Risk in Pathology as measured by KIMMS

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KIMMS data routinely looks at which of the KIMMS Quality Indicators (QIs) has the biggest risk associated with it for each 3 month cycle, but does not review the risk over time. This poster looks at this risk since the risk matrix was updated in 2015(1), and attempts to add some significance to the changes.

How has the risk changed

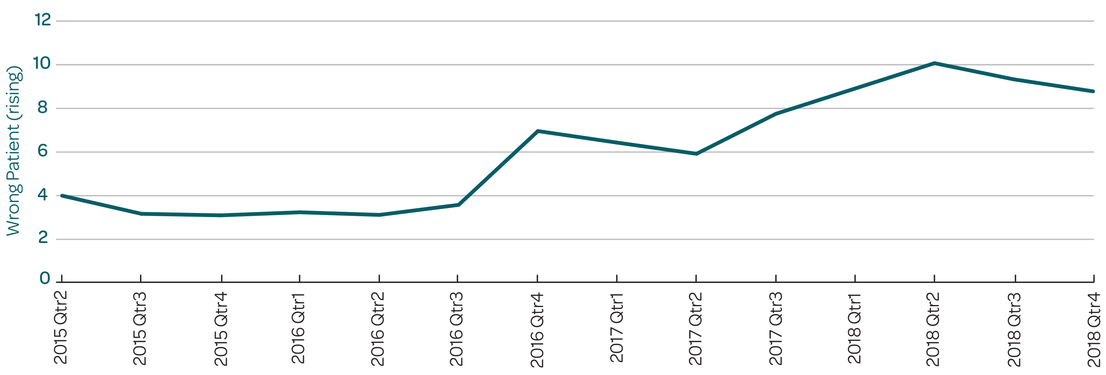
A review of each QI, reveals some showing a rising risk, others a falling risk, a steady risk or an erratic risk. Table 1 shows the results for each QI, with graphs 1–2 showing an example of each interpretation.

Table 1. How the risk associated with each KIMMS QI has changed between 2015 and 2018.

Quality Indicator	Risk	Quality Indicator	Risk
Wrong patient	Rising (see graph 2)	Unlabelled sample	Rising
<3ID	Initial rise, now falling	Mismatch	Rising
Precious sample ID issues	Falling	ID errors accepted	Erratic then rising
Transfusion sample issues (sample and documentation)	Steady	Transfusion sample issues accepted	Falling (see graph 1)
Haemolysis	No change (see graph 3)	Sample clotted	Rising
Incorrect fill	Rose, fell, now rising	Insufficient sample	Rising
Incorrect transport or patient preparation	Rising	Sample not collected	Rising
Incorrect sample type	Rising	Contamination	Rising
Lab identification errors	Fell, now rising	Lab accidents	Rising
Registration errors	No change		
Reports retracted	Erratic	Report to wrong doctor	Erratic

