



Assessment of non-economic benefits of standards – Case study: Shanghai University for Chinese Medicine – Shuguang Hospital





# Overview

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# 1 – Project objectives, organization of the assessment

## ➤ Objectives

- Basis: 3-pillar model of sustainable development
- Use of the value chain analysis method
- Assessment of the social and environmental benefits of standards for the Shuguang Hospital

## ➤ Subject of the assessment

- Shanghai University for Traditional Chinese Medicine, Shuguang Hospital

## ➤ Project participants

- Standardization Administration of China (SAC), China National Institute for Standardization (CNIS), Shanghai Shuguang Hospital, ISO Central Secretariat







## 2 – Introduction to Shuguang Hospital (1)

- Long history (founded in 1906)
- Clinical cooperation center for WHO for traditional medicine
- First hospital in China for Chinese medicine with ISO 9001 certification
- Accredited according to ISO 15189 for medical laboratories
- Accredited according to ISO 17025 for the competence of testing and calibration laboratories
- Certified by Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)





## 2 – Introduction to Shuguang Hospital (2)

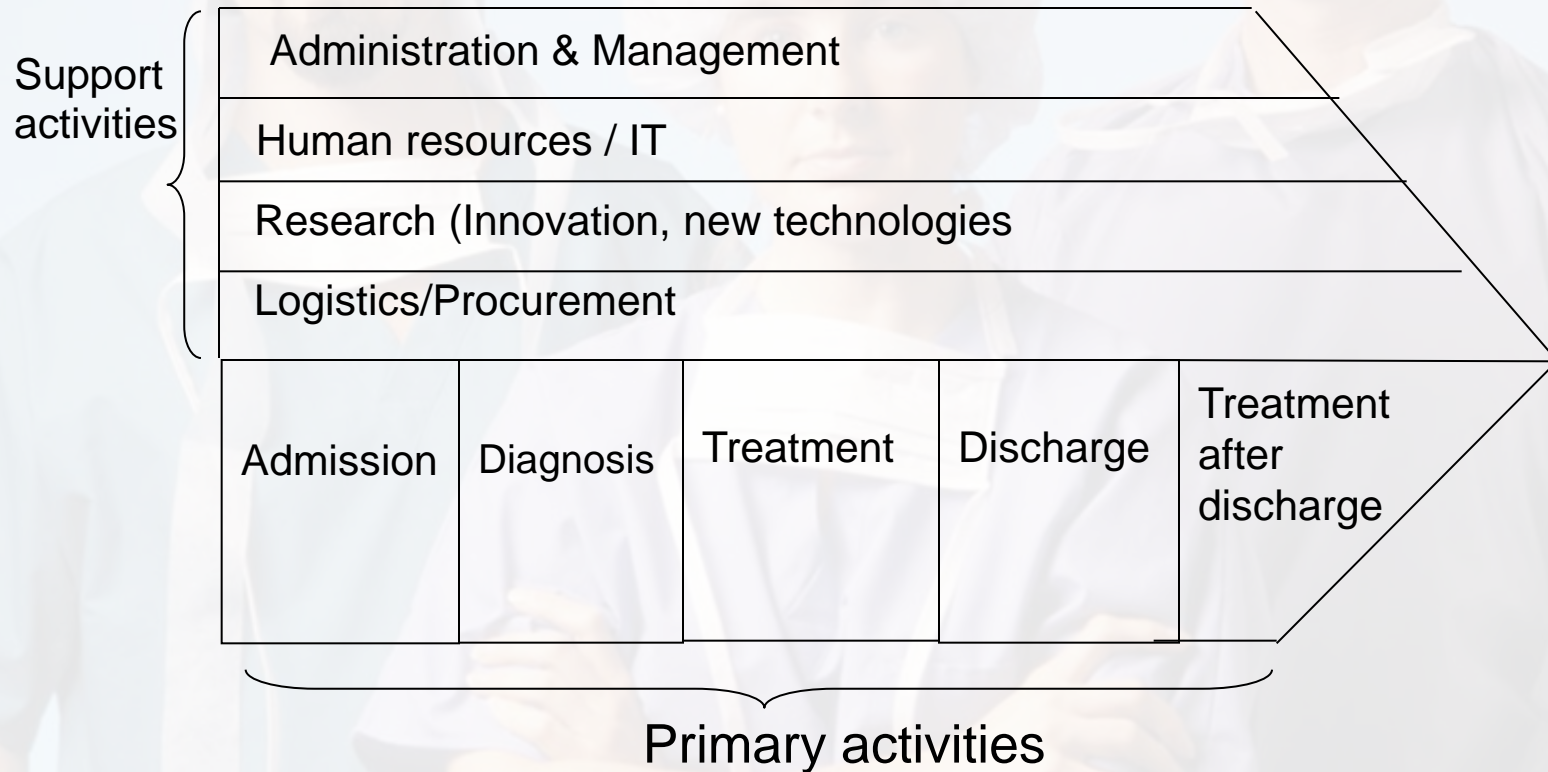
- Secretariat of ISO/TC 249 *Traditional Chinese Medicine* & WHO expert group for international classification in traditional medicine
- Certified in accordance with SFDA pharmaceutical clinical criteria
- Participation in development of Chinese standards
- Use of 22 external standards, 14 governmental documents, 11 technical regulations





