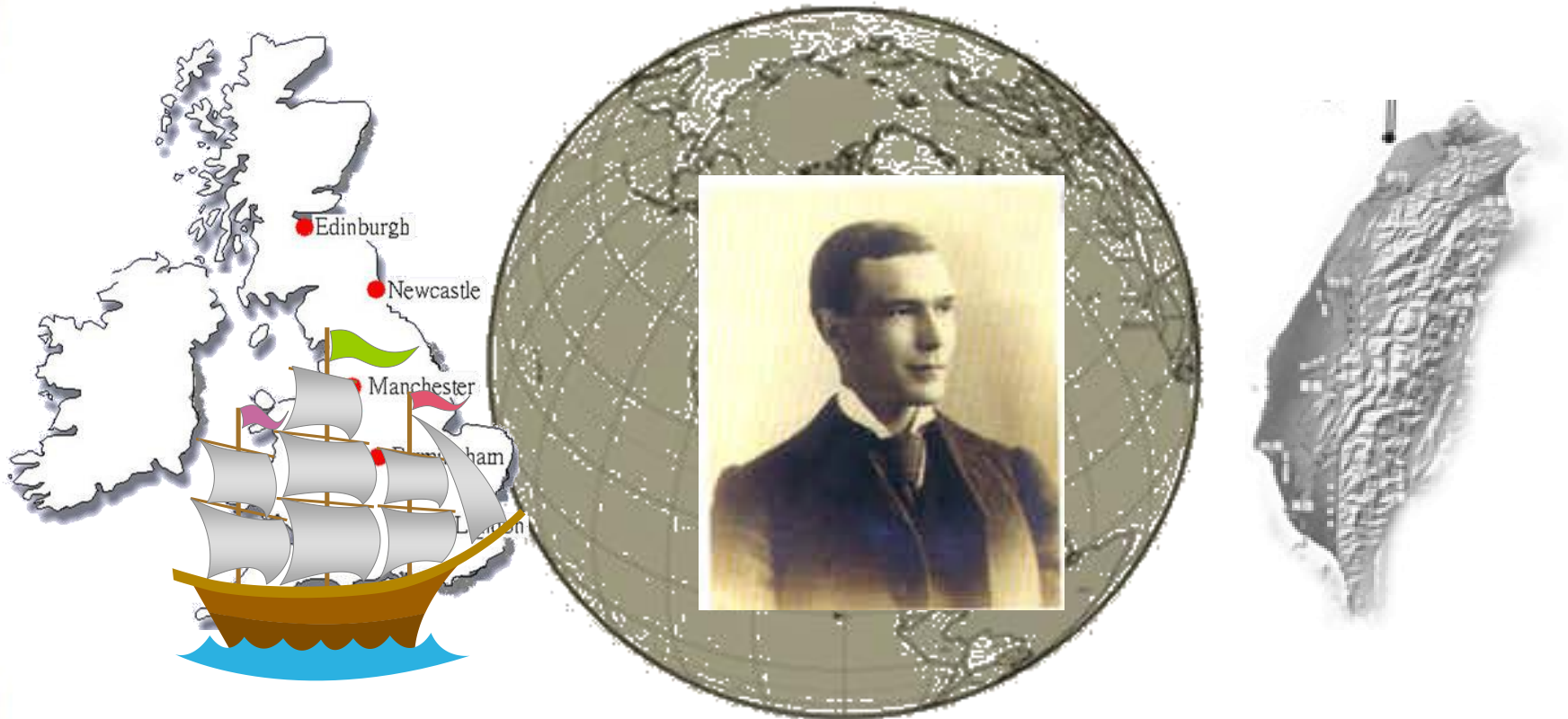
Briefings of Changhua Christian Hospital -- Establish under God's Love



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Dr. Landsborough Flew Overseas to Taiwan in 1895



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Pioneer of Taiwan's Modern Medicine



Founder Dr. Landsborough



Original building of CCH back in 1896



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Continuous Growth Since the Establishment in 1896



2-story hospital building built in 1907

Full view of the current CCH building



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Patient—Centered Healthcare



Hundred year ago health care

Patient—Centered healthcare



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The Only Medical Center with History of 100 Years in Central Taiwan Area



