What is the rate of follow-up (first patient contact by the ordering clinician) for abnormal lab results, within one week?

Dr. Alexander Singer, William Peeler, Sylvia Froese, Roberto Duarte

Describing the Data and Analysis

- **Data Custodian Organization(s) and data sources**: Manitoba Primary Care Research Network - MaPCReN
- **List of Datasets Used (e.g. names of database and/or data origins)**: De-identified primary care data collected from primary care clinics participating in the MaPCReN. Database managed in partnership with the Canadian Primary Care Sentinel Surveillance Network. Database located at the Queen's University High Performance Computing lab.
- **Exclusions**: Patients under the age of 18, clinics that did not have digitized laboratory results.
- **Nature and Size of Cohort (e.g. geographic area covered, number of patients included)**: MaPCReN currently collects Electronic Medical Record Data from 167 sentinels (primary care practices) from 35 sites (clinics) participating in the Winnipeg and the Southern Health Region of Manitoba. This represents data from over 182,000 patients. Clinics are recruited to participate in MaPCReN directly by the Network Director and represent a diversity of primary care providers including Family Physicians and Nurse Practitioners in both Fee-for-Service and Salary models. The services offered at the primary care clinics include but are not limited to same day access, inter-professional team care, social services and specialty medical care.
  The Research Ethics Board Approval at the University of Manitoba has granted permission for all data collected from EMRs related to MaPCReN's work in building this repository.
- **Data timeframe**: March 31, 2010 – March 31, 2015

Please provide a brief summary of the analysis methodology:

Using the de-identified data held by the Canadian Primary Care Sentinel Surveillance Network and collected by MaPCReN, we performed SQL queries to identify abnormal results related to Hemoglobin, Potassium, HbA1c and INR. We defined abnormal results in the following way: Male with hemoglobin under 140g/L, Women with hemoglobin under 120g/L, potassium above 5.8mmol/L, INR greater than 3.5 and HbA1c over 7.0%.

These particular labs and cut offs were chosen based on their clinical significance and the expectation that follow-up would be required if results were found in this range.

We then performed an SQL query to reveal the total number of scheduled visits recorded in the primary care EMR within 7 days following an abnormal result.

Describing the Findings

- **Numerator:** Number of abnormal test results for which first patient contact occurs in the first week.
  N = 27823
- **Denominator**: Total number of abnormal test results.
  N = 42513

Please also provide a brief summary of the findings including any key limitations or interpretation issues (may also include one figure/table)

The table below show the 20 sites for which we had adequate data during the study period. We found that 65% of the time follow-up of abnormal results occurred within 1 week of the result being received.

The most significant limitation of this methodology is that we could not detect whether the purpose of the visit was related to the abnormal result. It is possible that patients were having lab tests done before scheduled visits. We cannot establish from this data why the visit was scheduled and when the result was reviewed by the ordering provider.

Inclusion of tests with less significant implications for a patients' health may have lowered the follow-up rate. As well, further analysis related to clinic policies on appointment scheduling and management of abnormal results may also assist in further defining the trends identified in this data.

As primary care laboratory results and clinical information are stored in a single database, further elucidation of patient's clinical characteristics is possible. Unfortunately, not all clinics in Manitoba have a digital laboratory interface, limiting the ability to conduct this analysis. Despite this current limitation, this type of interoperability is rapidly improving.

Site_ID	Abnormal Result				Visit following week
	HbA1c	Hemoglobin	INR	K (POTASSIUM)	
2	51	236	325	15	546
5	484	3595	534	217	3246
7	2204	7014	728	238	4040
8	1686	5797	396	233	8459
10	82	435	32	25	359
11	271	589	128	6	522
12	235	287	320	11	430
13	253	1482	316	47	1525
14	251	627	204	43	861
15	77	213	30	6	408
18	276	1259	547	46	938
19	222	1332	290	35	836
20	465	1108	68	30	957
22	104	277	9	8	126
23	935	2511	168	73	1705
25	95	523	20	3	400
26	2	2			2
34	719	1383	170	110	2463
	8412	28670	4285	1146	27823

Total number of abnormal test	42513
Total number of follow up	27823
Percentage	65.4%