Experience in Peritoneal Dialysis in Acute Kidney Injury

WITS UPTO SPAED CONFERENCE

25 - 28 July 2024
Wits University Education Campus
Public Health Auditorium

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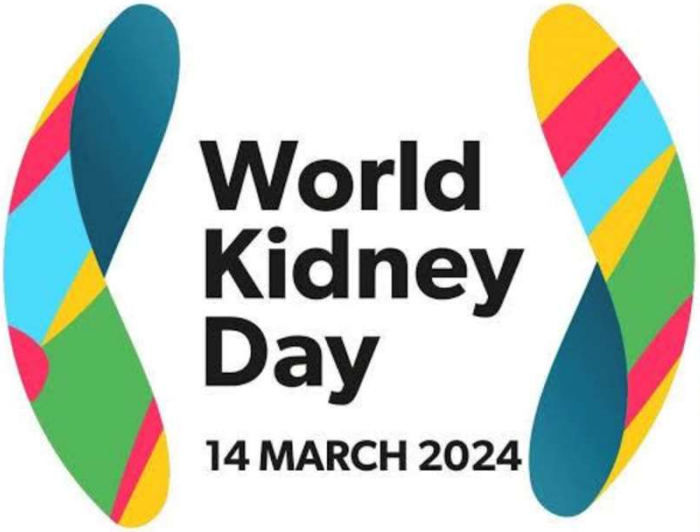
Disclosure

- No financial disclosures
- Passionate about paediatric care for AKI in low resource settings(LRS)
- I am Chair of the next IPNA 2025 Congress



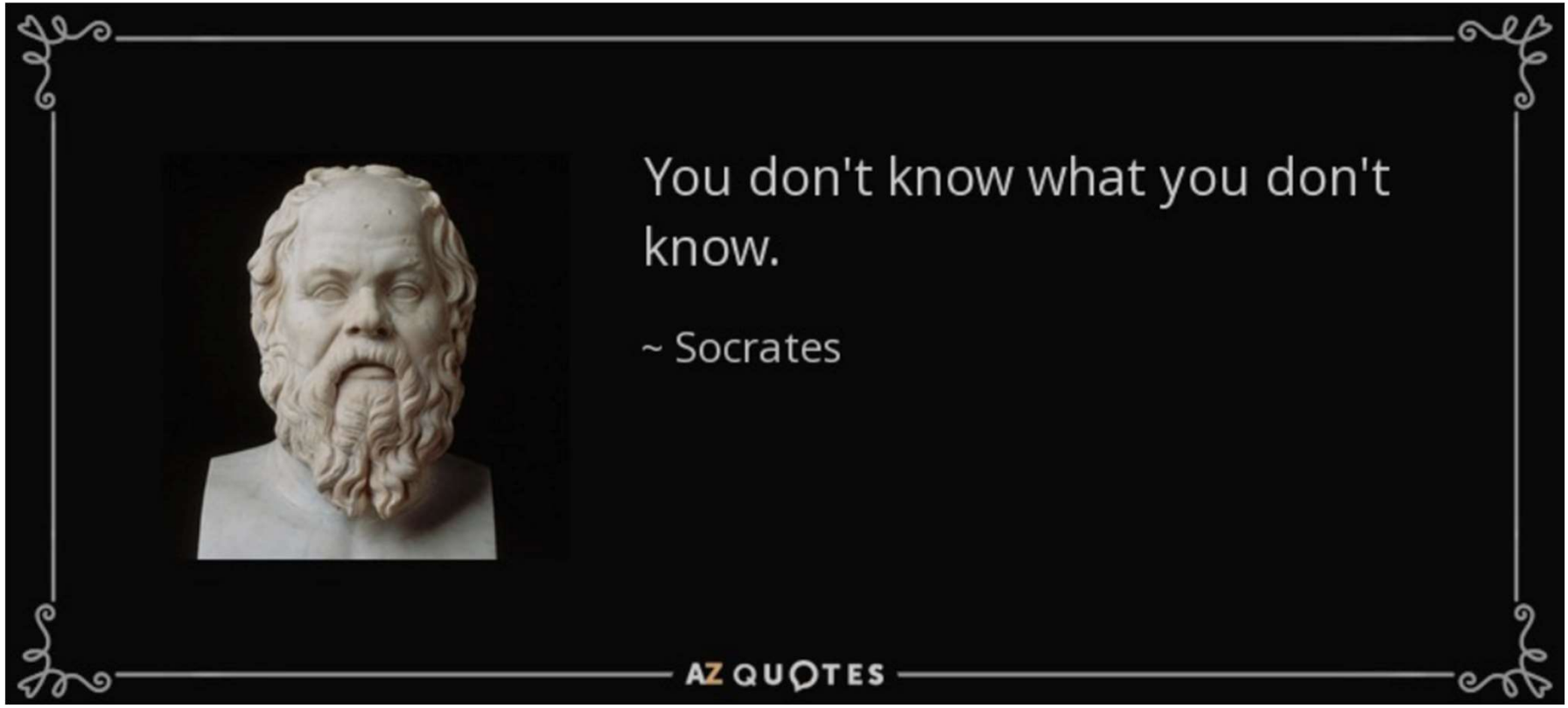
Abstracts open!

20TH IPNA CONGRESS

CAPE TOWN, SOUTH AFRICA

FEB 19–23, 2025

What is the denominator?
But possibly improving….



Case study 1

- 8month old 4kg male Cape Town – severe failure to thrive
- Presents with fever, poor feeding and some loose stools
- Family had some neonatal deaths
- Admitted to District Hospital in Cape Town
  - Continuing to deteriorate – obtunded, clinical signs of sepsis with hypotension
  - Raised Lactate and CRP , ABN renal function - AKI, can't measure endotoxin/biomarkers
  - But can measure Ammonia +++
- Transferred to RCWMCH Children's Hospital
  - PICU admission

Case Study 1

- Hyperammonaemia – Dx Metabolic defect
  - Lab can diagnose metabolic disorders in 6hours – Biochemist true geek!
  - Pre-warning about patient transfer
- Dialysis
  - Started Peritoneal dialysis @ bedside within 17minutes of patient arriving in our PICU
  - Took 3 hours to get lines and CRRT started as shocked and coagulopathic
  - Switched to Carpe Diem and continued CRRT
  - Renal function improved and Ammonia came down
- Diagnosis by end of the day – Tyrosinaemia
- Endocrine team
  - Special feeds and close follow-up
  - Consideration for liver transplant

Case Study 2

- 2 siblings male 8 months old and female 8years old from village in St Elsewhere in Africa using river water for household use
- Presents with fever, poor feeding and some loose stools?
- Had seen Traditional healer – given medication including NSAID's
- Admitted to a District Hospital
  - Continuing to deteriorate – obtunded, clinical signs of sepsis with hypotension and dehydration
  - Malaria diagnosed spot test
  - No lab tests available
  - Lots of fluids given and antibiotics including Ampicillin and Gentamicin

Case Study 2

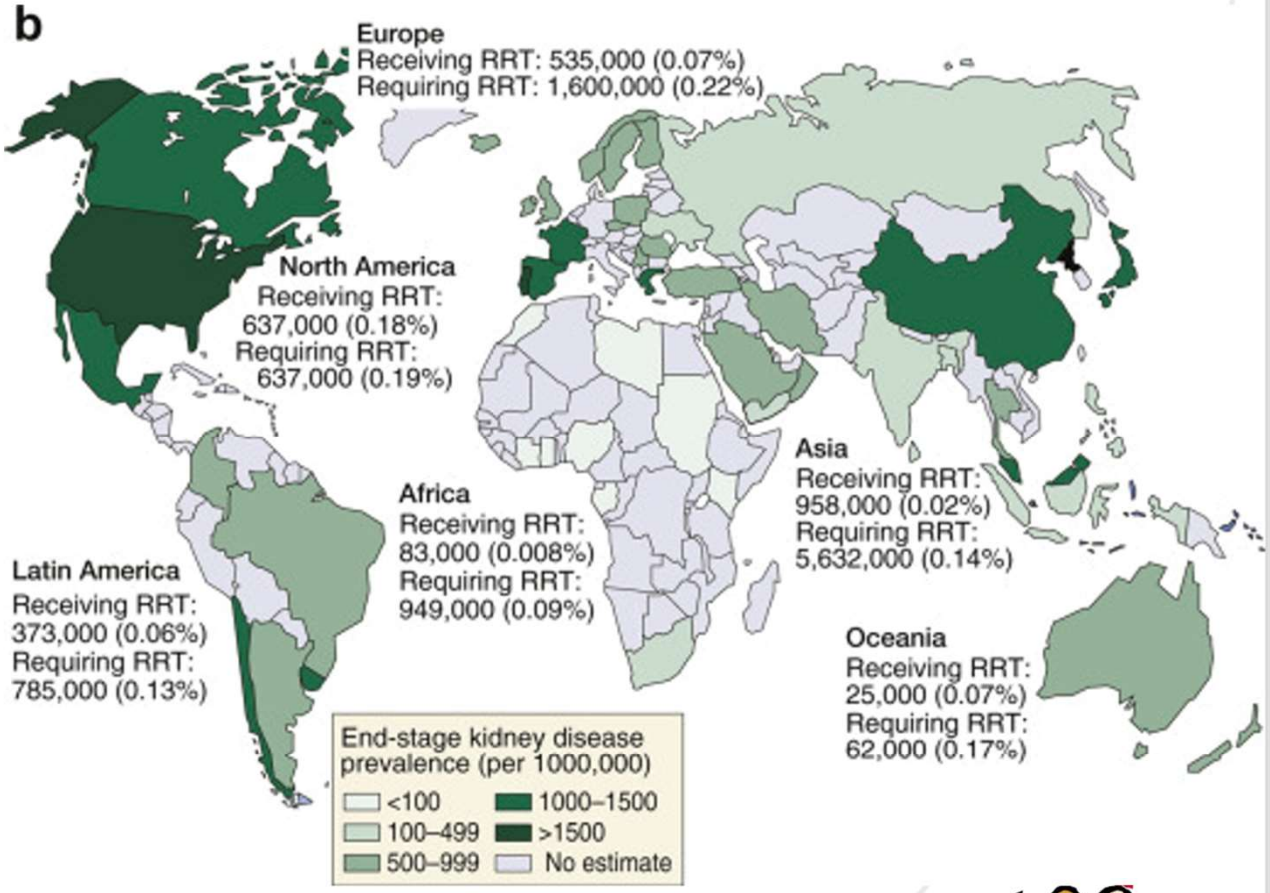
- Both Children continue to deteriorate
- Referred to large Regional hospital but no PICU
- 6-month-old male
  - Severe AKI with no urine output and high K and fluid overload
  - Attempts at diuretics but failed
  - No paediatric surgeons to place PD catheters
  - Too small for HD in an adult unit
  - Demised after 7 days

