

ing on Risk: Reducing Intra Ocular Lens Reservation near misses through Digital Intra Ocular Lens Systems (DIOL)

Singapore Healthcare Management 2017 Ms Loh Huey Peng¹, Ms Belinda Toh¹, Ms Goh Hui Shan¹, Mr Kelvin Chong², Mr Ang Cheng Hian ², Mr Mohd Shahul Hameed ², Prof Chee Soon Phaik, ^{1&3} Dr Ranjana Mathur ^{1&3}

Singapore National Eye Centre
 Integrated Health Information Systems
 Singapore Eye Research Institute



Background & problem statement

Cataract operation with lens implant is the most common ophthalmic procedure. Although lens implantation related serious adverse events are rare, they increase patient ocular morbidity due to the need of unintended repeat surgery and thus has significant impact on patient safety.

Capturing all near misses events is a core principle under pinning our commitment to patient safety. Data analysis of Intra Ocular Lens (IOL) related near misses from March to Aug 2012 showed surgeon and process related factors leading to these near miss events. The main *surgeon related factor* was inconsistent description of various IOL models while *process related factors* comprised of variability in processes involved in IOL reservation, for instance transcription errors on the reservation chit and issues arising along multiple manual reservation points leading to missing, non-availability of IOL order to the OT team

PDCA 2 – Phase 1 & 2 development and enhancement of Digital IOL Order system

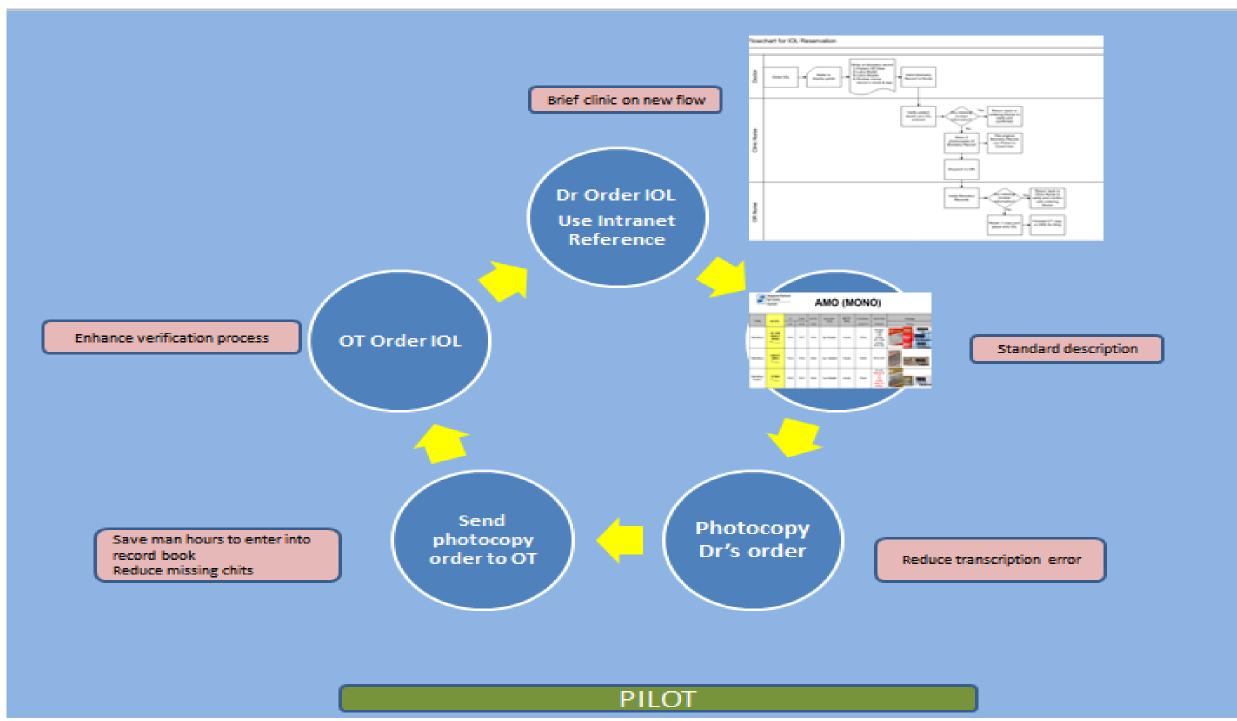
Phase 1 involved developing a digital IOL order system (SCM based) with detailed IOL information incorporated into the system including various ranges of IOL models, available range of IOL power for each IOL model, lead time required for IOL to be reserved (certain IOL required mandatory 2 months manufacturing lead time), ease of IOL reference etc. No manual transcription was required by the surgeons while they placed the order online (avoiding transcription errors) and orders were routed directly to the operating theatre for reservations by the OT team.

