Plasmapheresis in resource limited areas: Experience from Namibia

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Background

- WHO action framework on availability of PDMPs recommends introduction of plasmapheresis as a way to increase availability of plasma for production of PDMPs.
- Most countries in Sub Saharan Africa (SSA) do not collect plasma by apheresis due to high cost and complexity of apheresis procedure.
- Plasma fractionators require more plasma for fractionation, but their strict rigorous GMP quality requirements on source material plasma has not been met by most countries in the region leading to millions of recovered plasma to be discarded.
- Due to the successful implementation of QMS in Namibia, plasma could meet the fractionator (NBI)'s GMP requirements for fractionation.

NamBTS export surplus plasma to NBI since 2015

- Prior to 2015, NamBTS was discarding about 77% of high quality recovered plasma.
- After GMP audits by NBI, NamBTS's plasma was accepted for fractionation in 2014.
  - Plasma exports commenced in 2015.
- Since 2015 the volume of plasma exports have increased from 3 377 litres in 2015 to 8 371 litres in 2022.
- Plasma exports to NBI have contributed between 4- 8% to NamBTS's annual revenue.

The drive to implement Plasmapheresis at NamBTS in 2020

- Currently, NamBTS collects 42 000 donations annually of which 9% is plasma collected by apheresis.
- High demand for group O, drives blood collection activities
- However, highly motivated non-group O donors, donate regularly, resulting in high RCC stock levels and unavoidable expiries due to low demand
- Wastage rate for RCC was high and contributed to high cost of doing business.
- NamBTS implemented plasmapheresis programme as a strategy to reduce cost and optimize donations.

The drive...

- As part of optimizing costs, NamBTS increased the production of pooled platelets to 60% and reduced the production of apheresis platelets to 40% of annual output.
  - This left redundant labour and donation space in the apheresis collection clinic
  - This could accommodate plasmapheresis without additional costs of labour and other required resources.
- Therefore, creating the opportunity for implementing a cost effective plasmapheresis program

Cost Analysis for the implementation of the plasmapheresis programme at NamBTS

- Excluding labour and space which was already available, collection cost of a plasma donation through plasmapheresis was 1580 Rands of which:
  - TTI and Blood grouping constituted 69% of total cost
  - Plasma collection sets constituted 21% of total cost
  - Other consumables constituted 10% of total cost
  - Collection instruments were supplied on a placement deal.
- If labour and space costs are factored in, implementing the programme would not be cost effective after comparing with the price per litre offered by NBI.
- Strategies had to be implemented to make the programme cost effective.