Case Study 2

- 8-year-old female
- Severe AKI with no urine output and high K and fluid overload
- Adult Nephros – bless them! – offered to try some intermittent HD
- BUT…
  - Mother needed to purchase own HD catheter at the local pharmacy
  - Managed to do HD in adult unit and child stabilized
- Developed AKI – AKD – CKD with no recovery
- Long term HD/Transplant
  - Single *mother* and *girl child* – family had to find funding
  - Offer HD once a week in adult unit
  - No Transplant available – referred to India if can afford it

The challenge of delivering RRT in low and middle income regions

- Difficult to access pediatric renal expertise
- Lack of CRRT capabilities
- Are surgeons available and willing to place a Tenckhoff catheter?



Kidney Int. 2016;90:34–40

Thanks to Danielle Soranno

Review > Nat Rev Nephrol. 2021 Jan;17(1):33-45. doi: 10.1038/s41581-020-00338-7.
Epub 2020 Oct 1.

Challenges of access to kidney care for children in low-resource settings

Mignon McCulloch [1], Valerie A Luyckx [2 3 4], Brett Cullis [4 5], Simon J Davies [6], Fredric O Finkelstein [7], Hui Kim Yap [8], John Feehally [9], William E Smoyer [10 11]

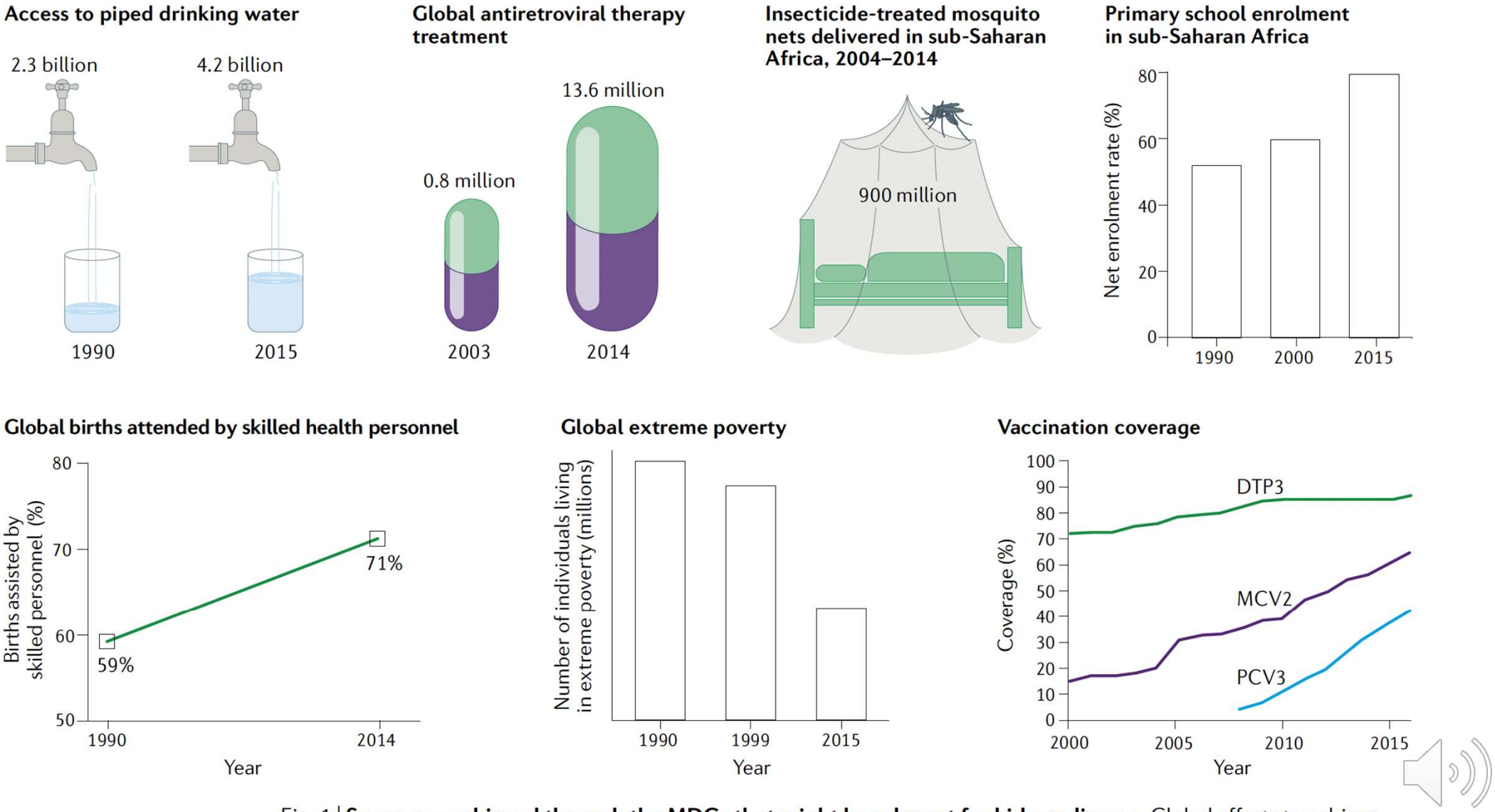


Fig. 1 | **Successes achieved through the MDGs that might be relevant for kidney disease.** Global efforts to achieve

Key points

- Many children in low-resource settings are at risk of kidney disease, especially from common infections and preventable conditions; insufficient awareness of kidney disease and lack of access to early diagnosis are important barriers to care in low-resource settings.
- Peritoneal dialysis (PD) using improvised catheters and fluids is a life-saving treatment for severe acute kidney injury (AKI) that can be delivered in all health economies, without electricity and by trained non-nephrologists.
- Treatment for kidney failure is complex and expensive — the cost per disability-adjusted life year for chronic dialysis may be prohibitive in low-economy health systems — and many children with kidney disease die unnecessarily because of lack of access to dialysis and transplantation.
- Children are less likely than adults to gain access to chronic dialysis, especially if no living kidney donor is identified, as dialysis in children is usually a bridge to transplantation and chronic dialysis services are often rationed, with priority access given to adults.
- Kidney transplantation is more cost-effective than chronic dialysis, but may still be unaffordable and often inaccessible owing to a lack of trained personnel, infrastructure and immunosuppressive drug resources.
- Adequate training for health-care workers must include advocacy skills to raise awareness at the community level and promote the needs of all patients with kidney disease, especially infants and children who tend to be overlooked.

Box 2 | **Strategies to improve kidney health in children**

Population level

- Optimize maternal health pre-conception and throughout pregnancy (including visits to antenatal care) to reduce the risk of preterm birth, low infant birthweight or birth of children who are small for gestational age.
- Engage with communities and traditional healers to increase awareness of kidney disease in local contexts.
- Advocate for implementation of public health strategies to improve child nutrition and reduce the risk of infection.
- Advocate at national and government level for children to be prioritized in the treatment of kidney diseases.

