TQ Rehabilitation Development in Private Sector in PRC

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ABSTRACT
This is a study for the readiness of enhancing a strategic quality management model in the coming "Rehabilitation" private sector in Mainland China. Total Quality Management (TQM) will be the ultimate mission for the rehabilitation enterprises, whereas Workplace Management (such as 5S) and Lean Management will be used as different milestones along the road to help different stages of the rehabilitation enterprises' development. The Hong Kong Queen Elizabeth Hospital who implements their "Wiser System" had entered an EFQM campaign in 2010 for its readiness of the mandatory accreditation by the Australian system ACHS. During then, critical departments like Administration, Emergency, Operations, Pharmacy, Laboratory and Patient Wards are required to go through their own campaign individually and compare results afterwards. Hence it shows that TQM can be deployed in departmental level like what we classified in the Rehabilitation first segment; it should not be far away that the whole Rehabilitation industry accepts such good thing.

Keywords: Total Quality, Rehabilitation, Privation Sector, PRC

1. Introduction

This is a study for the readiness of enhancing a strategic quality management model in the coming "Rehabilitation" private sector in Mainland China. Total Quality Management (TQM) will be the ultimate mission for the rehabilitation enterprises, whereas Workplace Management (such as 5S) and Lean Management will be used as different milestones along the road to help different stages of the rehabilitation enterprises' development.

PRC was found in 1949 after the civil war. Different kinds of significant events after its establishment such as wars, famine, large political campaign, earthquake, and floods have existed in 25 years after its establishment. Together with the "One Child Strategy", population pressure was slightly reduced and hence demand for rehabilitation could still be marginally fulfilled as a hospital department within the public health system.

2. A Rising Demand in Rehabilitation Quality and Quantity

However, since the PRC government has made a big economic change in late 70s, "Reform and Opening-up" policy has greatly improved the livings for the Chinese people. They remarkably live better and longer since then. Those who were born in after the "New China" have a bigger chance of survival comparing to the previous generations who born before them, i.e. a longer life.

Such "better lives" not only has created a larger aged population starting from 60 years old, but also initiated a quality demand for better treatment and services during their rehabilitation, instead of a basic level of services from the public hospital system, mainly due to people are wealthier than before.
There is also another impact from the above "better lives": people get richer, eating more, drink more, and play more…actually leads to some related illness such as diabetes, hypertension, cardiac issues, and even psychological problems. These also add up a sharp rehabilitation demand bother in quality and quantity.
Starting from those who were born in 50~60s are now over 60 years old, and people at such age group is over 240 millions in 2017, taking up close to 17% of the country's total population . Within this group, around 40 millions people (~20%) are in potential in demanding rehabilitation coverage, and estimated to become 60 millions in 2024.

图表3：2007-2017年中国60岁及以上老年人口数量及占总人口比重（单位：亿人，%）

资料来源：前瞻产业研究院整理 @前瞻经济学人APP

图表4：2018-2024年中国60岁及以上老年人口康复医疗需求预测（单位：万人）

资料来源：前瞻产业研究院整理 @前瞻经济学人APP

3. A Sharp Engagement from Private Sector

Legacy rehabilitation in PRC's public health system is a subsidiary extension department inside most of the integrated hospital. They do not have their own administration, budget & finance, labor or human resource power, and most important is not having the authorization to develop its own directional strategic as they are only an affiliation to the hospitals. With the increase in both demand in quality and quantity mentioned in the previous topic, together the lower entrance barrier comparing to tradition integrated hospitals, it created a significant space and opportunity for private sector investors to fulfill the gap. These "third parties hot money" are target and result oriented, will concern more an apex target planning to ensure their investments are returnable and justified. Hence investments "flood" into such market mainly streamed from public listed companies who are continuously seeking for capital investment return. In 2016, a total of 14 listed companies have entered the rehabilitation market and will have over 10,000 rehabilitation centers towards 2022 (知康界/中投顾问产业研究中心).

