SONIC HEALTHCARE

"We take it personally"

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STANDARDISATION OF CRITICAL VALUES AND NOTIFICATION OF RESULTS

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INTRODUCTION

Critical values are those that need to be notified immediately to the clinician beyond the usual means of reporting (e.g. printed report or electronic download). Typical issues for laboratories include deciding which analytes fall into this category, what values are critical, and mechanisms for notification. Having already established common reference intervals over the last five years, Sonic Healthcare's Australian laboratories were in a position to develop a common approach to addressing these issues.

METHODS

Regular teleconferences to review the issues described above were conducted over a two year period involving the affected Sonic practices within Australia. Data sources included values already in use at each laboratory, literature searches and statistical review of critical result prevalence. Primary consideration was given to the analytical values which reflected significant risk of adverse clinical outcome. Pre-existing disease and physiological states (such as pregnancy or paediatric patients) also were taken in to consideration.

RESULTS

A table of agreed critical and urgent values was developed for numerous tests of which 23 routine analytes are shown here. A two-tier approach to notification was deemed most appropriate. The first tier of "critical values" represents results which warrant urgent communication. A second tier of "urgent values" require rapid communication during normal working hours. Although second tier values may not require urgent clinical intervention, they could significantly affect patient management. It should be noted that the values agreed upon are community laboratory focussed and do not necessarily apply to all clinical settings.

Notification of critical results involves personal communication with the pathology requester or a suitable substitute and if either is unavailable, the patient or their carer(s). The protocols for such notification may vary between pathology practices according to resources available and local service requirements.

CONCLUSION

Standardisation of critical and urgent values together with mechanisms for notifying results has been achieved by asystematic consensus approach. Projects such as the AACB Harmonisation of Laboratory Testing Initiative highlight the need for further consensus between all laboratories in this important area.

ACKNOWLEDGEMENT

This poster describes consensus work of a number of pathologists and scientists in the clinical chemistry departments of Australian Sonic laboratories. Not all of these contributors could be listed above.

SONIC HEALTHCARE AUSTRALIA CRITICAL AND URGENT VALUES FOR CLINICAL CHEMISTRY

TEST	CRITICAL RESULTS *	URGENT RESULTS	UNITS
Na	<120 or >155	120 -125 or 150 –155	mmol/L
K (1)	<2.2 or >6.4	2.2 –2.6 or 6.1 –6.4	mmol/L
HCO3 (2)	<10 or >45	10-15 or 40 –44	mmol/L
Urea (3)	>15 & eGFR >55	>12.0 & eGFR > 55	mmol/L
Creatinine	>450 & HCO3 <20	300 –450 & HCO3< 20	umol/L
Urate (4)	See table for pregnancy	>0.65	mmol/L
Ca (corrected) (5)	<1.5 or >3.5	1.50 -1.90 or 2.80 -3.50	mmol/L
Total Bilirubin	N/A	>300	umol/L
Neonatal Bilirubin (<= 14 days)	>200	101-200	umol/L
Direct Bilirubin (up to 2 months)	N/A	>60	umol/L
GGT (6)	N/A	>1500	U/L
AST	>2500	1000 -2500(7) (8)	U/L
ALT	>2500	2000 –2500	U/L
Albumin (9)	<20	N/A	g/L
CK	< 40yrs >20000 ≥ 40yrs >10000	>5000 >1000 (10)	U/L
Troponin T	>50	N/A	ng/L
LD(11)	N/A	>400	U/L
Glucose F = Fasting (12) R = Random or Post Load Paediatric Patient (<16 yr) Diabetic Patient (Adult) Known diabetic (Adult)	<2.0 (13) >15.0 (F) >20.0 (R) >11.0 (F) >15.0 (R) >30.0 (R) >30.0 (R)	 11.1-15.0 (F) 15.1-20.0 (R) 7.0-11.0 (F) 11.1-15.0 (R) 15.1-30.0 (F) 20.1-35.0 (R)	mmol/L
Iron (<12yrs)	>60.0	50.0 -60.0	umol/L
Amylase	>1000	>300	U/L
Lipase	>500	>150	U/L
Mg	<0.2 or >2.0	N/A	mmol/L
CRP	>300	100 –300	mg/L

FOOTNOTES

* Recent comparable analytical values may obviate the need to notify results urgently – review with a supervisor as necessary

(1) Collection centre specimen with no haemolysis
(2) Non-deteriorated specimen and no recent comparable result(s)
(3) No necessity to phone if "GI Bleed" in clinical notes. Suggest comment: "Patient is at increased risk of GI bleeding"
(4) Not pregnant, no evidence of chronic renal failure (additional values for gestational age are included in a separate table)
(5) If not comparable with previous result(s)/or known from history or, if low result, no obvious contamination with EDTA
(6) No previous GGT result(s) >1000 / no history of cholestatic disease or other liver disorder
(7) If result of AST > ALT
(8) Upgrade to critical result if history of paracetamol use
(9) Total Protein < 40 g/L and no cause previously identified for hypoalbuminaemia
(10) If on lipid lowering therapy
(11) No current malignancy or haematological disorder, haemolysis index <100 and no significant elevation of other LFT results (isolated LD elevation)
(12) If consistent with previous results, then consider Lab Urgent (blue) rather than Critical (red)
(13) No history of diabete