Health system level

- Antenatal screening for congenital kidney abnormalities.
- Increase awareness of basic management of diarrhoea and sepsis with rehydration and antibiotics, but avoidance of nephrotoxic antibiotics, antipyretics and/or analgesics.
- Develop implementation research to build local evidence to support the scale-up of prevention and treatment strategies.
- Educate health-care workers on how to recognize and manage acute kidney injury, including bedside insertion of peritoneal dialysis (PD) catheters and the use of locally manufactured PD fluid, if necessary.
- Increase awareness of risk factors for chronic kidney disease in children to ensure that those at risk are appropriately screened.
- Ensure sustainable, affordable and accessible care for children with chronic kidney disease, including access to healthy lifestyle choices.

Individual level

- Screening for abnormalities in blood pressure, urine dipstick, or growth in height or weight in children, which can be performed by community officers and primary health care nursing staff or peer educators (for example, at the start of schooling or at the time of routine vaccination).
- Promote PD as the first-line treatment for children who need acute dialysis, especially in low- and lower-middle-income countries.
- When haemodialysis of children must be carried out in adult units, patient care should be shared between adult and paediatric doctors.

Review > Curr Pediatr Rep. 2021;9(4):134-141. doi: 10.1007/s40124-021-00256-7.

Epub 2021 Oct 25.

Paediatric Nephrology in Africa

Christopher I Esezobor [1] [2], Adebimpe E Alakaloko [2], Bashir Admani [3], Rashid Ellidir [4] [5], Peter Nourse [6], Mignon I McCulloch [6]

Affiliations + expand

PMID: 34721949 PMCID: PMC8542494 DOI: 10.1007/s40124-021-00256-7

Conclusion

Paediatric nephrology in Africa has its own peculiar challenges not only in terms of the unique kidney pathologies but also in terms of lack of available treatment modalities including both acute and chronic dialysis and access to transplantation for children. Advocacy for paediatric nephrology remains a priority as adults are often prioritised in the management of kidney disease. Human manpower has improved in the last two decades largely due to training input of international professional organisations. However, sustained support of paediatric nephrologists is needed to prevent them from migrating to better-resourced regions of the world. On-line education and support from training centres as well as attendance of virtual congresses has fostered continuing medical education but affordable investigations including genetic testing, equipment and facilities for paediatric dialysis and kidney transplantation remain a major challenge.

> Front Pediatr. 2022 Aug 31:10:870497. doi: 10.3389/fped.2022.870497. eCollection 2022.

Perspectives: Neonatal acute kidney injury (AKI) in low and middle income countries (LMIC)

Mignon I McCulloch [1], Victoria M Adabayeri [2], Selasie Goka [3], Tholang S Khumalo [4], Nilesh Lala [5], Shannon Leahy [5], Nokukhanya Ngubane-Mwandla [5], Peter J Nourse [1], Beatrice I Nyann [6], Karen L Petersen [5], Cecil S Levy [4]

Future goals

Education around neonatal AKI is an essential part of pediatric training together with advocacy for the development and funding of equipment suitable for these infants. Nephrology organizations, namely, IPNA, ISN, ISPD, and EuroPD with the Saving Young Lives program teaching adaptations and improvisation for PD, and also training fellowships, have come a long way in developing these services. However, advocacy at the hospital and government level in LMIC for funding of equipments is required to keep a focus on neonates with AKI.

Review > Lancet Glob Health. 2016 Apr;4(4):e242-50. doi: 10.1016/S2214-109X(15)00322-8.

Outcomes of acute kidney injury in children and adults in sub-Saharan Africa: a systematic review

Wasiu A Olowu [1], Abdou Niang [2], Charlotte Osafo [3], Gloria Ashuntantang [4], Fatiu A Arogundade [5], John Porter [6], Saraladevi Naicker [7], Valerie A Luyckx [8]

	Adult studies			Paediatric studies		
	1990–2009	2010–14	p	1990–2009	2010–14	p
Overall mortality						
Mortality (pooled)	237/639 (37%; n=9)	109/438 (25%; n=8)	<0·0001	285/720 (40%; n=7)	342/1122 (30%; n=14)	<0·0001
Mortality (means of individual studies)	38·7% (20·6)	29·2% (24·5)	0·40	40·5% (8·3)	30·4% (14·4)	0·11
Mortality without dialysis when needed						
Mortality without dialysis when needed (pooled)	43/50 (86%; n=2)	NA	..	179/247 (72%; n=4)	45/57 (79%; n=3)	0·32
Mean mortality without dialysis (means of individual studies)	82·4% (12.8)	NA	..	72·9% (18·8)	90·0% (17·3)	0·27
Mortality with dialysis						
Mortality with dialysis (pooled)	161/500 (32%; n=8)	78/288 (27%; n=6)	0·13	28/119 (24%; n=5)	184/585 (31%; n=10)	0·09
Mean mortality with dialysis (means of individual studies)	28·0% (15·7)	35·1% (26·1)	0·54	16·4% (11·5)	34·6% (20·1)	0·09
Mean mortality haemodialysis (means of individual studies)	27·3% (14·13; n=7)	33·46 % (27·00; n=6)	0·61	57·0% (39·9; n=3)		0·27*
Mean mortality peritoneal dialysis (means of individual studies)	25% (n=1)	NA	NA	33·6% (27·4; n=9)		..
Mortality when dialysis not indicated						
Mortality when dialysis not indicated (pooled)	23/43 (53%†; n=2)	NA	..	36/232 (16%; n=4)	43/285 (15%; n=4)	0·84
Mortality, acute kidney injury not needing dialysis (means of individual studies)	30·3% (42·8)	NA	..	22·2% (17·1)	10·2% (8·4)	0·25
Other outcomes						
Recovery of renal function in survivors (pooled)	58/78 (74%; n=2)	72/159 (45%; n=4)	<0·0001	152/172 (88%; n=3)	515/714 (72%; n=8)	<0·0001
Residual chronic kidney disease in survivors (pooled)‡	6/73 (8%; n=1)	18/113 (16%; n=2)	0·1	23/143 (16%; n=2)	45/533 (8%; n=3)	0·007
Left hospital against medical advice (pooled)	0	6/62 (10%; n=1)	..	10/183 (5%; n=2)	33/814 (4%; n=5)	0·4
Lost to follow-up (pooled)	28/264 (11%; n=2)	6/17 (35%; n=1)	..	116/334 (35%; n=2)	20/700 (3%; n=2)	<0·0001

Data are mean % (SD) or mean (%; number of studies with outcome). p values for 1990–2009 versus 2010–14. *Comparison between haemodialysis and peritoneal dialysis in children. †One study included high-comorbidity patients in intensive care units. ‡Chronic kidney disease not specifically defined, generally non-requirement for dialysis but non-return of renal function to normal parameters by discharge or loss to follow-up.

Table 4: **Outcomes in children and adults with acute kidney injury**

	Adult studies			Paediatric studies		
	1990–2009	2010–14	p	1990–2009	2010–14	p
Overall mortality						
Mortality (pooled)	237/639 (37%; n=9)	109/438 (25%; n=8)	<0·0001	285/720 (40%; n=7)	342/1122 (30%;	<0·0001
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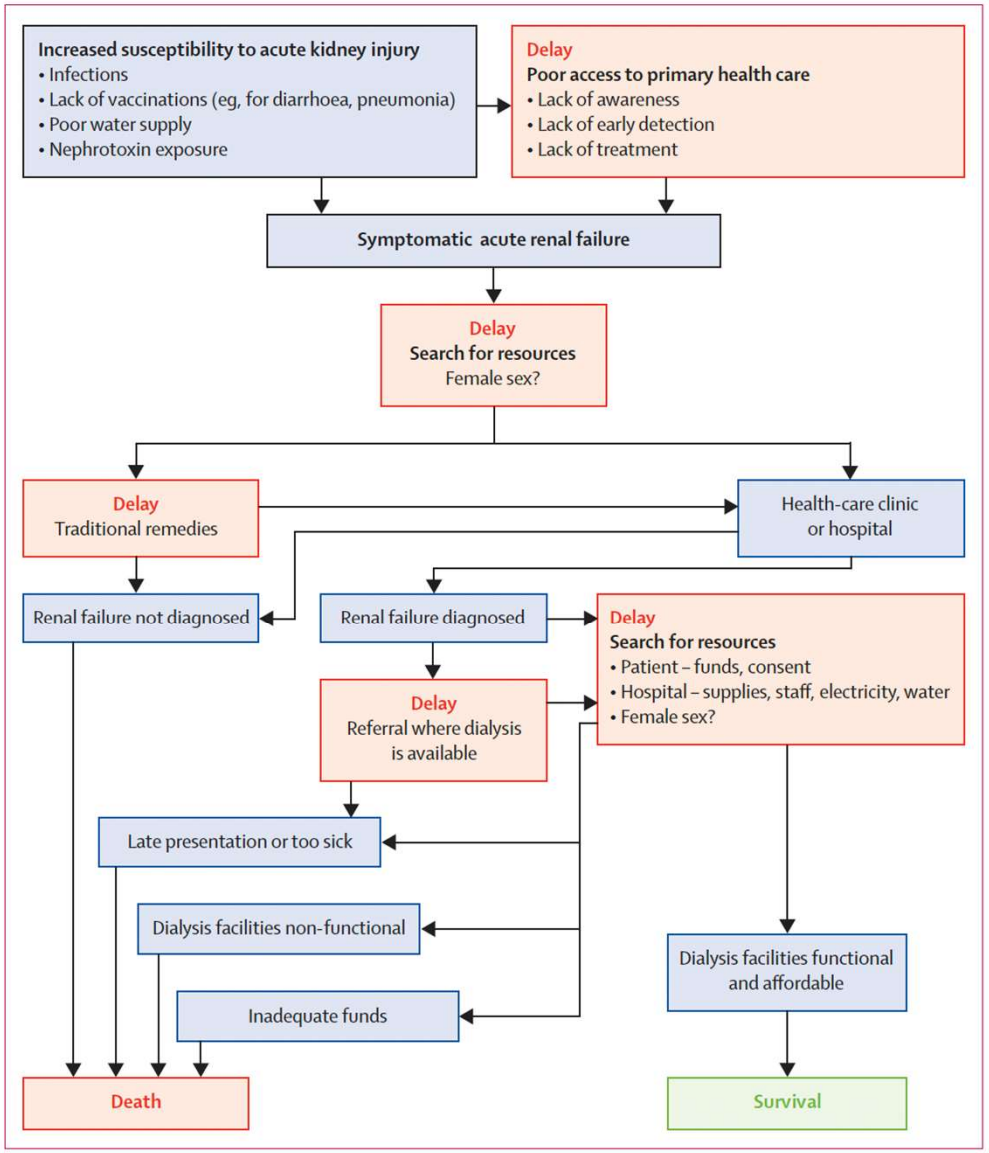