Graph 1. Transfusion sample issues accepted - an example of a falling risk

Graph 2. Wrong blood in Tube - an example of a rising risk

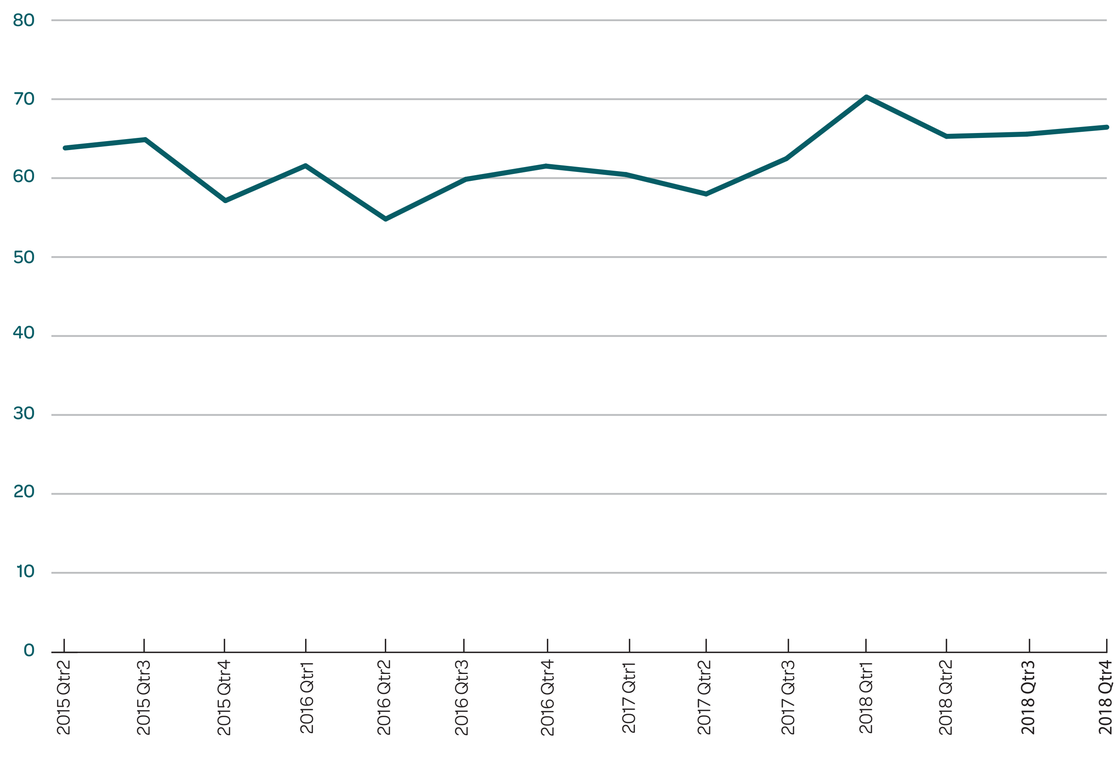


In the Pre-analytical Phase- Collection and Transport Incidents category, all QI's have seen a rise, but not of the same proportions (table 2). This table also shows the high volume of haemolysed samples compared to the other QI's in this category, but also that the rise in this QI has been relatively minor over time (graph 3). This may be due to the fact that many laboratories have stated that they have taken steps to alleviate this issue, such as training new registrar's to collect samples in Emergency Departments (ED), holding phlebotomy training courses for nurses and placing trained phlebotomist in ED.

Table 2. Rise in risk between quarter 2 2015 and quarter 4 2018. Results are risk per 1000 episodes.

QI from Pre-analytical phase – Collection Transport Incidents	Result for Quarter 2 2015	Result for Quarter 4 2018	% rise
Sample haemolysed	63.8	66.4	4%
Sample clotted	4.5	5.2	16%
Incorrect fill level of sample	6.5	8.5	31%
Insufficient sample	3.3	7.3	121%
Incorrect sample storage or transport	4.9	11.3	131%
Sample not collected	9.4	11.2	19%
Incorrect sample type	1.8	3.2	78%
Contaminated sample	0.9	3.5	289%

Graph 3. Haemolysis showing realtively small rise in risk. Results are risk per 1000 episode.



Significance of these changes

An estimate of the cost of a recollections has been calculated by Sol F Green (2) to be in the vicinity of $AUS76 (2), and at $AUS35 by Sonic (personal communication). For the sake of this report, we have used the Australian data, however, the costs could be as much as doubled. As a recollection carries a KIMMS risk equal to 4, one way of estimating the cost of the risk as calculated by KIMMS is to equate the Total risk to the recollection risk (e.g. divide total risk by 4), and multiply it by the cost of a recollection. This calculation is given in table 2.

Table 3. Estimated cost of the risk as reported to KIMMS, and the increased cost between 2015 and 2018.

	2015	2018
Episodes reported on	38471609	47254668
Total risk as calculated by KIMMS	6286469	9324544
Risk/episode	0.1634	0.1973
Increase in risk		**21%**
Cost of the risk*	$55,006,604	$81,589,760
Increase in costs		**$26,583,156**

*Cost is the total risk divided by 4 then multiplied by $35.

Discussion

Why the risks in Pre and Post analytical Pathology are increasing is on the whole unknown, however, some individual KIMMS participants can comment on their individual experiences. How much is due to better reporting is suspected, but unprovable. At a cost to the Australian community in excess of $81 million in recollections alone, the real challenge lies in reducing the number of incidents. The apparent increased number of wrong blood in tube is concerning particularly when it is known that this increase has been seen in laboratories where the use of online collection trollies has been implemented. On a positive note, the reduction in transfusion accepted samples is welcomed.

Conclusion

Pre and post-analytical errors not only contribute to errors in patient care, but are very costly to Pathology. It is imperative that more is done to investigate why the risks are increasing rather than decreasing. KIMMS is contributing to this investigation by running 4 audits per year to look at areas of Pathology in more detail, with a final aim of promoting best practice for pre and post handling of Pathology results.

References

1. *The Key Incident Monitoring and Management System – History and Role in Quality Improvement*. Badrick T, Gay S, Mackay M, Sikaris K. Clin Chem Lab Med 2018 Jan26;56(2):264-272
2. *The Cost of poor blood specimen quality and errors in pre-analytical process*. Sol F Green. Clin Biochem 46(2013)1175-1179