

Bridging the gap: Unmet needs in interventional nephrology in Pakistan

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Abstract

Nephrology is a multidisciplinary team specialty that provides care for patients with established renal disease requiring Renal Replacement Therapy and renal transplantation. There has been enormous progress in RRT and interventional procedures have now become an integral part of Renal medicine training curriculum. Historically, nephrologists have relied on other specialties to perform these procedures. This reliance often caused inefficiency in patient care and therefore led to the birth of sub-specialty of 'Interventional Nephrology' (IN).

We here describe the various efforts being done in Pakistan for promotion and establishment of IN as a routine part of training of the nephrology residents and as a separate subspecialty. We here also highlight the efforts being imparted by the Pakistan Society of Nephrology and sister units abroad in training the nephrologists and residents.

Key words

Interventional nephrology, kidney biopsy, POCUS, ultrasound, permanent catheter, vascular access, peritoneal dialysis, hemodialysis, catheter, arteriovenous fistula.

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Introduction

Nephrology is a multidisciplinary team (MDT) specialty that provides care for patients with established renal disease (ESRD) requiring Renal Replacement Therapy (RRT) and renal transplantation. There has been enormous progress in RRT and interventional procedures have now become an integral part of Renal medicine training curriculum.¹

Historically, nephrologists have relied on other specialties to perform these procedures. This reliance often caused inefficiency in patient care and therefore led to the birth of sub-specialty of 'Interventional Nephrology' (IN).

Interventional nephrology encompasses a variety of procedures such as US guided renal biopsy, peritoneal dialysis catheter insertion, tunneled dialysis catheter insertion and percutaneous USS management of AV fistulas.

As the number of patients with ESRD requiring dialysis increases, so does the need for Interventional nephrologists. In the US, this increase in demand led to the development of the American Society of Diagnostic and Interventional Nephrology (ASDIN). ASDIN has been responsible for successfully training many interventional nephrologists since its conception in 2000, facilitating increased access to single-center renal care, and reducing the demand placed on other specialties.²

Interventional Nephrology

It is estimated that the annual incidence of new cases of end-stage renal disease (ESRD) is >100 per million population in Pakistan.³

In Pakistan there have been significant improvements in the delivery of both nephrology training and provision of renal care in recent years, however, there remains a shortfall in the provision of IN training in the country.⁴

Pakistan Society of Nephrology (PSN) identified this shortfall and the need for greater access to training. The PSN organized an interventional nephrology workshop to be delivered at the Biennial International Conference of the PSN, Figure 1. The workshop was delivered by a faculty of interventional nephrology, Table 1. The aim of the workshop was to provide nephrologists and their teams with an introduction to the principles and techniques of interventional nephrology.

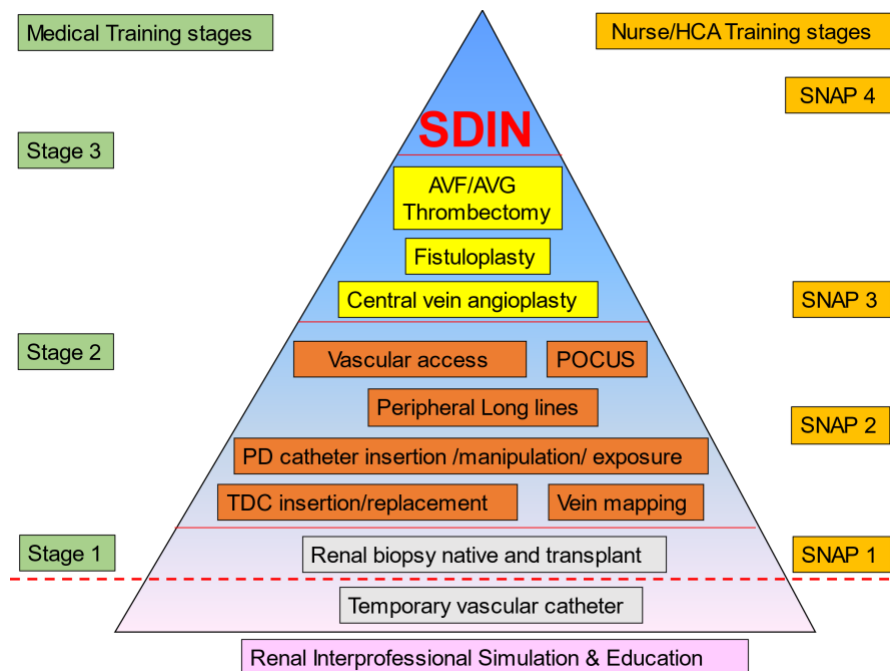


Figure 1: Training pyramid for the Sunderland Diagnostic Interventional Nephrology (SDIN) program Staff Nurse Assistance Program stages (SNAP)

Methods

The interventional nephrology workshop was delivered at the 12th Biennial international conference of the PSN October 2019, Figure 2. The audience consisted of both nephrology consultants and trainees and nursing staff. The workshop was composed of 6 individual stations each with its own instructor see Table 1 and Figures 3-8. All the stations were held in one hall allowing delegates to move between stations. Delegates were pre-allocated to groups A to F see Table 1.