Strategies implemented to make plasmapheresis programme more cost effective

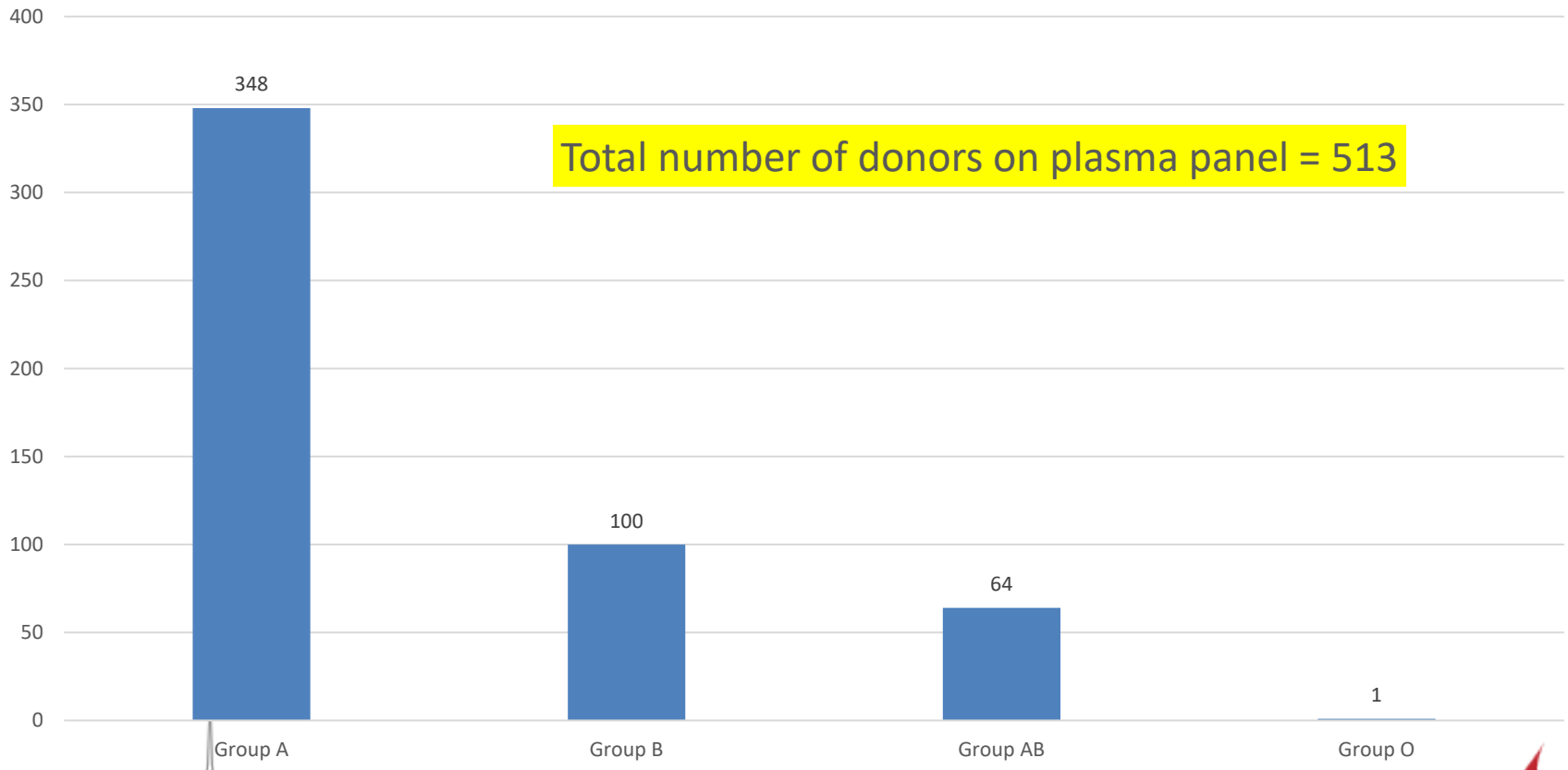
- Negotiated the price per litre with NBI
- Issue some of the plasma collected for clinical transfusion where the price per litre was more than double that which was offered by NBI.
  - Due to double testing requirement for recovered plasma, NAMBTS experienced shortages of mostly non- group O FFPs.
  - This strategy improved availability of quality FFPs for transfusion
  - Currently 60% of FFPs needed for transfusion are supplied through the plasmapheresis programme
  - Therefore plasmapheresis programme provided the opportunity to meet demand for FFPs for transfusion as well as surplus for fractionation.
- The strategies ensured that the plasmapheresis programme is financially sustainable.

Recruitment Strategies that were implemented to build a sufficient panel of donors

- Since the plasmapheresis programme is only done at the main centre in Windhoek, non-group O donors around Windhoek were recruited into the programme
- A very small number of group O donors who struggle with low Hb on whole blood donation are from time to time recruited to the panel
- No first-time donors are recruited to the panel. All donors that are recruited to the panel must have at least had one whole blood donation

The distribution of plasmapheresis donors by blood group

The current panel size is 513 active donors. Group A = 348 (68%), Group B = 100 (19.4%), Group AB = 64 (12.4%), Group O = 1 (0.2%)



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Management of donors to ensure sufficient plasma output

- Annual plasma donation output target is set at 3 810 donations with a forecast yield of 2 820 litres of plasma per annum.
- The panel size of 513 consist of 423 (82%) active donors to fulfil the target with an average of 9 donations per donor per annum.
- The panel size also includes 87 (17%) to buffer for deferrals.
- Cancellations at appointment is currently 39%, recruitment efforts are being done to accommodate these cancellations.
  - 20% are able to make an average of 18 donations per annum, therefore, contributing 50% of the annual output
  - 30% of the donors can make an average of 9 donations per annum, contributing 30% of the annual output
  - The remaining 50% of the panel can only donate >5 donations per annum, therefore, contributing the final 20% of the annual output

Growth of the plasmapheresis programme 2020 to 2023 fin year

	No. of donors	No. of donations	Volume of plasma collected (Litres)	Average output per donation (mls)
2020	108	211	137.2	650
2021	322	2644	1747.3	661
2022	474	3702	2735.8	739
2023	513	1202	909.9	757

- The number of donors donating plasma have increased
- Plasma output per donation has also increased year –on- year, this has increased the volume of plasma available for fractionation.
- This strongly indicates that the implementation of plasmapheresis in Namibia is a huge success.

Conclusion

- Overall, the plasmapheresis programme increased availability of double tested non-group O plasma for transfusion as well as providing more plasma for fractionation, thereby making PDMPs available in the region and contributing an additional 2.5% to NamBTS annual revenue.
- We can therefore, conclude that it is possible to implement a cost effective and successful plasmapheresis programme in resource limited areas.

Thank you for your attention