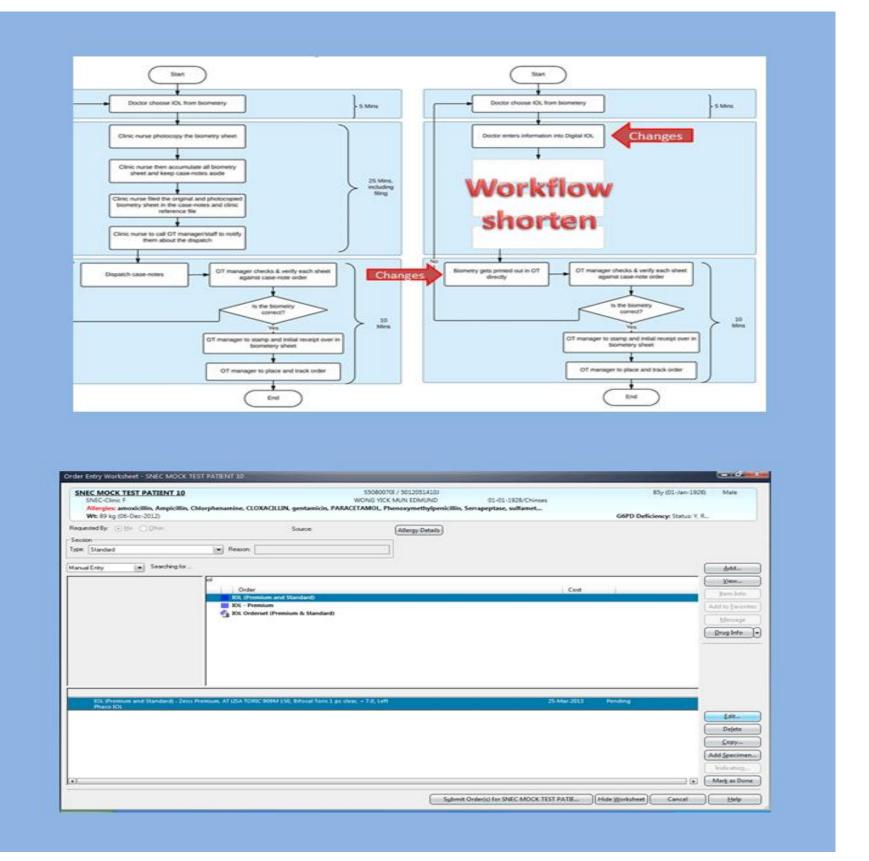
Aims:

Reduce incidence of IOL reservation related near misses/SREs particularly those related to process and surgeon factors

Methodology:

The project was carried out in 2 phases using PDCA PDCA 1 – Simplification of process & Intranet IOL reference