Figure 2: Pakistan Society of Nephrology conference 2019.

Interventional Nephrology

At the end of each session participants were asked to complete a feedback questionnaire and score each station from 1 to 5 (5- excellent and 1- poor) see Table 2. The questionnaire also collected free text feedback from the delegates.

Table 1. Workshop stations and timings and trainers

Station 1. Professor Marie Richards, AVF examination and Cannulation
Station 2. Dr Junaid Qureshi, Tunnel Dialysis catheter placement
Station 3. Dr Ali Khan, Interventional Wires and balloon types.
Station 4. Dr Rauri Clark, Pre-recorded Fluoroscopy cases
Station 5. Muhammed Azhar, USS for Vein mapping and Fistula scan
Station 6. Saeed Ahmed, Point of care USS (PoCUS) in Nephrology
 Workshop Grid below based on 40-minute stations with maximum 10 delegates per station.

STATION	TIME					
	2.15-2.55	3.00-3.40	3.45-4.25	4.30-5.10	5.15-5.55	6.00-6.40
1	A	F	E	D	C	B
2	B	A	F	E	D	C
3	C	B	A	F	E	D
4	D	C	B	A	F	E
5	E	D	C	B	A	F
6	F	E	D	C	B	A

Results

Out of 69 participants who attended the workshop 47 completed the questionnaire, see Figure 2 and 3. 23 of the 47 participants recorded 'free text' comments on the questionnaire see Table 3. 43/47 delegates would attend another IN workshop and 43/47 would recommend this workshop to another colleague.

There was a low number of non-responders on the questionnaire for each of the stations.

Table 2: Delegate questionnaire

Questionnaire PSN IN workshop 25/10/2019

(Please tick ☒ the appropriate number for each of the stations you attended question, where 1 = poor and 5 = excellent)

Station 1. Prof Marie Richards

AVF examination and cannulation

1	2	3	4	5
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Station 2. Dr Junaid Qureshi

Tunnel dialysis catheter placement internal jugular
Vein anatomy.

1	2	3	4	5
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Station 3. Dr Ali Khan

Interventional wires and balloon types

1	2	3	4	5
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Station 4. Dr Rauri Clark

Pre-recorded fluoroscopy cases

1	2	3	4	5
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Station 5. Dr Muhammed Azhar

Ultrasound for vein mapping and fistula scan

1	2	3	4	5
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Station 6. Dr Saeed Ahmed

Point of care USS (POCUS) in Nephrology

1	2	3	4	5
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1. Would you attend another course like this in the future Yes ☐ No ☐
2. Would you recommend this course to colleagues Yes ☐ No ☐

Any other Comments or suggestions for future courses or Stations:

Table 3: “free text” comments collected in the questionnaire Number in () records frequency of the comments if greater than 1.

1. mannequins for TDC placement and AVF needling
2. increase the number of slots on the workshop (3)
3. more frequent workshops (6)
4. student international exchange programme
5. renal biopsy station
6. specific training programme for nurses and dialysis techs
7. annual workshop
8. excellent work by all demonstrators
9. Urdu speaking doctors
10. more POCUS stations
11. Pakistan vs UK comparison and what we can learn from each other
12. Separate station for nurses and dialysis technicians
13. Live placement of TDC or video
14. TDC problem solving use of fibrinolytic agents, removal, CRBSI, line locks
15. vascular access examination on patients
16. vascular access guidelines updates
17. Renal Biopsy workshop
18. doppler USS of femoral vein, internal jugular vein, subclavian vein
19. Doppler USS of AVF
20. AVF doppler USS (4)
21. TDC mannequins for tunnelling
22. USS of thrombosed AVF
23. POCUS real cases to USS (6)

Figure 3 demonstrates that “Interventional wires and balloon types” (station 3) and “point of care ultrasound” (station 6) received the highest mean score, 4.62 and 4.68 out of 5, respectively. The station that received the lowest mean score was the “pre-recorded fluoroscopy cases” (station 4).

Discussion

The aim of the interventional nephrology workshop was to provide a basic introduction to the principles and techniques of interventional nephrology for nephrologists and their teams in Pakistan. The workshop received very positive feedback as shown in Figure 2 and Figure 3.