***Figure 2*: Barriers to care in acute kidney injury**
Outcomes shown for each pathway (survival or death) are the most likely outcomes, but are not inevitable (table 4).

Pediatric Nephrology
https://doi.org/10.1007/s00467-024-06324-6

ORIGINAL ARTICLE

Assessment of South Asian Pediatric Acute Kidney Injury: Epidemiology and Risk Factors (ASPIRE)—a prospective study on "severe dialysis dependent pediatric AKI"

Sidharth Kumar Sethi[1] · Rupesh Raina[2,3] · Ahmad Sawan[2] · Sadaf Asim[4] · Aye Kyawt Khant[5] · Manoj Matnani[6] · Kalaivani Ganesan[7] · Shraddha Lohia[8] · Rajiv Sinha[9] · Jubaida Rumana[10] · Syed Saimul Haque[11] · Suprita Kalra[12] · Rabia Safdar[13] · Gopal Prasad[14] · Iftikhar Ijaz[15] · Omer S. Ashruf[16] · Aishwarya Nair[1] · Savita S[1] · Kritika Soni[1] · Devendra Shrestha[17] · Shankar Yadav[18] · Asiri Abeyagunawardena[19] · Valerie A. Luyckx[20,21,24] · Khalid A. Alhasan[22] · Azmeri Sultana[23]

Received: 22 December 2023 / Revised: 3 February 2024 / Accepted: 13 February 2024

Assessment of South Asian Pediatric Acute Kidney Injury: Epidemiology and Risk factors (ASPIRE)
A Prospective study on "Severe Dialysis Dependent Pediatric AKI"

Graphical Abstract

First ever study from South Asia, specifically looking at epidemiology & outcomes of 'severe dialysis dependent Pediatric AKI'

DESIGN:

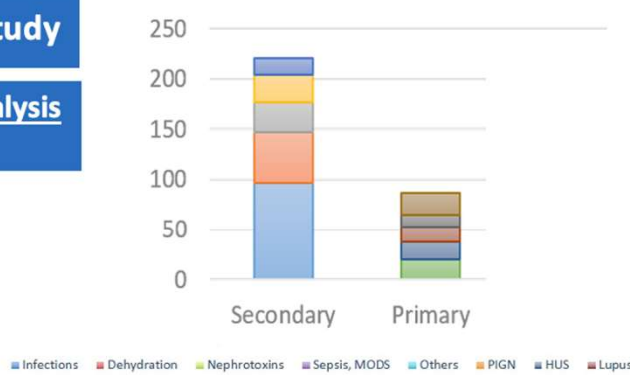
ASPIRE: multi-center, multi-national prospective observational study

Inclusion Criteria: All children (≤18 years old) with severe AKI requiring dialysis
Study Period: April 1st, 2019-- 31st December 2022

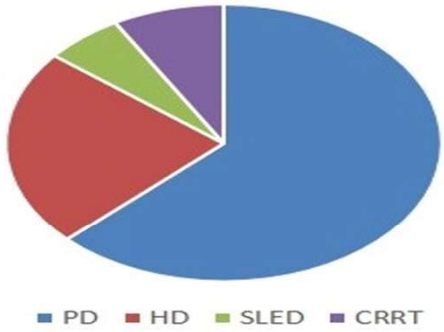
18 collaborating centers

n=308 children (63.3% males)
Mortality n=99 (32.1%)
Median (IQR) Age: 6.9 (1-10)yrs
Time taken to AKI: 1 (0-2)days

Aetiology



Dialysis Modality



Outcomes

Complete kidney recovery	n=160 patients (59.1%)
Dialysis dependence	n=26 (8%)
Partial kidney recovery	n=44 (14.2%)
Mortality	n=99 (32.1%)

CONCLUSIONS: Common causes of AKI in children in South Asia are preventable. Mortality is high among these children suffering from 'severe dialysis dependent AKI'.

Sethi SK, Raina R *et al*. 2024

Pediatric Nephrology
Journal of the
IPNA International Pediatric Nephrology Association

Review > Semin Nephrol. 2022 Sep;42(5):151313. doi: 10.1016/j.semnephrol.2023.151313.
Epub 2023 Feb 22.

Access to Dialysis for Acute Kidney Injury in Low-Resource Settings

Brett Cullis [1], Viviane Calice da Silva [2], Mignon McCulloch [3], Ifeoma Ulasi [4], Eranga Wijewickrama [5], Arpana Iyengar [6]

Summary
Acute kidney injury (AKI) is estimated to occur in approximately 13.3 million patients per year with an estimated mortality of 1.7 million. Approximately 85% of cases occur in low-resource settings where access to kidney replacement therapy (KRT) may be limited or nonexistent. The true extent of AKI, including access to KRT in developing countries, is largely unknown because appropriate systems are not in place to detect AKI or report it. Barriers to provision of KRT in low-resource settings revolve around systems management and funding, however, there also are region-specific issues. This review focuses on the epidemiology, obstacles, and solutions to improving access to KRT for AKI.

Keywords: Acute kidney injury, low resource, developing country, dialysis, peritoneal dialysis, access