CHANGHUA CHRISTIAN HOSPITAL



Changhua Christian Hospital Healthcare System



- Hospitals: 10
- Patient beds: 3232
- Staff: 6358
- Pharmacists: 189

Hospitals: 10

Medical Center	1	District Hospitals	6
Regional Hospitals	2	Specialist Hospital	1



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Outline

- A. Why Develop Medication Barcode System**
- B. Development of Medication Barcode Standards in Taiwan**
- C. Standards of Medication Barcode in Taiwan**
- D. Results of Survey**
- E. The Future**



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A. Why Develop Medication Barcode System

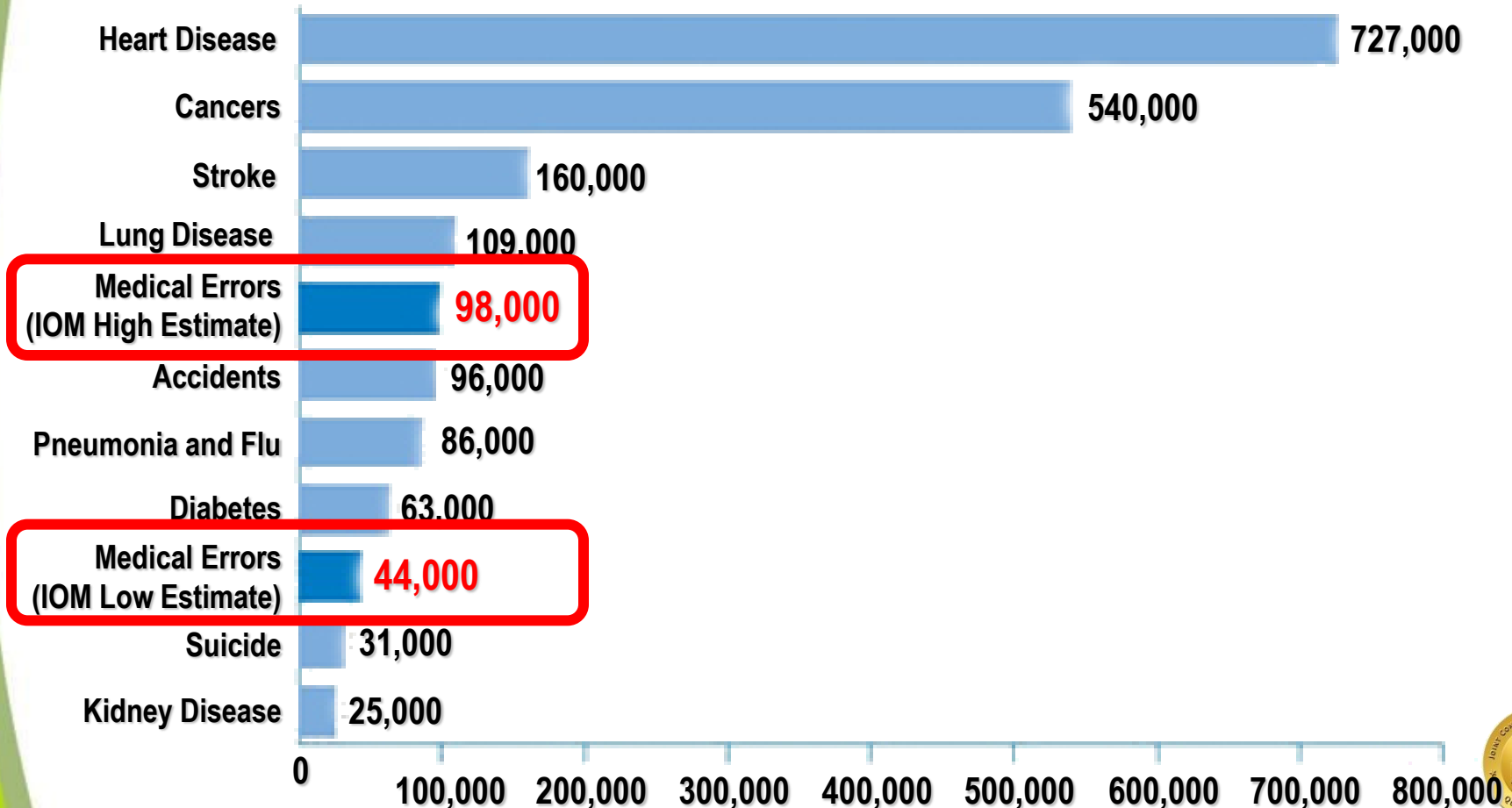


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Medical Error Annual Reports of IOM

Estimated **Deaths** Associated with **Medical Errors**
Compared to Leading Causes of Death in the U.S.