Station 4 we have speculated that the cause for this variation was that the station was “pre-recorded” and therefore was potentially less engaging and practical.

The “Point of Care Ultrasound Scan” station receiving the highest mean score was supported by many “free text” responses such as “POCUS real cases to USS” which would support including more

POCUS stations in future IN workshops, Table 3. Demographic details were not collected on the delegates and this would have been useful to see what part of the vascular access multidisciplinary team requires targeted input in future meetings.

It is usually the case that nursing staff are particularly interested in needling competency as compared to doctors inserted in intervention. Statistical analysis of the data was limited given the small sample size and varying response rates for each station. Despite this the overwhelming feedback for the IN workshop was well received and has potential to help bridge the gap that currently exists in interventional nephrology training in Pakistan.



Figure 3: Station 1 Arteriovenous fistula examination and cannulation



Figure 6: Station 4 Pre-recorded Fluoroscopy cases



Figure4: Station 2 Tunnel dialysis catheters insertion



Figure7: Station 5. USS Vein Mapping and fistula scanning



Figure 5: Station 3 Interventional Wires and balloons



Figure 8: Station 6 Point of care Ultrasound (POCUS)

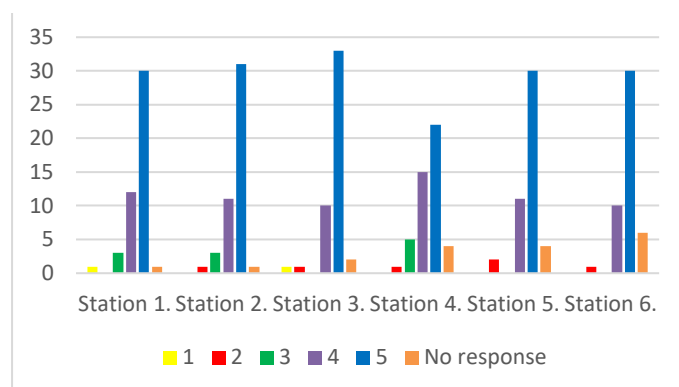


Figure 9: Comparison of each station and respective score from 1-5 and frequency of these scores.

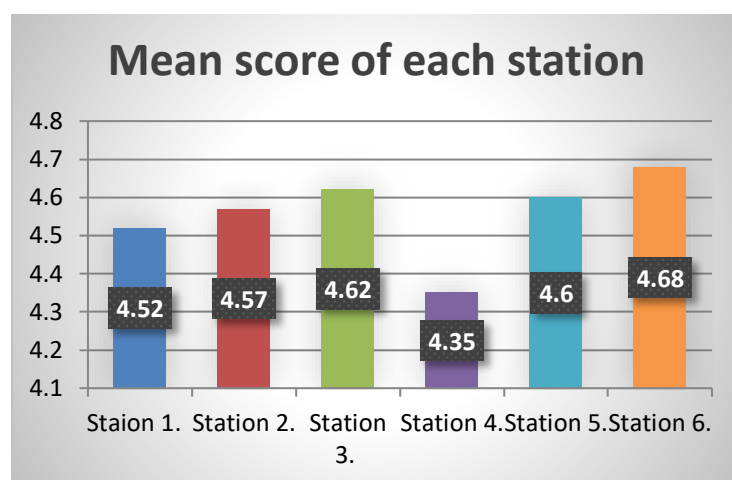


Figure 10: Comparison of the average feedback score of each station

Conclusion:

We have clearly identified and unmet need for an increase in interventional nephrology training in Pakistan. We believe that this training workshop environment provides the foundations for developing future, more formal training in interventional nephrology. A training curriculum based on the Sunderland Diagnostic Interventional Nephrology (SDIN) program would be one way to progress more formal training in Pakistan, Figure 1. The SDIN program has both different stages of competency in IN but also involves a staff nurse assistance program as IN is a MDT approach to patient care.

Conflict of Interest: None declared

References:

- Greenberg KI, Pourafshar N, Choi MJ. Current Trends and Challenges in Nephrology Fellowship Training: Expansion of Education in Home Dialysis, Palliative Care, and Point-of-Care Ultrasound. *Adv Chronic Kidney Dis*. 2022 Nov;29(6):510-515. doi: 10.1053/j.ackd.2022.07.006.
- <https://www.asdin.org/page/60>. Last accessed 14 April 2022.
- Syed AJN. Nephrology services in Pakistan. *Nephrol Dial Transplant* 2000; 15: 769 – 771
- Ahmad W. Nephrology training in Pakistan: To infinity and beyond. *Pak J Kidney Dis*. 2019; 3(10):150