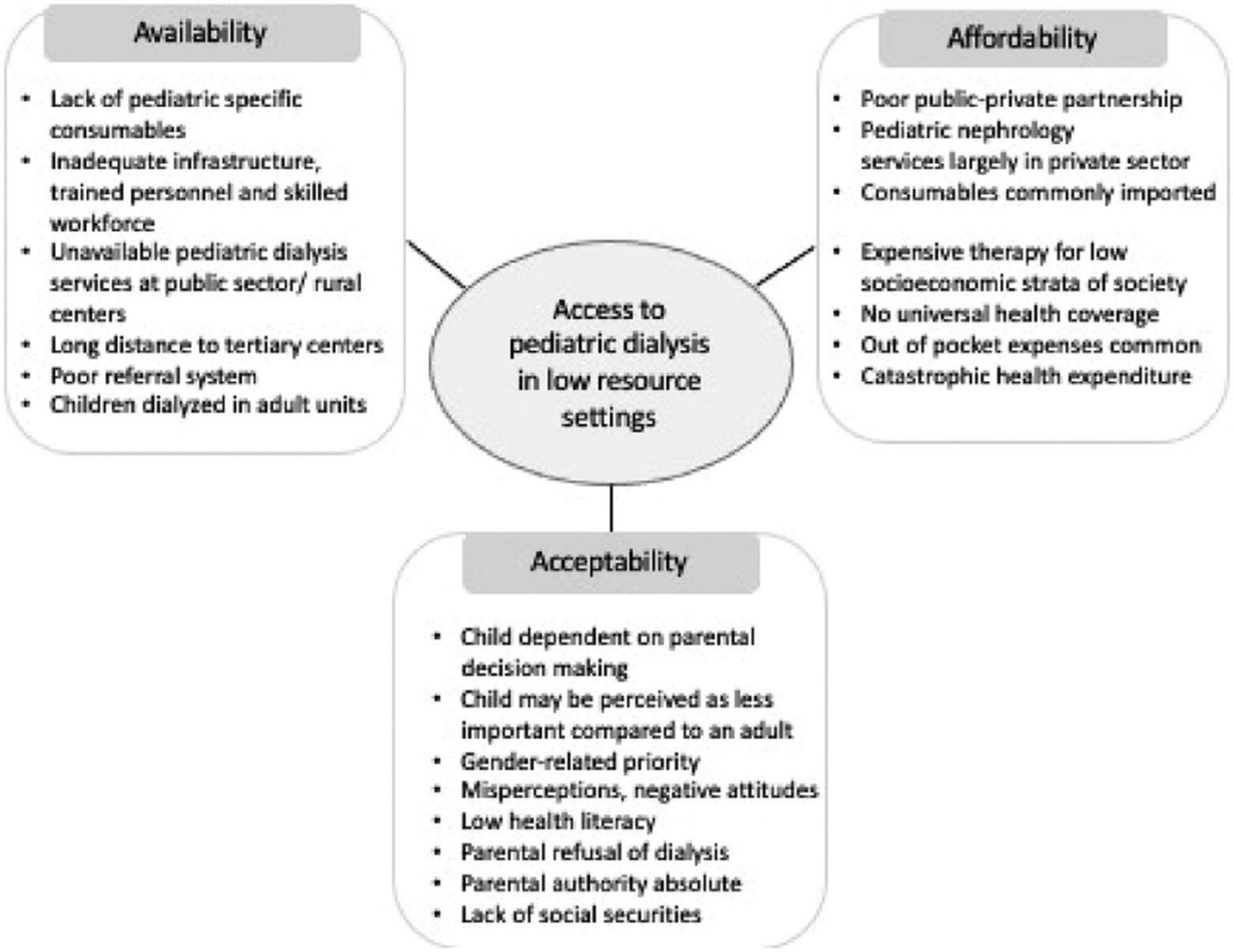


Figure 1. Factors affecting access to kidney replacement therapy in pediatrics.

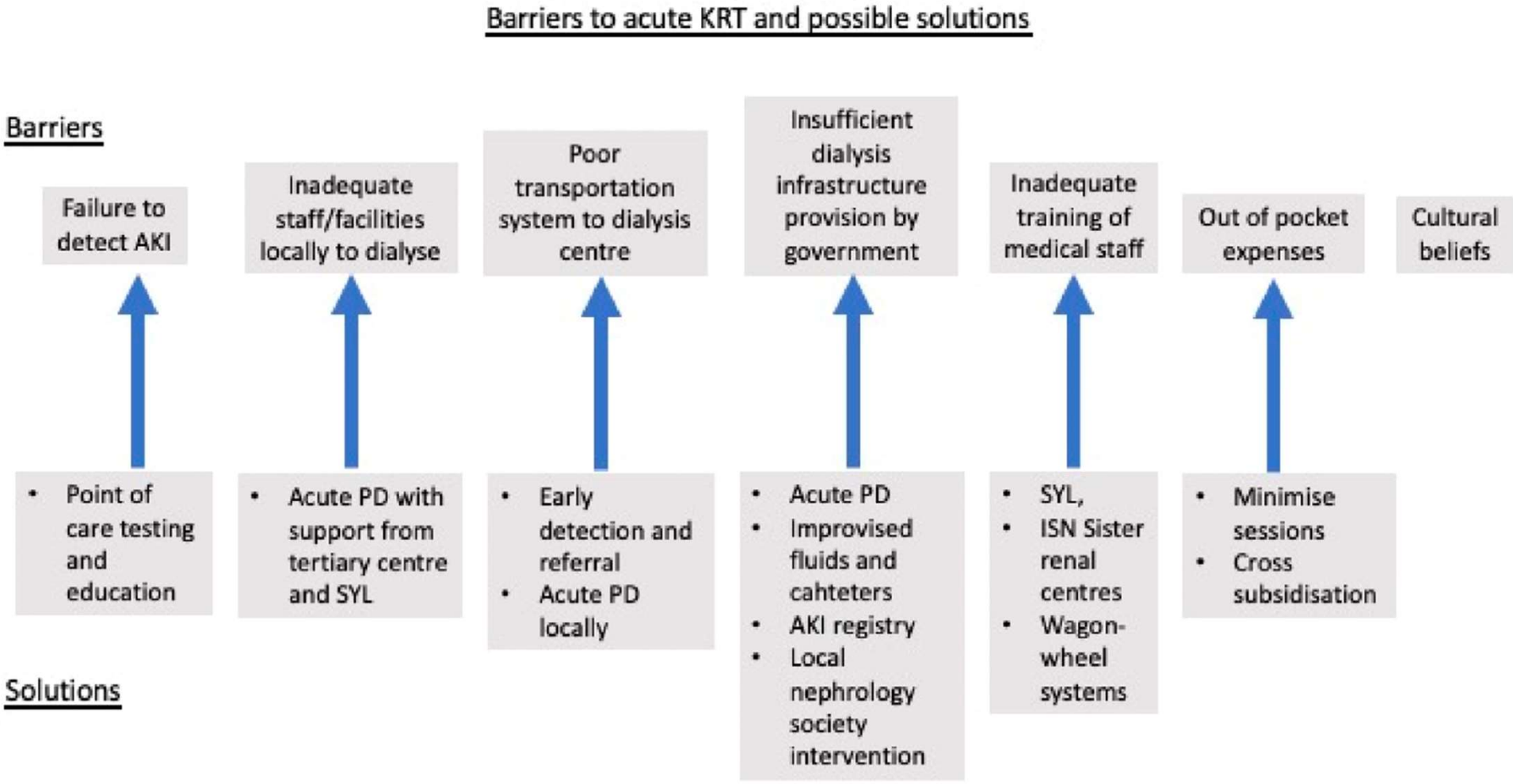


Figure 2. Barriers and solutions to improving access to kidney replacement therapy (KRT) in acute kidney injury (AKI). Abbreviations: PD, peritoneal dialysis; ISN, International Society of Nephrology; SYL, Saving Young Lives.

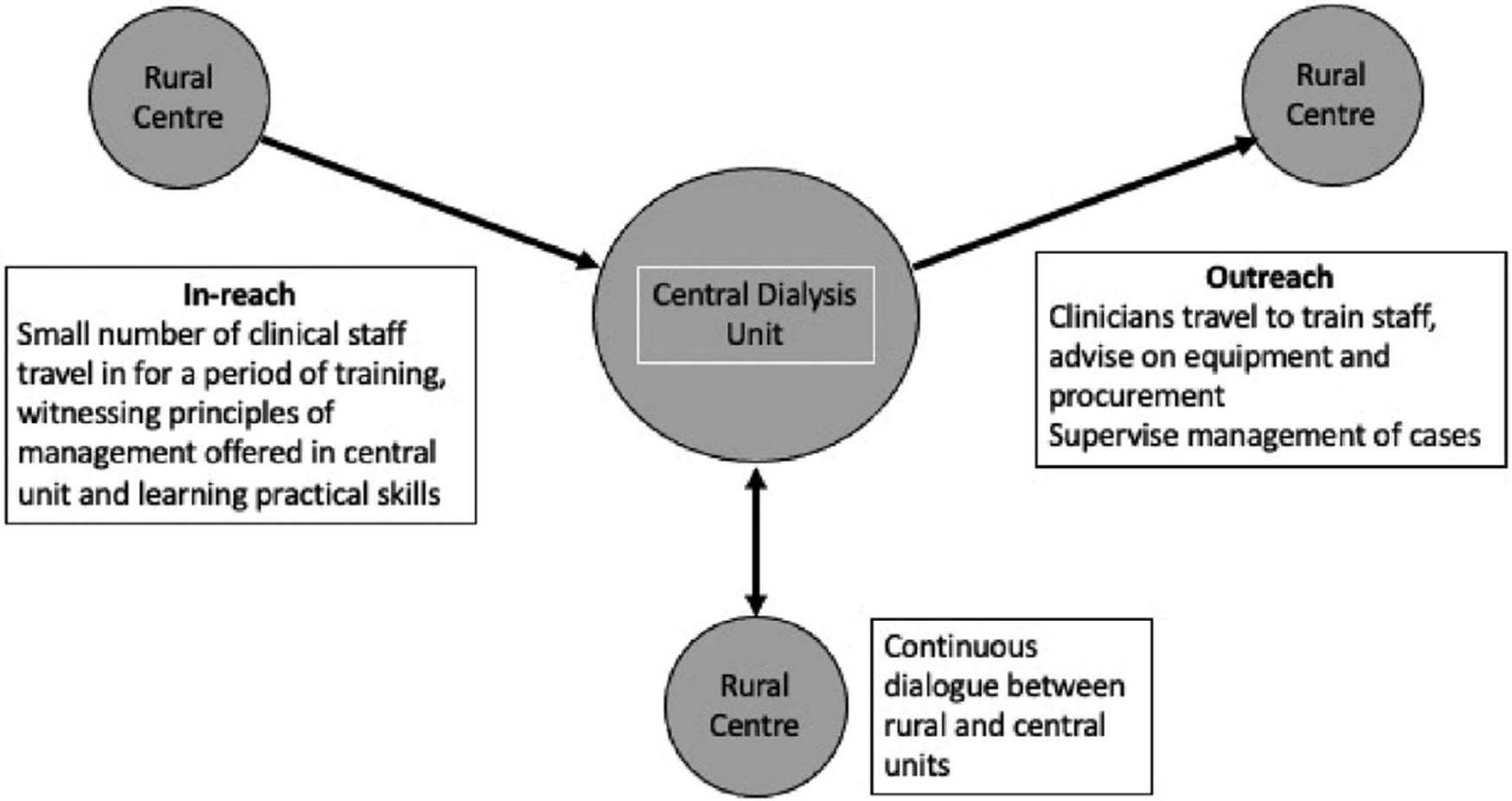


Figure 3. Wagon wheel approach to outreach and in-reach teaching.