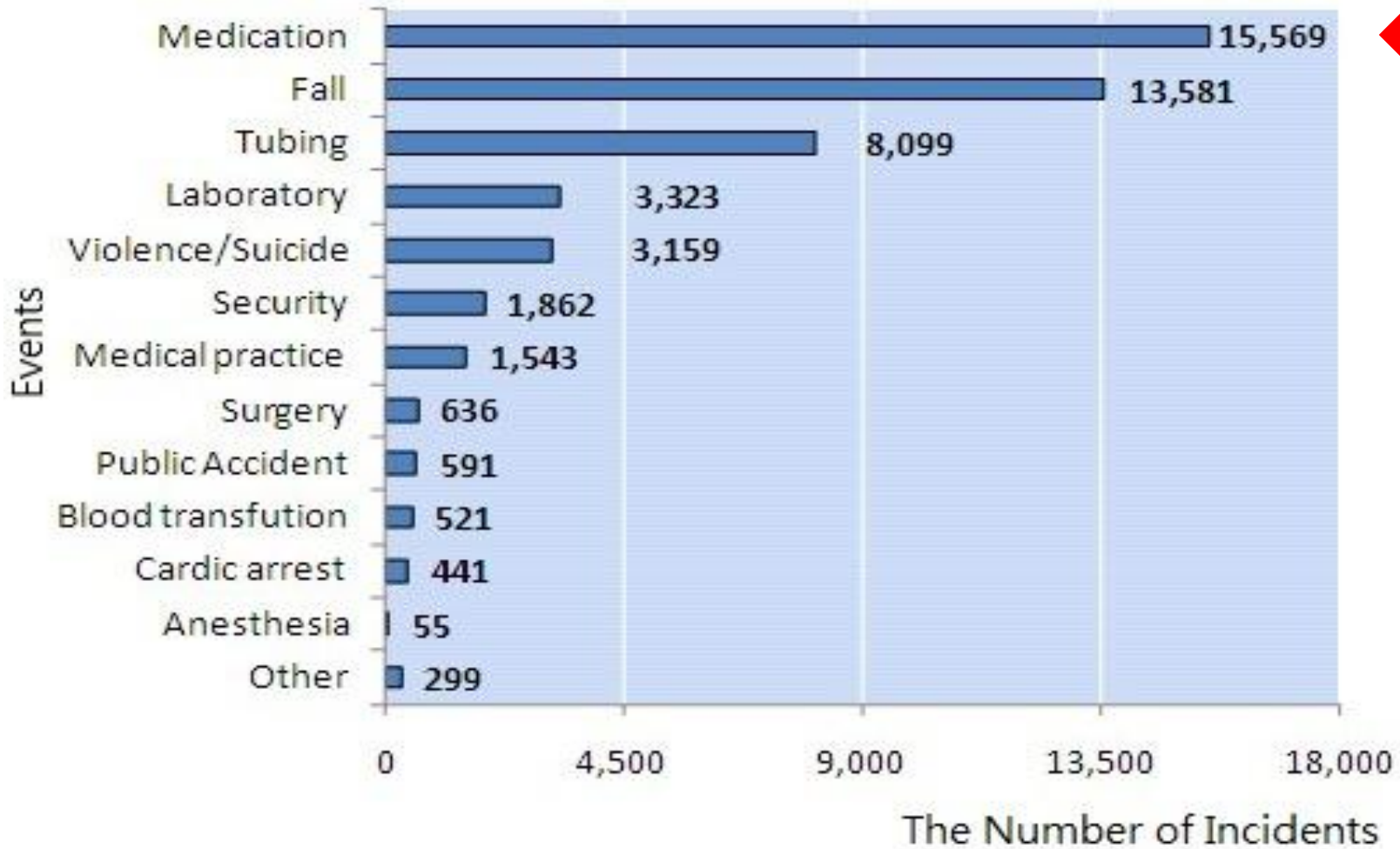
Adapted from IOM

IOM: Institute of Medicine





Medical Error Reports in Taiwan, 2010



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TSHP 2020 Initiative

- Goal 1 Increase the extent to which pharmacists help individual hospital inpatients achieve the best use of medications
- Goal 2 Increase the extent to which pharmacists help individual non-hospitalized patients achieve the best use of medications
- Goal 3 Increase the extent to which pharmacists actively apply evidence-based methods to the improvement of medication therapy
