Blood Giving Sets

PVC: Gamma and sterilization stability, Migration resistance, Color consistency, Thermal stability, RF and solvent welding, Printability ([link](https://www.eastman.com/Markets/Medical-Supplies/Pages/Medical-Tubing-Bags.aspx))

1. Bag
   1. Saline: Polypropylene (PP) - Sterilized by water cascade terminal sterilizer in house; eliminating the need for 3rd party sterilization services ([link](https://isikel.com/manufacturing/saline-bags/#:~:text=About%20The%20Saline%20Bags&text=The%20bag%20is%20a%20flexible,tubing%20to%20the%20patient's%20catheter.))
   2. PVC
      1. 42 day shelf life
   3. Needs to have a port for donation and a port for transfusion (most had 3 ports tho?)
   4. If reusable must be resealable after donation/transfusion
   5. Needs anticoagulants (and for them to be replenished with each use
2. Protector
   1. Polyethylene (PE) - sterilizable
3. Plastic Spike
   1. Acrylonitrile butadiene styrene (ABS) - ABS can be sterilized, but not with an autoclave or gamma sterilization
4. Air Vent
   1. Stainless steel, ABS, or POM (polyacetal). The spike is encased in polyamide
   2. [Air vent](https://www.kmedhealth.com/difference-between-vented-and-non-vented-iv-sets/) isn’t absolutely necessary unless transferring from rigid container
5. Drip Chamber
   1. DEHP PVC or Non-DEHP PVC - potentially toxic?
   2. Polyethylene terephthalate (PET or PETE) - sterilizable and flexible
   3. [Drip Chamber + Spike](https://www.kmedhealth.com/product/drip-chamber-with-spike-48mm-and-50mm/)
   4. Needs to be able to be compressed
6. Filter
   1. Polypropylene (PP)
   2. Basic mesh filter with pore size of 170-260 microns
   3. <https://sharevfilters.en.made-in-china.com/product/KmNrbVyYgnRP/China-Blood-Filter-for-Transfusion-Set.html>
   4. Metal mesh with 125-micron filter [link](https://www.amazon.com/Stainless-Steel-Filter-Screen-Filtration/dp/B07QNTQ13L/ref=asc_df_B07QNTQ13L/?tag=hyprod-20&linkCode=df0&hvadid=693071814667&hvpos=&hvnetw=g&hvrand=9695736233747201920&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9009748&hvtargid=pla-774419141180&mcid=e1b6977f4fe53c41854a64e1d76d68ff&th=1)
   5. Watchman device for LAA - PET fabric material [link](https://www.watchman.com/en-us-hcp/about-the-procedure.html)
7. Tubing
   1. PVC and sometimes DEHP to add flexibility
8. Flow regulator
   1. PE or ABS
   2. Potentially could make from metal/order metal component
      1. <https://www.mcmaster.com/5330K16/>
      2. <https://www.mcmaster.com/products/pinch-valves/>
9. Injection site
   1. Latex or Latex free
   2. [Rubber Bulb Injection Site](https://www.kmedhealth.com/product/rubber-bulb/)
10. Luer Lock Connector
    1. ABS
    2. Pre-made order?
    3. Will need connectors for each component not necessarily this type but airtight and reusable
11. Needle
    1. Non sterilizable/ reusable
12. Other material links
    1. <https://www.kmedhealth.com/types-of-iv-set-injection-sites/>

Wednesday

* Understanding of how each component works

First prototype

1. Blood bag - Ziploc bag
2. Plastic spike -
3. Drip chamber - squeeze bottles
4. Filter - cheese cloth
5. Tubing - tubing or plastic straws
6. Injection site
7. Luer lock - plastic syringe luer lock
8. Needle - sewing needle