Review > Pediatr Nephrol. 2022 Apr;37(4):745-755. doi: 10.1007/s00467-021-05070-3.
Epub 2021 Apr 10.

Paediatric kidney transplantation in under-resourced regions-a panoramic view

Arpana Iyengar [1], M I McCulloch [2]

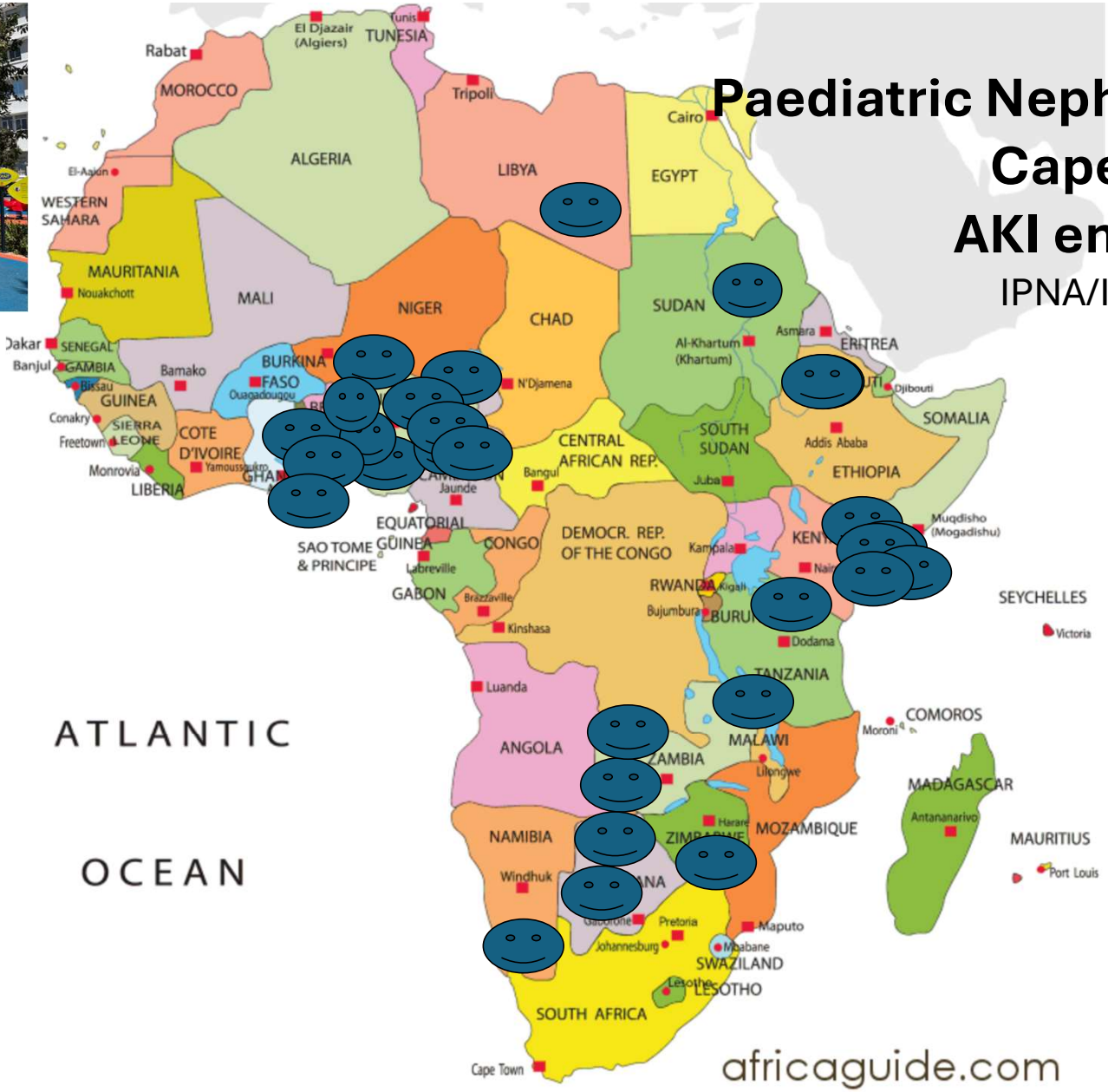
> Pediatr Nephrol. 2021 Mar;36(3):693-699. doi: 10.1007/s00467-020-04753-7.
Epub 2020 Sep 24.

The current status of kidney transplantation in Nigerian children: still awaiting light at the end of the tunnel

Felicia U Eke [1], Taiwo A Ladapo [2], Augustina N Okpere [3], Olalekan Olatise [4], Ifeoma Ar[illegible]hie [3], Tochi Uchenwa [3], Henrietta Okafor [5], Paul Ibitoye [6], Uchenna Ononiwu [7], Ademola Adebowale [8], Rosamund Akuse [9], Seyi Oniyangi [7]

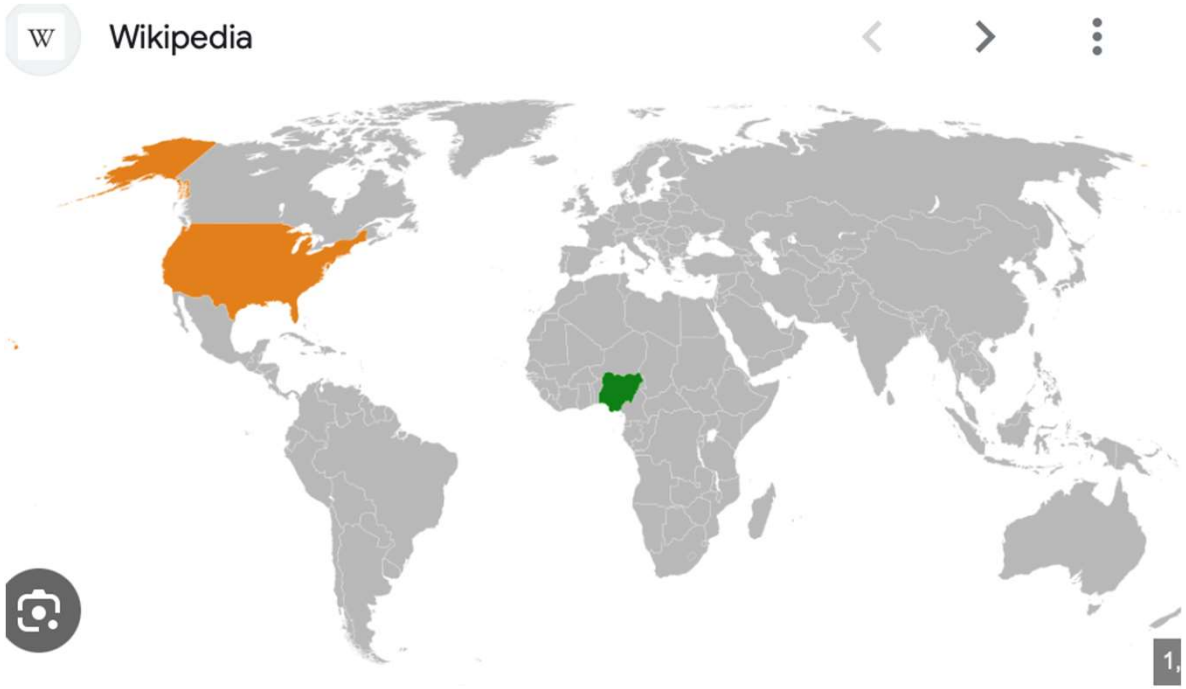
Paediatric Nephrologists Trained
Cape Town
AKI emphasis