# 3 – Analysis of the Value Chain

## ➤ Primary and support activities







# 3 – Value Chain – Key value drivers

- **Increase quality of medical services**
  - **Effectiveness**
  - **Reduce medical errors**
  - **Ensure medical safety**
  
- **Decrease consumption of medical resources**
  - **Operational effectiveness**
  - **Time effectiveness**
  - **Information effectiveness**





# 4 – Scope of the project

## ➤ Relevant standards

External standards (incl. governmental documents or internal standards established on the basis of external standards)

## ➤ Assessment period

Transition in the QMS from the previous ISO 9001-2000 edition to the new 2008-edition (2010-2012)

Situation before the transition: 2010

Situation after the transition: 2011 and 2012

## ➤ Assessment objective

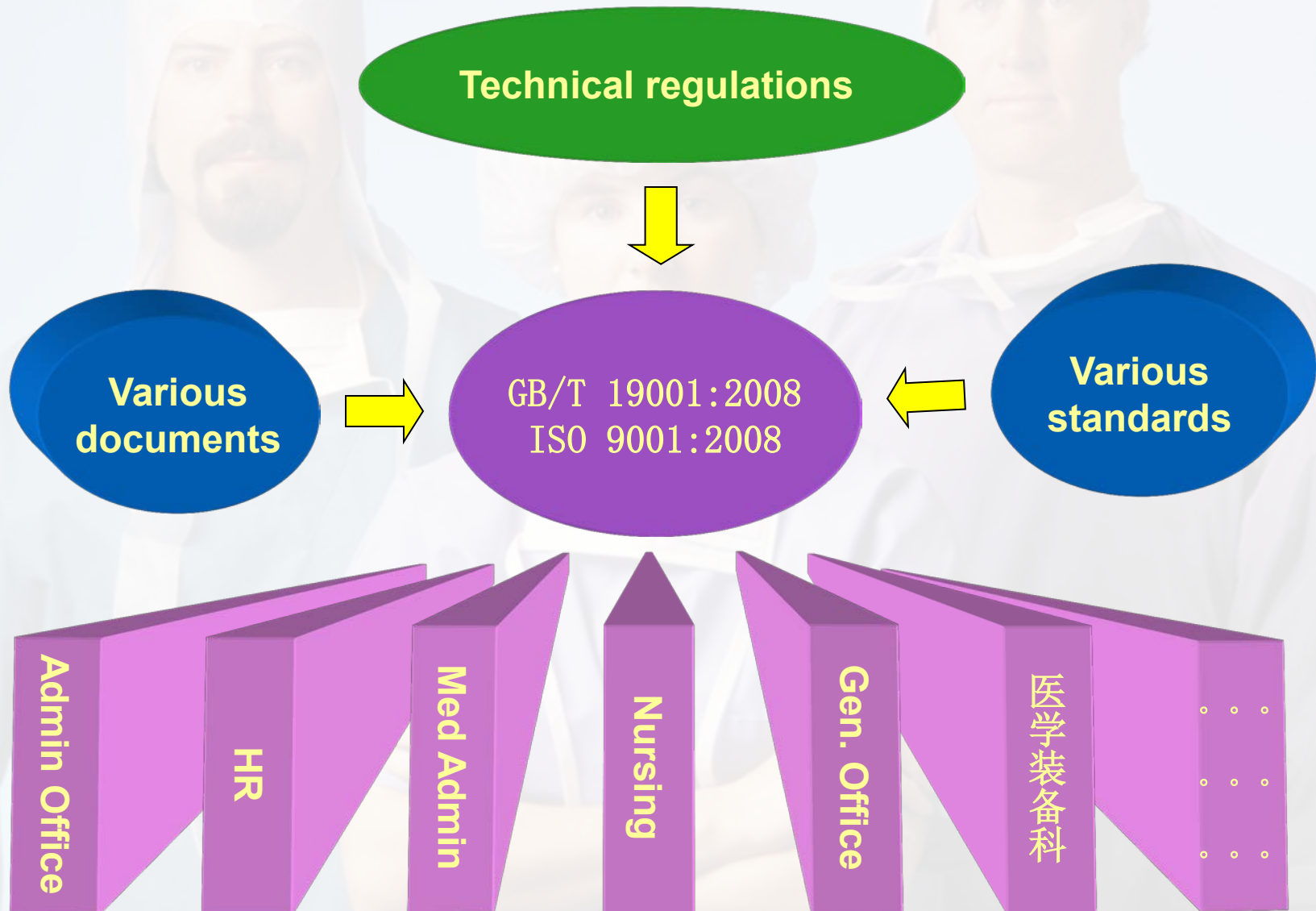
Determine the difference in the non-economic benefits between the use of the ISO 9001 QMS before and after the transition to the new 2008-edition







