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| **Recommended Maximum Phlebotomy Volumes** |
| **Purpose** | This procedure provides instructions for determining RECOMMENDED MAXIMUM PHLEBOTOMY VOLUMES. |
| **Policy Statements** | * To provide a guideline to perform safe phlebotomy on neonates, infants, and pediatric populations.
* This procedure applies to all laboratory staff who perform phlebotomy or answer calls regarding test requirements.
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| **Procedure** | Follow the activities in the table below for RECOMMENDED MAXIMUM PHLEBOTOMY VOLUMES.

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| **Step** | **Action** |
| 1 | The following guideline for blood drawing is practiced at Children’s Minnesota Laboratory:* **Pounds (lbs) / 2.2 = kilograms (kg)**
* **kilograms X 1.7 = milliliters (ml)**
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| 2 | Refer to the table below for volume guidelines:

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| **Pounds (lbs)** | **Kilograms (kgs)** | **Volume which can be safely drawn per day in milliliters (ml)** |
| 6 – 8 | 2.7 – 3.6 | 4.6 – 6.1 |
| 9 – 10 | 4.1 – 4.6 | 7.0 – 7.8 |
| 11 – 14 | 5.0 – 6.4 | 8.5 – 10.8  |
| 15 – 17 | 6.8 – 7.7 | 11.6 – 13.1 |
| 18 – 20 | 8.2 – 9.1 | 13.9 – 15.5 |
| 21 – 23 | 9.6 – 10.5 | 16.3 – 17.9 |
| 24 – 26 | 10.9 – 11.8 | 18.5 – 20.1 |
| 27 – 29 | 12.3 – 13.2 | 23.2 – 24.7 |
| 30 – 32 | 13.6 – 14.5 | 23.2 – 24.7 |
| 33 – 35 | 15.0 – 15.9 | 25.5 – 27.1 |
| 36 – 38 | 16.4 – 17.3 | 27.8 – 29.4 |
| 39 – 41 | 17.7 – 18.6 | 30.1 – 31.7 |
| 42 – 44 | 19.1 – 20.0 | 32.5 – 34.0 |
| 45 – 47 | 20.5 – 21.4 | 34.8 – 36.3 |
| 48 – 50 | 21.8 – 22.7 | 37.1 – 38.6 |

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Procedure notes1. Children’s Minnesota laboratory has developed procedures to minimize specimen volume requirements whenever possible. Laboratory staff will do their best to work with the specimens collected and will notify the patient’s caregiver if testing cannot be completed.
2. This procedure is a guideline for blood drawing. If test requests require greater amounts of blood drawn than indicated in these guidelines, laboratory staff should contact the ordering provider to determine which labs should be given priority and which ones can wait until the next day.
3. If the ordering provider insists on collecting all labs with the volume to be collected exceeding the recommended maximum volume listed above, this can be accommodated with the ordering provider’s approval.
4. General Information:

Approximate blood volume1:Age Total Blood VolumePremature infants 90 – 105 ml/kgTerm newborns 78 – 86 ml/kg>1 month 78 ml/kg>1 year 74 – 82 ml/kgAdult 68 – 88 ml/kg1. For phlebotomy, observe the patient for the risk of development of physiologic signs of rapid blood loss. Symptoms of excessive blood loss are tachycardia, decreased profusion, bradycardia, decrease in blood pressure, and shock. Symptoms are more severe with acute loss. If signs of acute blood loss are apparent or if the patient losses consciousness, immediately call the rapid response team (Dr. Blue). In most instances the body can compensate for the blood loss but notify the patient’s practitioner.
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| **References** | 1. 1The Harriet Lane Handbook, 13th Edition, The John Hopkins Hospital, Kevin B. Johnson, M.D., Editor.
2. Mayo Medical Laboratory, Mayo Guidelines for Pediatric Patients (August, 2006).
3. Becan-McBride K, Garza D. Phlebotomy Handbook, 2nd Edition. Norwalk, Conn; Appleton & Lange; 1989; 241.
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