图表5：涉足康复医疗领域的上市公司情况

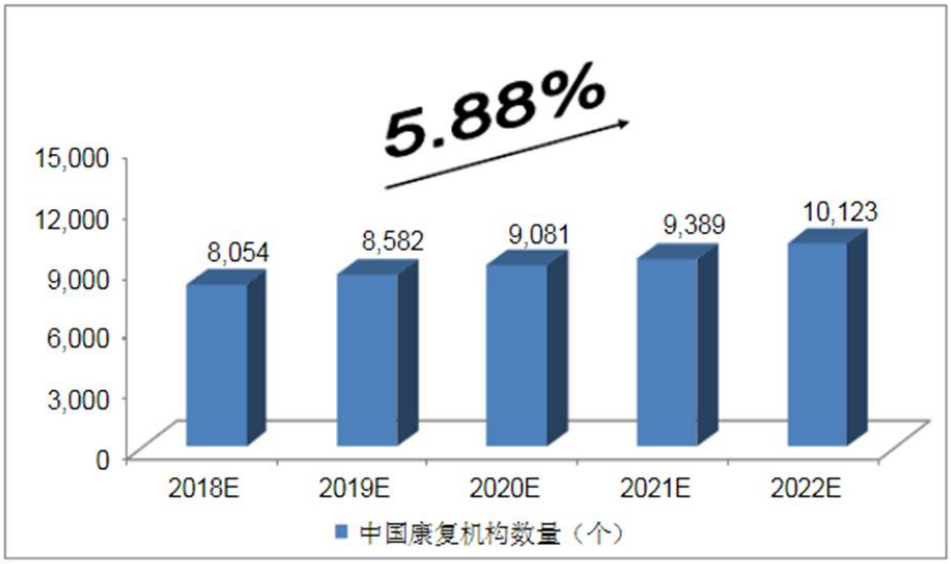
上市公司	主业	涉足时间	涉足康复领域内容	涉足方式
海宁皮城	商业百货	2015年	康复医院	自建
昆药集团	生物制药	2016年	康复医院	收购、投资、合作共建
三星医疗	仪器仪表	2015年	康复医院	收购
湖南发展	电力	2012年	康复医院	自建、收购
天士力	生物制药	2012年	康复医院	投资
复星医药	生物制药	2014年	康复医院	合作共建
和佳股份	仪器仪表	2014年	康复医院	收购、投资、合作共建
华邦健康	生物制药	2015年	康复医院	收购
万方发展	房地产	2012年	康复医院	收购
汉森制药	生物制药	2015年	高端康复养生园	自建
尚荣医疗	医疗器械	2015年	康复养老项目	合作共建
澳洋科技	纺织实业	2015年	康复医院	自建、合作共建、托管
东富龙	医疗器械	2015年	康复信息化	投资
万科	房地产	2016年	康复医院	自建

知康界

4. Staying Competent in the Rehabilitation Market

Inside the 4 cost analysis equipment/capital, land, labor and entrepreneur, rehabilitation equipment is not high compared to medical equipment. Drugs cost in such sector is even far lower than medical area. Area and space required are also not high compared to hospital. Majority of cost has been contributed to labor wages which significantly depends on the quality of therapists. With the simple calculation of lower cost versus high income, this is a profit attractive business and could be reflected from the following forecast (info: 中投产业研究中心).

With more players steadily go into the market, whether one can stay competence in the market would seriously depend on its entrepreneur, or management system applied.



5. The Market Segments

There rehabilitation organizations can be classified into three categories: firstly the rehabilitation departments which still exist under the traditional hospital coverage; second are those who simply "detached" from the previous hospital coverage act as rehabilitation outsource for their previous host with some business agreement; and finally are those we mentioned above owned by big investors like listed companies. The first and second group can migrate upwards to the next group.
For the first group existing within the hospital, we are not going to talk much of it as its self management is quite limited within its host. While the second one could be a smaller organization whose main objective is survival from its start, and then evolved into a bigger and more profitable centre or even becoming a chain business. Of course the third segment like mentioned in previous paragraph aims at both profitable, market share and Sustainable Development: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Smith & Rees, 1998).