IPNA/ISN/ISPD

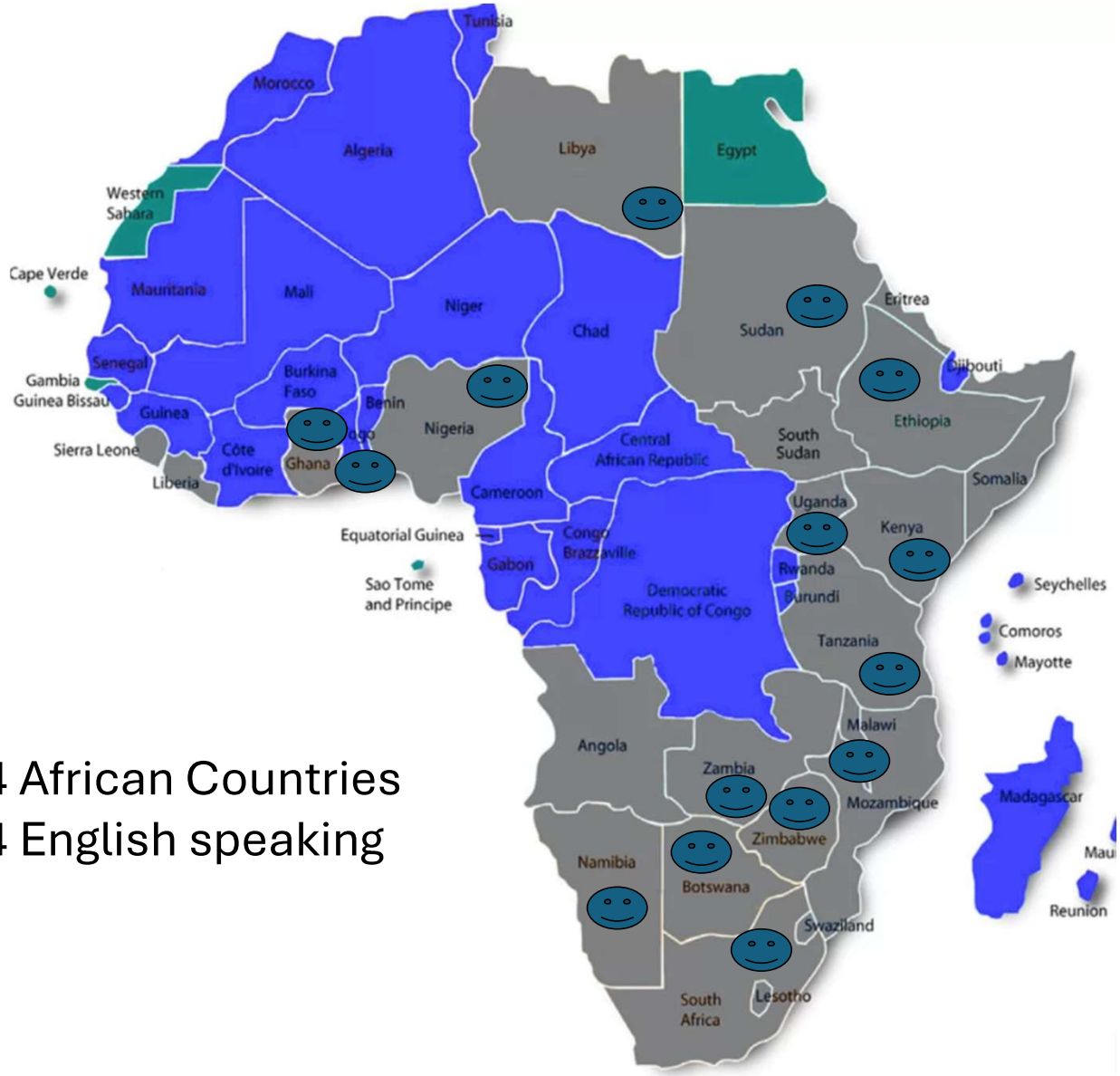


Nigeria Population 2024 (Live)

The UN estimates the July 1, 2024 population at **229,152,217**.



The current population of the United States of America is 341,243,330 as of Friday, March 8, 2024, based on Worldometer elaboration of the latest United Nations data [1].



54 African Countries
24 English speaking

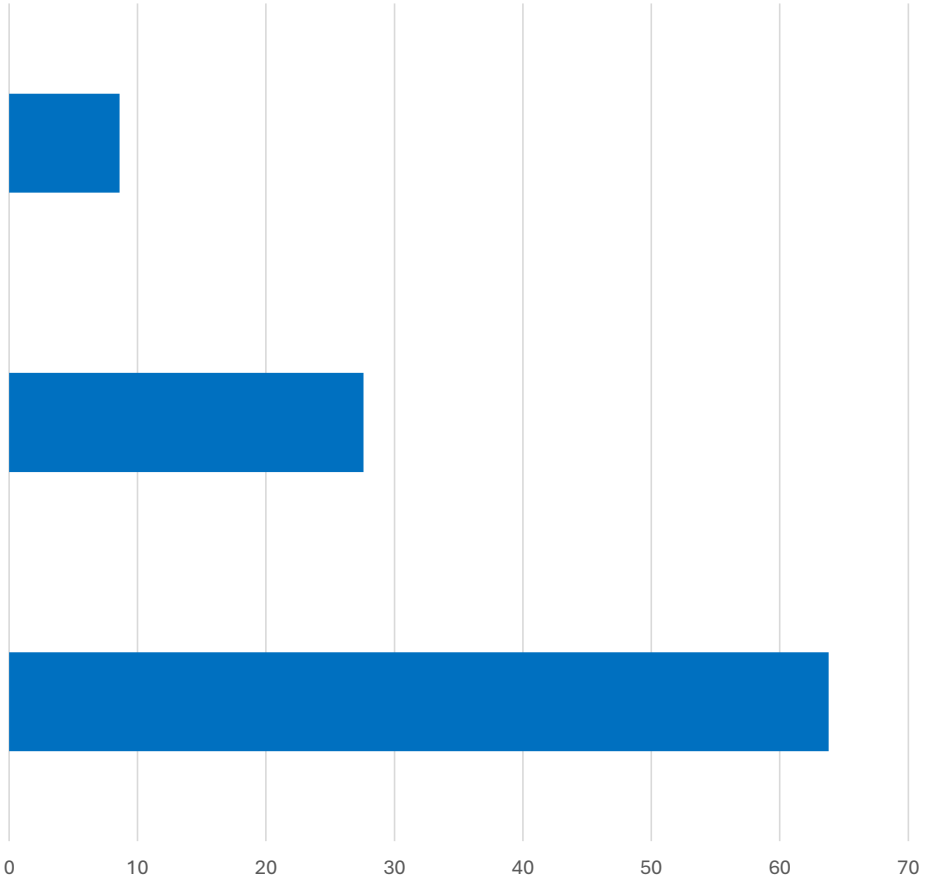
Study total of 593 paediatric patients (1998-2020) Types of Dialysis

Peritoneal Dialysis (PD)(Bedside acute)	ExtraCorporeal Dialysis(ECD)
78.1% (463/593)	21.9% (130/593)
Younger children 6.4 months	Older children 73.9 months

PD Catheter Types

PD First Acute Start

- 45/578(8.2%) surgically inserted PD catheters
- 145/578(26.3%) peel-away PD
- 335/578(60.9%) Cook® catheters



Dialysis Times

Red Cross War Memorial Children's Hospital - Cape Town

Period on dialysis	Number of cases	
Total	351 (100%)	
2-4days	**185(52.7%)**	**72.6%**
5-7days	**70(19.95%)**	
8-14days	49(13.9%)	
>14days	47(13.3%)	

> Kidney Int. 2024 Feb 29:S0085-2538(24)00155-8. doi: 10.1016/j.kint.2023.11.036.
Online ahead of print.

Development of PD in Lower Income Countries: a Rational Solution for the Management of AKI and ESKD

Brett Cullis [1], Mignon McCulloch [2], Fredric O Finkelstein [3]

Abstract

It is estimated that more than 50% of patients with end stage kidney disease (ESKD) in low-resource countries are unable to access dialysis. When hemodialysis is available, it often has high out of pocket expenditure and is seldom delivered to the standard recommended by international guidelines. Haemodialysis is a high cost intervention with significant negative effects on environmental sustainability, especially in resource poor countries (the ones most likely to be impacted by resultant climate change). This review discusses the rationale for peritoneal dialysis (PD) as a more resource and environmentally efficient treatment with the potential to improve dialysis access, especially to vulnerable populations, including women and children, in lower resource countries. Successful initiatives, such as the Saving Young Lives program, have demonstrated the benefit of PD for acute kidney injury. This can then serve as a foundation for later development of PD services for ESKD programs in these countries. Expansion of PD programs in resource poor countries has proven to be challenging for a variety of reasons. Hopefully, if some of these issues can addressed, PD will be able to permit an expansion of ESKD care in these countries.