- Goal 4 Increase the extent to which pharmacists in health systems have a significant role in improving the safety of medication use

Goal 5 Increase the extent to which health systems apply technology effectively to improve the safety of medication use

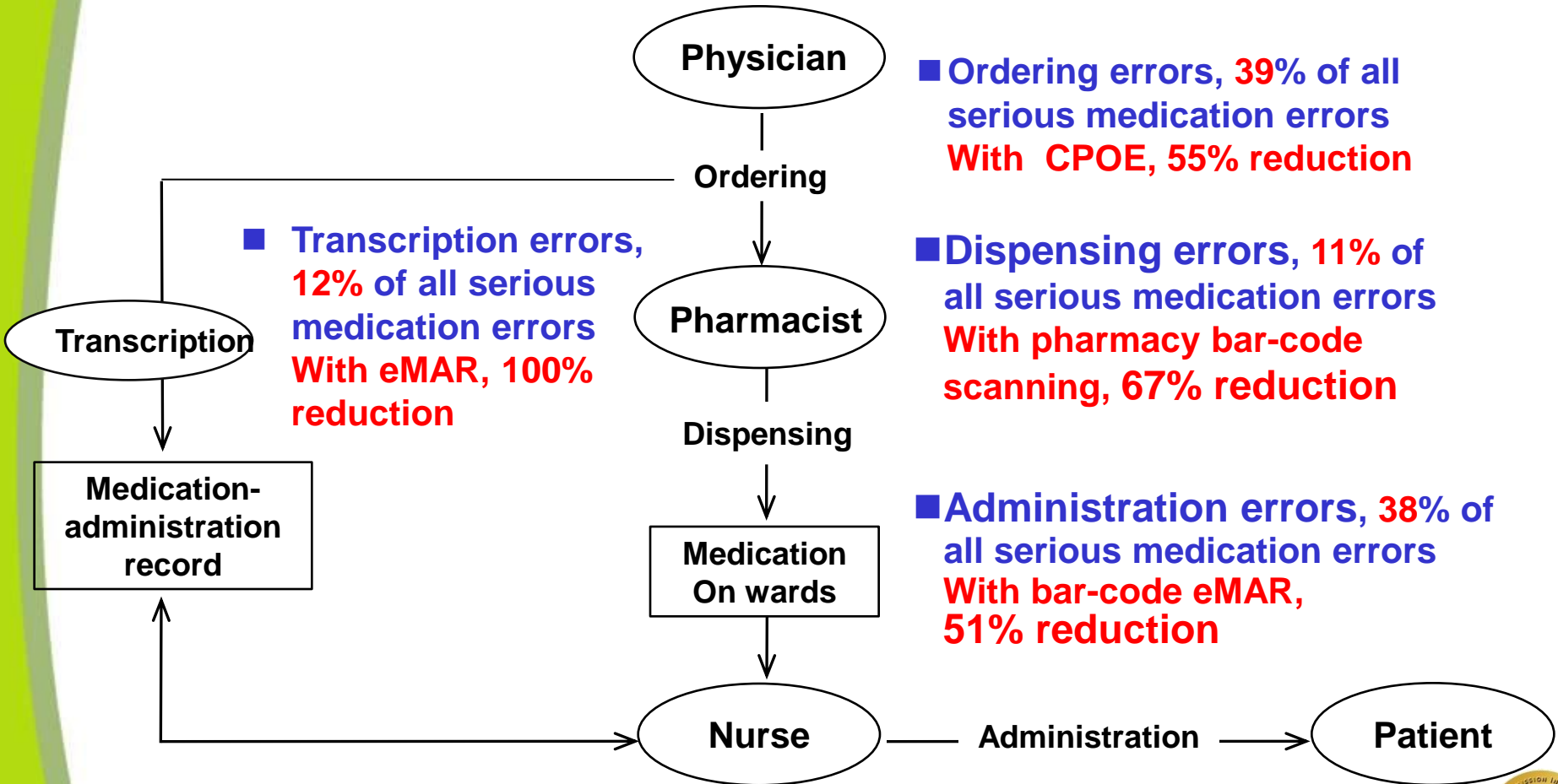
- Goal 6 Increase the extent to which pharmacists engage in public health initiatives on behalf of their communities
- Goal 7 Increase the extent to which pharmacists participate in international affairs