6. A Total Quality Approach

No matter which segment you stay, quality management is required and also a key performance index to be evaluated, either by its host hospital in the first segment or directly by the visiting customers in the second segment, or even reflected by the annual business report in the third segment.
Total quality management originated from manufacturing has extended into many other industries, including medical sector. It can be interpreted in a way starting from basic workplace approach, then moving onwards to lean operation management, and finally migrates to an excellence status, i.e.

TQM = Workplace Management ➔ "Lean" Management ➔ Business Excellence

We hereby looking into different significant quality tools these segments can implement, and how these tools can be integrated to help organizations in their evolution.

6.1 "5-S" Checklists" (Ho:1999 , see Appendix-A)

Workplace Management is the "101" foundation for all operations, no matter it is a rehabilitation department within host hospital, or an rehabilitation clinic affiliated to nearby hospitals or even within a chain. It is a very easy to implement with quick result can be seen. Though Japanese 5S is mostly adopted to be the way how workplace can be will organized, however its success in Japan is mostly influenced by the Japanese culture laid deep inside, whereas further enhancement is required so as to be easily used and to become successful without such culture, especially in PRC. A much better approach is the "5-S Checklist" developed by Prof. Sam Ho in late 90s which can be applied across 7~8 industries, including medical. Such tool has listed 50 out 50 checkpoints to guide you step by step to tidy up the workplace with key objectives of "Safety, Hygiene, Quality, Productivity & Image". Also all these checkpoints can be auditable and can be copied from clinic to clinic, which is very important in sustainability. A very good example is "5-S" has been widely implemented in Hong Kong's hospitals, rehabilitation clinics and as well in many "3A (三甲)" hospitals in PRC (See reference).

There is no free lunch in the world. All quality and productivity enhancement involve investment, and expect a much higher return from quality, productivity. "5-S" costs the minimal, mostly are labels, boxes, storing frames, and also labor. Hence it helps to improve almost all size of operations.

6.2 "Lean 5-S Checklist"

Workplace management works well to improve many internal issues in quality and efficiency, or in order words the static problems. However, when facing dynamic issues like change in customer needs, competitions within the industries or the economical fluctuation, especially for those who are not under the host hospital, they certainly need further measures to handle different external challenges above. Hence Lean Management, originated from Toyota Production System (Ohno, Taiichi, 1998, see reference) was in place to improve both revenue and profit.

However, profit/cost ratio spans over a large range within the organization. There could be many aspects to be concerned and come across many areas where quality or efficiency improvement should be made or in priority. Other than the hardware needs to be added, ways of operate may needs to change, a larger amount of labour force may also be required. May be the most expensive one is the opportunity cost to decide where the apex changing effort should be placed.

Like "5S Checklist", there also exists a checklist of lean management for a more accurate changing force implementation. ***"Lean 5-S Checklist"*** (Ho, 2012: see Appendix-B) is a tool developed by Prof. Sam Ho. It is an easy to use, guiding the organization to think of most of the area needed to be concerned, and then targeted to increase revenue and reduce cost both by 10%. It helps organization to quickly develop its KPI and make apex changes where necessary.

Queen Elizabeth Hospital has learnt from "Lean 5S Checklist" and then integrated into their 'Wiser Systems" for operation enhancement. Patient waiting time for blood taking has significantly lowered since the system in place.

"Lean 5S Checklist" is a one step upwards for those smaller to mid size rehabilitation clinic towards TQM after they have successfully implement "5-S Checklist".

6.3 Self Checking Business Excellence

When both Workplace Management and Lean Management are successful and becoming stable in place, it now becomes time that organization moves on towards a higher level. It should be able systematically check up whether further improvement can be done, starting from management styles to operation flow. Whether both internal factors and external results are in good directions, and how the organization are engaging, interacting and repaying the society. Are the overall final results good? How can they be improved, any plans or any execution? All these can be considered a continuous health check via models from the quality world.