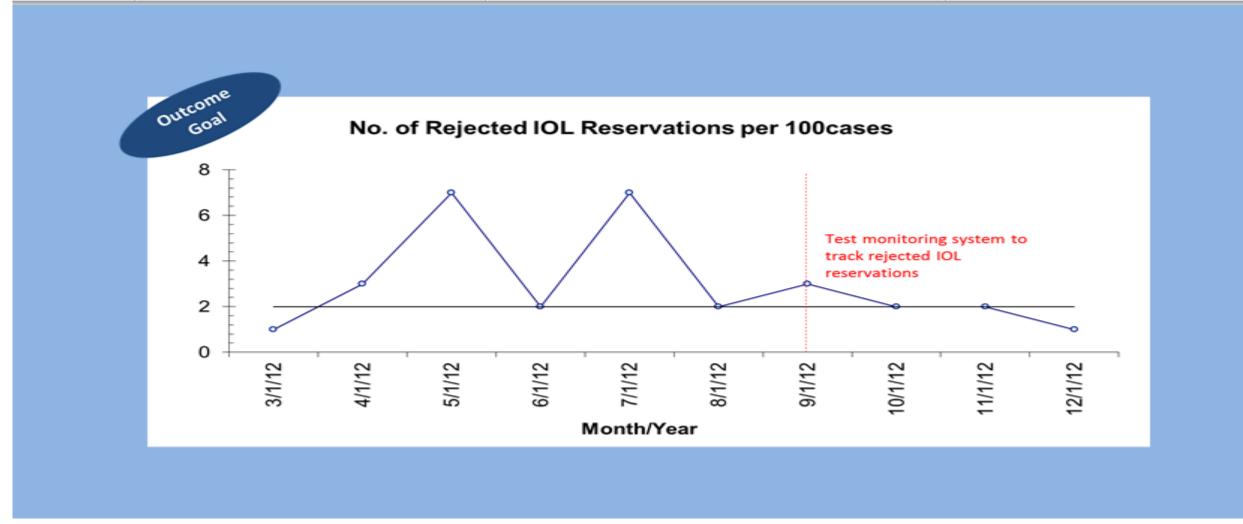


System wide IOL ordering process (Phase 1June 2013) eliminating manual processes

Version 1

Phase 2 was enhancement of the phase 1 by dividing the IOL types into two major categories to avoid confusion related to numerous types and models of IOLs. This ensured a systematic flow to IOL order for ease of surgeons and to avoid errors in order.

Eliminated transcription errors and number of rejected orders from inaccurate description reduced from 0.22% to 0.05% within 1 week



Increased staff satisfaction was reported on simplified process and time saved for reservation process from 40 seconds to 10 seconds per staff.

Time Take	n fan IOL Begennetien Mede	Staff Satisfaction Rating	

Non-by Turner (Duper) In drawer (Duper) See Organization See Organization Alton Pressine		
Produce (* Upperio Die of Operation (* Upperio Die of Operation (* Upperio Die of Operation (* Upperio Produce (* Upperio		
Packer C Upperio Com Packer C Upperio Com Packer C Upperio Com Packer C Upperio Com Packer C Upperio Packer C Upper		
Image: Set of Querting Image: Set		
Site of Question Cour Regist Cut Nature of Question Cour Pressure Lease Alto O Pression Cour Pressure Course Alto O Pression Cour Pressure Course Alto O Pression Course Pressure Course Alto O Pression Course Pressure Course Alto O Pression Course Alto O Pression Course Pression Cour Pressio	Charles C Urgent	
Person Leve Person Leve Person Leve Person Leve Person Leve ADO herrine ADO herrine ADO herrine ADO herrine Person Leve Person		
Netre #Opension @COER / ECCELOL. Pressue LarsAdd O Pressue @Add ON @Add O		
Presium Less Add O Presium Add O Presium Add O Presium Presium Less Taric DL Asia Taric	Nature of Operation Clear	
AND Pensium © ALCON Pensium © ALCON Pensium © ALCON © Baseds and Londs © HOYA © Other Baseds a	F Press IOL F ECCELOL	
AltO hereium C ALCON / Persium		
Taki KU. Auk Taki KU. Auk Tongeresun Lars AND A ALCON A ALC		
Non-pensus Les AND ALCON ALCON Bauch & C B HOYA Others Description B BRUND Nable		
HOTA C Construint C ALCON Premium C ALCON Premium C ALCON C Basech and Lamb C HOTA C OTHERS		Varaian
HOTA C Color		VEISION
Details of the limits brand and model : BRAND NAME BRAND Name Count		
BRAND NAME Over O		
BRAND NAME Court		
Description of the Model Input 4 sign in front - Diopter no. Criterable Range (no input of "D)		
Input «I- sign in front - Diopter no 🕐 "Ordenable Range (no input of '0')	AND Premium @ ALCON Premium @ Joints Premium @ AND @ ALCON @ Baseds and Lonb @ HOYA @ DTHERS	
Connerts & Ternants		
	Conners 5 remarks	

Results:

Digital system have completely eliminated process issues related to illegibility, inconsistency and duplication of order, System is able to flag special order requiring lead time and improved surgical planning (figure 1) however new near misses from use of digital system (figure 2) not related to PDCA 1.