# 5 – Use of standards in the value chain: Core role of the QMS





# 5 – Some of the most important standards

- GB/T 19001:2008/ISO 9001:2008 *Quality management systems -- Requirements*
- GB 15657-1995 *Classification and codes of diseases in traditional Chinese medicine*
- GB 15982-2012 *Hygienic standard for disinfection in hospital*
- GB 26345-2010 *Criteria for control and elimination of malaria*
- GB 28235-2010 *Safety and sanitary standard for ultraviolet appliance for air disinfection*
- GB 26367-2010 *Hygienic standard for biguanides disinfectants*
- GB 26368-2010 *Hygienic standard for iodine disinfectants*
- ISO 15189:2012 *Medical laboratories -- Requirements for quality and competence*
- ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*
- WHO ICD-10 *International classification of diseases*
- Other mainly national and industry-sector standards of China





## 5 – Some of the most important technical regulations

Technical regulations and decrees by Chinese government agencies, such as from the Ministry for Health and others, such as :

- Evaluation standard for third level comprehensive hospitals (2011-edition)
- Detailed rules regarding evaluation standards for third level comprehensive hospitals (2011-edition)
- Notification #95 of the State Bureau for medical and pharmaceutical administration, evaluation standard for third level comprehensive hospitals (2012-edition)
- Notification #29 of the State Bureau for medical and pharmaceutical administration (Detailed rules regarding the evaluation standards for third level comprehensive hospitals (2012-edition)
- State Council Decree No. 351, Regulations for the handling of medical accidents







# 6 – Indicator system / operational indicators

Value drivers	Level-1 indicators	Level-2 indicators (per year)	Value drivers	Level-1 indicators	Level-2 indicators
<b>Quality</b>					
Therapeutic effectiveness	Service capability	# of persons diagnosed	Medical errors	Unpredictable conditions	Rate of comorbidity in patients
		# of patients discharged			Rate of repeated surgery in patients
		# of surgeries		Serious medical accident	Accidents in patients of 2 <sup>nd</sup> & 1 <sup>st</sup> class
		# of prescriptions		Complaints against the hospital	Number of effective complaints against the hospitals
	Service quality	Survival rate in emergency unit	Medical safety	Patient safety	Infections in the hospital
		Diagnostic conformance in admission & discharge			Rate of infections in the hospital (acute infections)
		Number of cures for serious conditions			Bed sores in patients
		Treatment rate			Falls and drops of patients
		Improvement rate		Environmental protection	Orderly disposal rate of medical waste
	<b>Resource consumption</b>				
Operational efficiency	Asset use efficiency	Rate of bed usage	Time efficiency	Avg patient stay in hospital	Avg hospital stay of patients
		Frequency of bed changes	Information efficiency		
		Nurse-bed ratio			