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More than 50% Medication Error Reduction with Bar-Code Scanning



NEJM 2010; 362; 1698-1707





B. Development of Medication Barcode Standards in Taiwan



Promote **Medication Safety** and **Efficiency** of Medication Management



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History of Medication Barcode in Taiwan

DOH Project

2000-2004

2008-2009

2011

DOH Project

Suppliers

- Promote the efficiency of supply chain

GS1

Advocate Period

- Enhance safe medication usage

TSHP

Establish Standard Mode

- Elevate safe and efficiency of medication usage

TSHP



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Establishment and Nationwide Promotion

1

- Standardize the medication barcode content
- Establish user guidelines of medication barcode application
- Hold medication barcode application orientation

2

- Survey of Medication barcode application penetration

3

- Establish the mode of barcode application on medication management system

4

- Recommendations for increasing health insurance payment price

5

- Establish the information platform of medication barcode



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C. Standards of Medication Barcode in Taiwan

- The package of drug should label generic name, brand name, dosage form, potency, **lot number, expiration date.**
- Every package layer should have printed or patched GS1 barcode.
- The primary layer adopt **DataMatrix** as a data carrier.
- The second layer adopt **DataMatrix** or **GS1-128** as a data carrier.
- The third layer adopts **GS1-128** as a data carrier.



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C. Standards of Medication Barcode in Taiwan (Cont.)

Category	Definition	Blister	Tablet	Injectable/ External usage	Data Carrier
1st layer	The most inner package level				DataMatrix
2nd layer	Sale box level				DataMatrix or GS1-128
3rd layer	Shipping Box				GS1-128



Samples



- Script information : generic name, Chinese/English brand name, and potency
- Barcode information : GTIN, lot number, expiration date



DataMatrix size: 5.7*5.7mm
 GTIN: (01) 04711916011641
 Expiry: (17) 131201
 Batch: (10) 1BD0772



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D. Results of Survey (1)

Prescription Drug

Category	Domestic investment manufacturer (n=59)			Foreign investment manufacturer (18)		
	Blister	External usage	Injection	Blister	External usage	Injection
Shipping Box	18%	20%	24%	12%	25%	13%
Sale box	40%	45%	33%	94%	50%	67%
The inner most package	6%	15%	18%	0%	13%	7%



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Results of Survey (2)

- Strategies to promote pharmaceutical manufacturers using medication barcode

Items	Domestic manufacturer			Foreign manufacturer		
	n	%	Sequence	n	%	Sequence
Develop national standards	52	88 .1	3	15	65 .2	3
Announce mandate	36	62 .1	5	15	65 .2	3
Priority purchase	39	66 .1	4	13	56.5	4
Barcode tech. assistance	52	88 .2	2	17	73.9	2
Increase health insurance payment	52	92.9	1	17	77.3	1



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Main Implementation difficulties and Solutions

No	Difficulties	Solutions
1	Small size of Unit-dose package	■ Technology assistance
2	Difficult to print barcode on blister	
3	Small market demand in Taiwan	■ Give priority purchase -- products with DataMatrix printed
4	Increase operating time and cost (Material cost: 0.05 NT/Tab.)	■ Strive for reasonable payment