Both EFQM (EFQM, 1989) or MBNQ (US Congress, 1987) are the famous business excellence model in the world to provide a list of self answered checkpoints for organizations to keep on asking themselves whether if they are heading TQM.

European Foundation of Quality Management	**Malcom Baldbridge National Quality Program**
Committee from 40 European corporate found in 1989	US Congress found in 1987
Key Content: • Leadership • Policies and Strategies • Human Resources • Products and Services Partnership • Process • People Results (both internal & external) • Society Engagement • Overall Business Results	Key Content: • Leadership • Strategy • Customer • Measurement, Analysis & Knowledge Management • Workforce • Operations • Results

Though Business Excellence is a relatively complete model for larger rehabilitation organization in the third segment whose structure are well set, the clinics who are aggressively go for quality improvement aiming upward migration. A simplified version of both excellence models with fewer checkpoints can be introduced to the second segment so that they can ready themselves for upgrading when opportunities come.

7. Conclusion

The Hong Kong Queen Elizabeth Hospital who implements their "Wiser System" had entered an EFQM campaign in 2010 for its readiness of the mandatory accreditation by the Australian system ACHS. During then, critical departments like Administration, Emergency, Operations, Pharmacy, Laboratory and Patient Wards are required to go through their own campaign individually and compare results afterwards. Hence it shows that TQM can be deployed in departmental level like what we classified in the Rehabilitation first segment; it should not be far away that the whole Rehabilitation industry accepts such good thing.

APPENDIX-A: The I5SO-HK5SA 5-S® Audit Checklist (ver.13; Jan 2019)

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5-S	**What** *(every audit needs to be supplemented with a digital photo of around 1MB resolution, landscape, with date)*	**Where**	**How (✓/ X)**	**Who**	**When**
S-1: Structurise *(Seiri)*					
1.1	Throw away/return things which are not needed (>1year)				
1.2	**3-R**: **R**educe, **R**e-use, **R**e-cycle & paperless, etc.				
1.3	"Needed things" stored: low, medium & high usage/wt.				
1.4	Personal belongings kept to the minimum				
1.5	Treat defects, leakage, breakage and their causes				
1.6	1-is-best #1:Daily "Things-to-do" List				
1.7	1-is-best #2: one set of tools/stationery/1-page form				
1.8	1-is-best #3:one hour meeting (be concise)				
1.9	1-is-best #4: one stop service for customer				
1.10	1-is-best #5: one location for files, server & material				
S-2: Systematise *(Seiton)*					
2.1	Everything has a clearly designated name & place				
2.2	Every place should have a 'responsible person' label				
2.3	Security on doors & cabinets and key management				
2.4	Functional placement for leaflets, tools and material				
2.5	Filing standards and control master list				
2.6	First in, first out arrangement (always left in, right out)				
2.7	Zoning, placement marks, signage and badges				
2.8	Neat notice boards (including zoning and labels)				
2.9	Easy-to-read notices (include expiry date)				
2.10	30-second retrieval of tools, document & parts				
S-3: Sanitise *(Seiso)*					
3.1	Individual cleaning responsibility assigned				
3.2	Make cleaning and inspection easy (15cm above floor)				
3.3	Clean the places most people do not notice (anti-SARS)				
3.4	Cleaning inspections and correct minor problems				
3.5	Regular sparkling cleaning campaigns				
S-4: Standardise *(Seiketsu)*					
4.1	Transparency (e.g.: minimize doors, covers & locks)				
4.2	Straight line, right-angle and leveling arrangements				
4.3	'Danger' warning, fire extinguisher & exit sign/map				
4.4	Dangerous goods, mechanical safety measures				
4.5	Workplace work instructions and 'passed' labels				
4.6	Electrical wiring neatness and switch labels				
4.7	Energy Conservation – Aircon temperature mark/switch				
4.8	Physical handling standards and instructions				
4.9	Colour & Visual Mgt. -- paper, files, containers, etc.				
4.10	5-S responsibility labels on floor plan or at site				
4.11	Prevent noise, vibration, hazards & ensure food safety				
4.12	Exercise Safety Policy and Risk Assessment				
4.13	Fool-proofing (Poka-yoke) Practices				
4.14	Park-like environment (garden office/factory)				
4.15	5-S & OSH Museum (including photos before/after)				
	S-5: Self-discipline *(Shitsuke)*				
5.1	Execute individual 5-S responsibilities				
5.2	Wear suitable clothing/safety helmet/gloves/shoes/etc.				
5.3	Good communication & phone practices (magic-word)				
5.4	Do 5-minute 5-S Practice daily				
5.5	One day processing of job/tasks (see 1.6)				
5.6	First-Aid box and practise dealing with emergencies				
5.7	Organisation Chart and Performance Indicators				
5.8	Design and follow the 5-S Manual				
5.9	Quarterly 5-S Audit and Improvements				
5.10	Seeing-is-believing and Keep It Short & Simple (KISS)				
	Total X ➔				