# 7 – Evaluation of the impacts of standards on indicators for non-economic benefits

## ➤ Grading scheme to evaluate the impacts of standards

Indicators	Indicator not applicable (= 0 points)	Limited impact (= 2 points)	Medium impact (= 4 points)	High impact (=6 points)	Maximum points
Indicator 1		√			6
Indicator 2			√		6
Indicator 3		√			6
Indicator 4	√				6
Indicator 5				√	6
Indicator n			√		6
	0	4	8	6	36 (=100%)

Grading scheme with points: 0 to 6 (for each indicator) → 18 out of 36 = 50%

Note: The above serves only as an example.



Non-economic benefits of standards identified in primary activities of the value chain					
Value drivers	Level-1 indicators	Level-2 indicators (annually)	Impact of standards (Rate of change)	Degree of impact of standards on respective indicators	Degree of impact of standards on business functions
<b>Admission</b>					
Medical effectiveness	Service capability	# of diagnoses	28.30% (increase)	High (6)	83.33%
		# of discharges	28.30% (increase)	High (6)	
	Public services	Satisfaction rate amongst ambulant patients	1.94% (increase)	Limited (2)	
		Satisfaction rate amongst discharged patients	1.12% (increase)	Medium (4)	
Medical errors	Medical complaints	Rate of successful medical complaints by patients	11.54% (decrease)	High (6)	
Information efficiency	Information support	Use of specialized information systems	57.14% (increase)	High (6)	
<b>Diagnosis</b>					
Medical effectiveness	Service capability	# of diagnosed persons	28.30% (increase)	High (6)	57.58%
		# of discharges	28.30% (increase)	High (6)	
		# of surgeries of patients	73.89% (increase)	High (6)	
	Service quality	Accuracy rate of diagnoses at admission & discharge	0.21% (increase)	No impact (0)	
		Accuracy rate of 3-day diagnoses	0.38% (increase)	Limited (2)	
		Accuracy of freezing reports in the pathology department	Stable	No impact (0)	
	Public services	Satisfaction of ambulant patients	1.94% (increase)	Limited (2)	
Satisfaction of discharged patients		1.12% (increase)	Medium (4)		
Medical errors	Serious medical accidents	Rate of accidents amongst 2nd and 1st class patents	No change	No impact (0)	
	Medical complaints	Successful medical complaints by patients	11.54% (decrease9	High (6)	
Information efficiency	Information support	Use of specialized information systems	57.14% (increase)	High (6)	





# Non-economic benefits of standards identified in primary activities of the value chain

Value drivers	Level-1 indicators	Level-2 indicators (annually)	Impact of standards (rate of change)	Degree of impact of standards on respective indicators	Degree of impact of standards on business functions
<b>Treatment</b>					
Medical effectiveness	Service capability	# of patients	28.30 (increase)	High (6)	65.15%
		# of hospital discharges	28.30 (increase)	High (6)	
		# of surgeries	73.89% (increase)	High (6)	
		# of Chinese medicine prescriptions	33.83% (increase)	High (6)	
	Service quality	# of survivals in emergency unit in serious conditions	38.05% (increase)	High (6)	
		# of survivals of patents in serious conditions	103.55% increase)	High (6)	
		Healing rate	1.98% (decrease)	No impact (0)	
		Improvement rate	1.79% (increase)	Medium (4)	
	Public services	Satisfaction rate of ambulant patients	1.94% (increase)	Limited (2)	
		Satisfaction rate of discharged patients	1.12% (increase)	Medium (4)	
Medical errors	Occurrence of unexpected conditions	Rate of development of comorbidity of surgery patients	No increase	No impact (0)	
		# of patients needing repeated surgery	No increase	No impact (0)	
	Major medical accidents	Rate of medical accidents in 2 <sup>nd</sup> & 1 <sup>st</sup> class	No increase	No impact (0)	
	Medical complaints	Rate of successful medical complaints by patients	11.54% (decrease)	High (6)	
Medical safety	Patient safety	Rate of infections in the hospital	31.47% (decrease)	High (6)	
		Rate of patients infected in the hospital (acute infections)	30.96%	High(6)	
		Rate of bed sores in patients	No increase	No impact(0)	
		Rate of falls or bed-drops	No increase	No impact(0)	
Operational efficiency	Use efficiency of assets	Rate of bed usage	2.34% (Increase)	Medium (4)	
		Rate of bed turnover	27.35% (Increase)	High(6)	
Time efficiency	Avg stay of patient in hosp.	Avg # of days of patients stay in hospital	17.61% (decrease)	High(6)	
Information efficiency	Information support	Use of specialized information systems	57.14% (Increase)	High(6)	