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E. The Future

- **Need government support**
 - **Announce the timeline**
- **Develop complementary strategy**
 - **Technical assistance**
 - **Reasonable payment**
 - **Priority purchase**



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I Hope, ... ??? To --

Improve the patient safety

Enhance professional role

Reduce hospital management cost

Promote government efficiency in medication management and vigilance



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Taiwan (Formosa) -Beautiful Island



Thank You for Your Attention

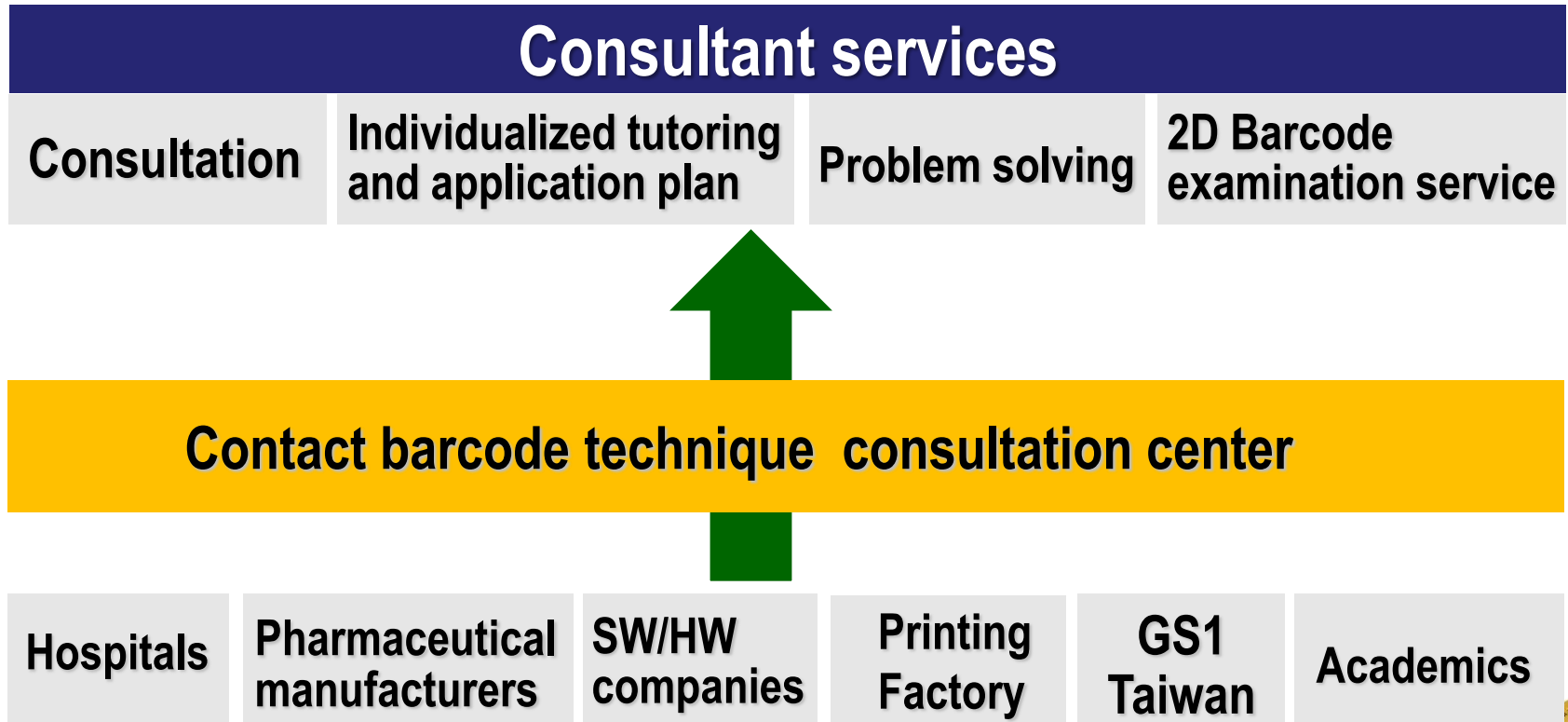


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Establish the Barcode Consultation Team

Purpose: providing technique tutoring and Consultation to help reduce implementation barriers



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