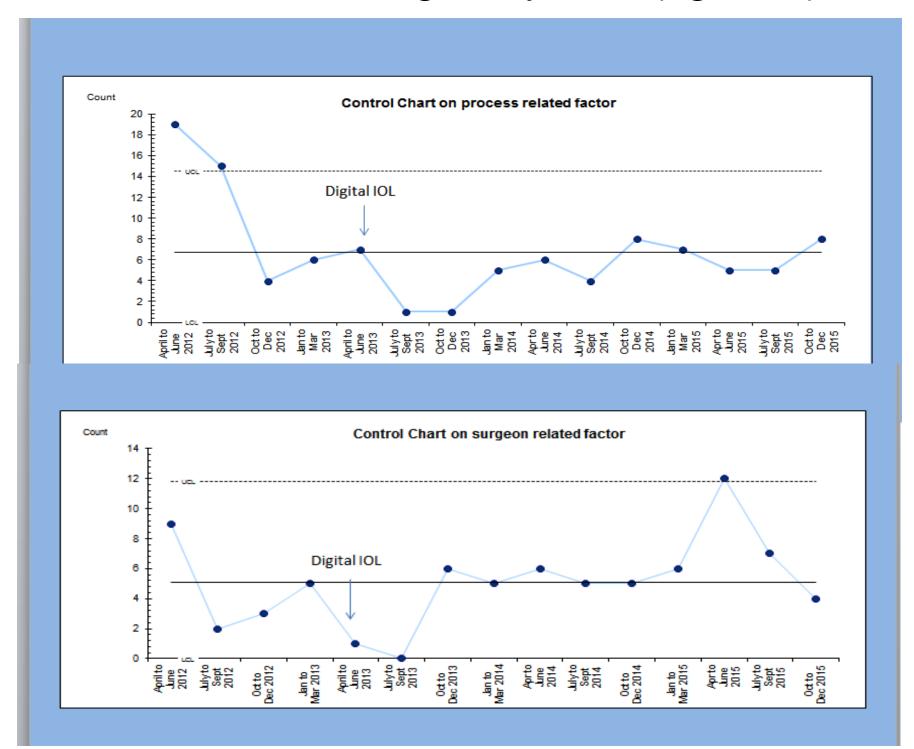
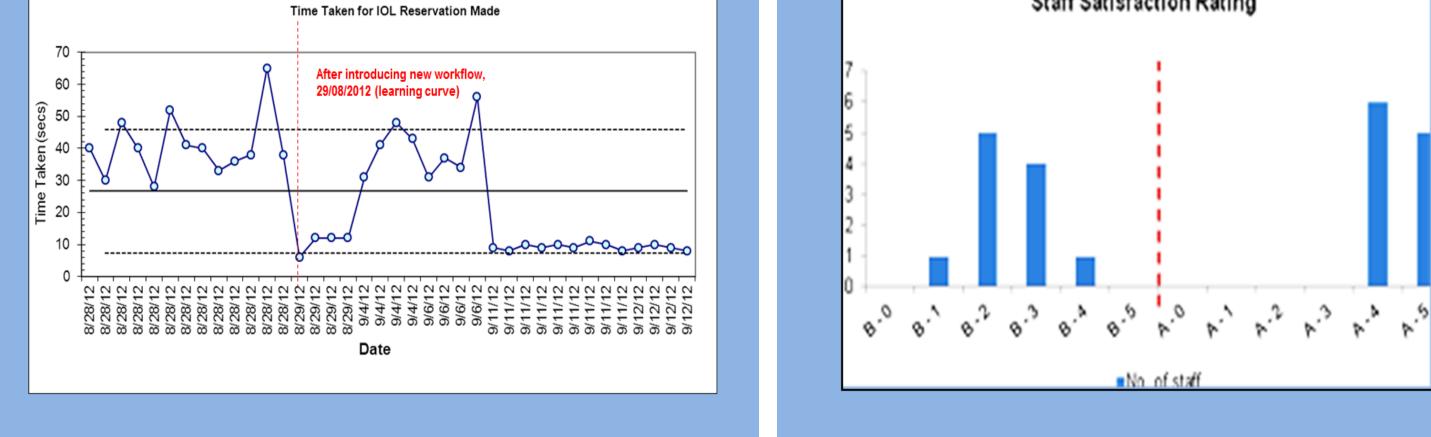


Figure 1 Process related factors reduction from 0.3% to 0.14%



Key points from PDCA 1 such as standardization of order, reducing steps in ordering were used to develop digital IOL ordering system

ACKNOWLEDGEMENT

Ms Low Siew Ngim, Director of Nursing

Sustainability:

Monitoring and sharing of data every quarterly to management and departments

Conclusion and future plans:

Post enhancement from phase 1&2 reduces incidence of near misses from 0.41 % to now 0.38%. Improving the system using human factor principles may need to be addressed.

Figure 2 Surgeon related factors did not show significant improvement from 0.12% to 0.16%