# Non-economic benefits of standards identified in primary activities of the value chain

Value drivers	Level-1 indicators	Level-2 indicators (annually)	Impact of standards (rate of change)	Degree of impact of standards on respective indicators	Degree of impact of standards on business functions
<b>Discharge</b>					
Medical effectiveness	Service capability	# of diagnosed persons	28.30% (increase)	High (6)	85.19%
		# of discharges	28.30% (increase)	High (6)	
	Public services	Satisfaction rate of ambulant patients	1.94% (increase)	Limited (2)	
		Satisfaction rate of discharged patients	1.12% (increase)	Medium (4)	
Medical errors	Medical complaints	Rate of successful medical complaints by patients	11.54% (decrease)	High (6)	
Operational efficiency	Use efficiency of assets	Rate of bed use	2.34% (increase)	Medium (4)	
		Rate of bed turnover	27.35% (increase)	High (6)	
Time efficiency	Avg # of days of patient stay	Avg. # of days of patient stay	17.61% (decrease)	High (6)	
Information efficiency	Information support	Use of specialized information systems	57.14% (increase)	High (6)	
<b>Ambulant treatment after discharge</b>					
Information efficiency	Information support	Use of specialized information systems	57.14% (increase)	High (6)	100%

**Note: No impact» does not mean that there are no benefits from standards. It means that impacts from the 2000-edition of ISO 9001 had already occurred and that the transition to the 2008-edition of ISO 9001 did not generate additional benefits.**



# Example: Impacts of standards on the business function «Admission»

## ➤ Impacts of standards on some indicators

Indicators	2010 (before transition)	2012 (after transition)	Change
# of persons diagnosed	2 206 165	2 830 418	Increase 28.30%
# of persons discharged from the hospital	37 328	47 891	Increase 28.30%
Satisfaction of ambulant patients	96.12%	97.98%	Increase 1.94%
Satisfaction of discharged patients	97.80%	98.90%	Increase 1.12%
# of effective complaints against the hospital	0.026%	0.023%	Decrease 11.54%
# of specialized information systems	7	11	Increase 57.14%