APPENDIX-B: Lean 5-S Audit Checklist: 10 Operations & **5** Steps Approach (2012)
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Firm Audited : _____ Date : _____

Auditee: _____ Mob. : _____ Email: _____

Auditor: _____ Mob. : _____ Email: _____

L5S Checklist		Change	L5S Checklist		Change
L1:	**Design**	**+10%**	**L6:**	**Machine Maintenance**	**-10%**
1.1	Customer Feedback	_____%	6.1	Breakdown	- ____%
1.2	Blue-ocean Strategy	_____%	6.2	Spare equipment	- ____%
1.3	80/20 Rule	_____%	6.3	Maintenance Staff	- ____%
1.4	Over-design	_____%	6.4	Obsolete	- ____%
1.5	Purchase/Add-value	_____%	6.5	Maintenance is Free	- ____%
L2:	**Forecasting**	**+10%**	**L7:**	**Flow Method**	**+10%**
2.1	Produce > Sales	_____%	7.1	Bottleneck	_____%
2.2	Sales > Produce	_____%	7.2	4-M Co-ordination	_____%
2.3	Overtime Rate	_____%	7.3	Non-stop Flow	_____%
2.4	Idling Capacity	_____%	7.4	Delay in delivery	_____%
2.5	Just-In-Time (JIT)	_____%	7.5	Flow KISS & Merge	_____%
L3:	**Men & Materials**	**-10%**	**L8:**	**Quality**	**-10%**
3.1	Idling HR	- ____%	8.1	1-10-100 Rule	- ____%
3.2	Unfit HR	- ____%	8.2	DIRFT	- ____%
3.3	Expensive Purchases	- ____%	8.3	5 to 6-σ	- ____%
3.4	Cost of Men/Materials	- ____%	8.4	Don't Get, Make & Send poor Quality	- ____%
3.5	Plan at 101%	- ____%	8.5	Fool-proofing	- ____%
L4:	**Utilities & Tax**	**-20%**	**L9:**	**Stock Control**	**-10%**
4.1	Water + Sewage	- ____%	9.1	Over-stock	- ____%
4.2	Electricity + Aircon	- ____%	9.2	Loss stock, loss money	- ____%
4.3	Gas + Heating	- ____%	9.3	Dead-stock is loss	- ____%
4.4	Computer & Telecom	- ____%	9.4	Poor control leads to Cheating	- ____%
4.5	Tax Reduction	- ____%	9.5	Loss sales, loss profit	- ____%
L5:	**5-R for Material/Machines**	**-10%**	**L10:**	**Floor and Space**	**+10%**
5.1	Refuse	- ____%	10.1	Floor area is expensive	_____%
5.2	Reduce	- ____%	10.2	Space for storage	_____%
5.3	Re-use	- ____%	10.3	High/Mid/Low Usage	_____%
5.4	Re-cycle	- ____%	10.4	Park-like setting	_____%
5.5	Replace	- ____%	10.5	Happy Customer brings Profit	_____%
	Profit arise from +% ➔	_____%		**Saving arise from -% ➔**	_____%

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