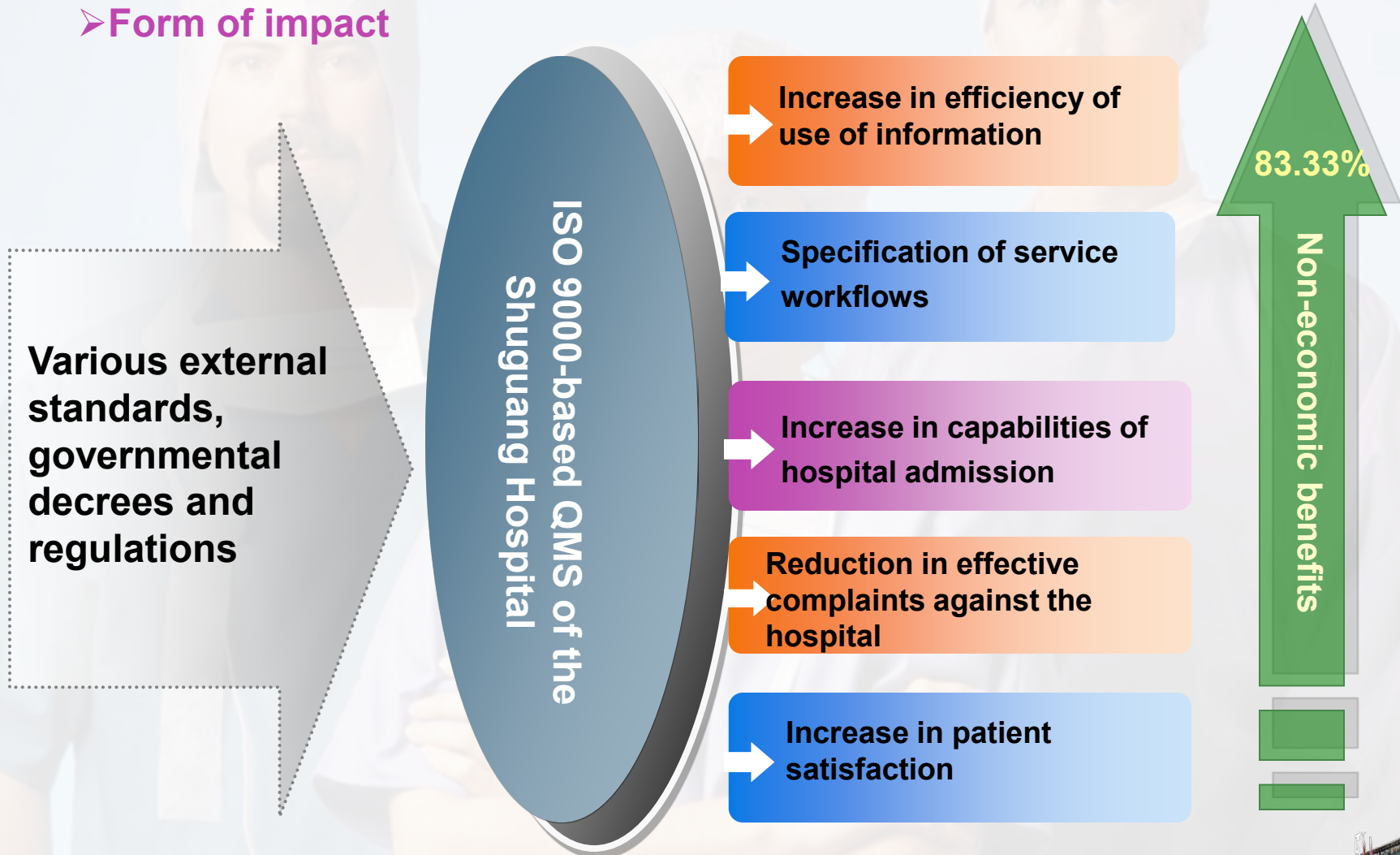






# Example: Impacts of standards on the business function «Admission»

## ➤ Form of impact





# 8 – Conclusions

1

**Standardization in hospitals is a means to increase their competitiveness**

- In the center of the hospital services are patients, all technical and management activities need therefore to be on-time, effective and safe
- Hospitals are complex organizations, they have many departments, are technology-intensive with high quality standards and have a need for efficient inter-departmental cooperation
- Standardization assists in the quantification and proceduralization of various activities and helps to increase the quality level of service, the monitoring of their quality and can generate, to a maximum degree, non-economic benefits





# 8 – Conclusions

2

**Non-economic benefits of standards are a source of stimulation for the further development of standardization**

- Can support the development of appropriate policies
- Can create awareness amongst policy makers, companies, and the public of the importance of standards and can help create an international platform
- As a special type of service industry, hospitals can obtain scientific and objective data from assessment studies that can be used to stimulate the interest of managers in standardization and promote its fast development







# 8 – Conclusions

3

## Suggestions to improve the methodology

- Using the Delphi-Method we established an indicator system for non-economic benefits of standards on the basis of the value chain, which has an authoritative status
- In a complex environment like a hospital where it is difficult to distinguish between different factors, it seems appropriate to undertake an overall estimation of the impacts of standards on the generation of non-economic benefits





**Thank You !**