SYL
SAVING YOUNG LIVES
Partnering to Deliver Global AKI Care

Saving Young Lives

A partnership to deliver care of Acute Kidney Injury in low resource settings

Who We Are

SYL is a partnership between

INTERNATIONAL SOCIETY FOR PERITONEAL DIALYSIS

ISN
INTERNATIONAL SOCIETY OF NEPHROLOGY

IPNA

With support from

SFNDT

APSN

The SYL Team

The SYL Steering Committee


Brett Cullis, Chair
ISPD


Fred Finkelstein
ISPD


Mignon McCulloch
IPNA


Bill Smoyer
IPNA


Simon Davies


Sydney Tang
ISN


Arvind Bagga
IPNA


Guillermo Hidalgo


Arpana Iyengar


CC Szeto
APSN


Annabel Boyer
SFNDT

Regional Advisors


Kim Yap


Abdou Niang


Nicola Wearne


Stefano Picca


Robert
Freercks

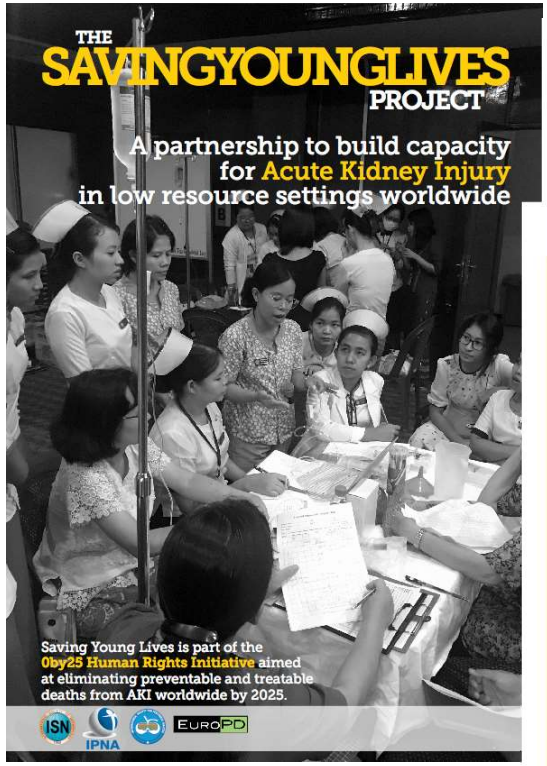

Peter Nourse


Rajiv Sinha


Sharon Teo


Adrien Liew


Mary Rose
Bisquera



AKI AFFECTS **13.3 MILLION** PEOPLE ***EVERY YEAR.***

Of the estimated
1.7 million deaths per year
caused by AKI globally,
an estimated
1.4 MILLION
of those deaths occur in
low- and middle-income countries,
and predominantly in the
young.

SYL trained doctors and nurses have treated more than

500

PATIENTS W/AKI USING ACUTE PD with a

65%

SURVIVAL RATE

Delegates trained by SYL

Adults and Children

Delegates from 49 countries trained in formal SYL courses

Created with Datawrapper

KI submitted for publication

Training and Education

In the 2017-2023 time period, SYL trained 470 individuals in over 42 different institutions from over 45 countries.

Created with Datawrapper

SAVINGYOUNGLIVES

A partnership to deliver care for acute kidney injury in the developing world

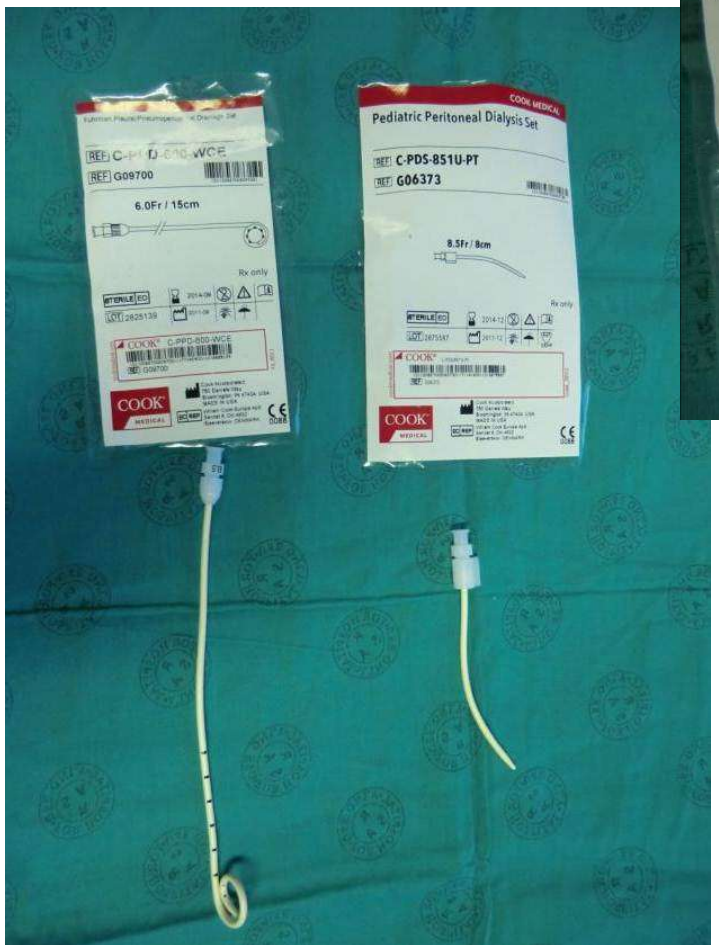
ISN

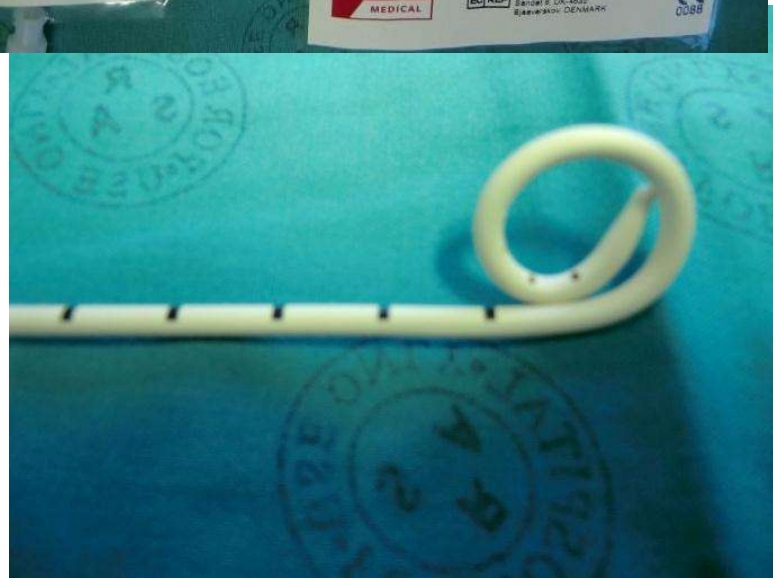
IPNA

With support from:

SFNDT

Multipurpose catheters





CVP lines as PD Catheters

Challenges

- Identification of AKI
- Acquisition and delivery of fluids
- Acquisition of catheters
- Migrant staff
- Costs of dialysis

PERITONEAL DIALYSIS FOR AKI IN CAMEROON: COMMERCIAL VS LOCALLY-MADE SOLUTIONS

Dennis Palmer,[1] William J. Lawton,[2,3] Charles Barrier Jr.,[4,5] B.D. Fine Jr.,[6] Hayden Hemphill,[7] Norah Ndi Nyah,[1] Virginie Kinne,[1] Njaprim Ivor Ringnwi,[1] Genevive Yong,[1] Amy L. Neufeldt,[8] Yves Mitterand,[1] Fredric O. Finkelstein,[9] and Thomas A. Krahn[10]

Original Article

PERITONEAL DIALYSIS INTERNATIONAL

Peritoneal Dialysis International
1–5

DOI: 10.1177/0896860820920132
journals.sagepub.com/home/ptd
SAGE

Use of locally prepared peritoneal dialysis (PD) fluid for acute PD in children and infants in Africa

Mignon I McCulloch[1], Peter Nourse[1] and Andrew C Argent[2]

PD in 49 cases
Age Newborn – 10.2yrs(Median 0.33yr)
Weight 1.3 – 50kg (Median 4.1kg)
Peritonitis 2/49(4%)

Conclusions: Locally prepared PD solutions at the bedside adapted from intravenous solutions can be used safely and effectively. This has important relevance for centres in less well-resourced countries, where commercially produced PD fluid is not available for the management of AKI.

Making Fluid for Dialysis

- 1L Ringer's lactate:
  (Na 127 mmol/L lactate 27 mmol/L Ca 1.36mmol/L K 3.8 mmol/L glucose 1.45 % Osmo 346)

- 30 ml 50% dextrose = 1.5%
- 50ml 50% dextrose = 2.5%
- 85ml 50% dextrose = 4.25%

- This is similar to lactate-based PD solutions

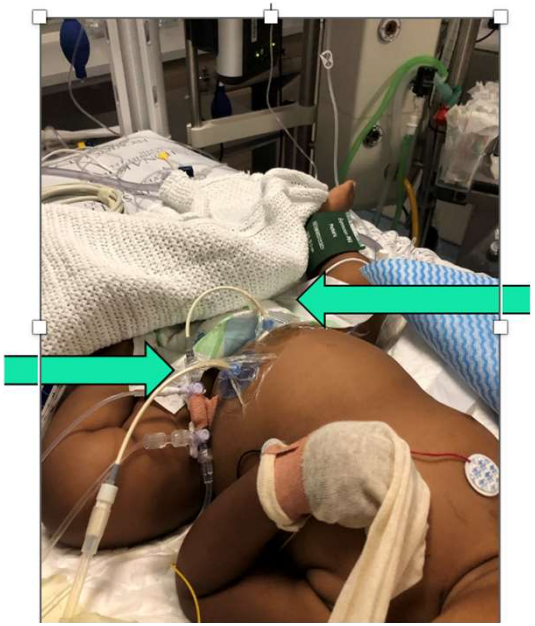
NG tube and Ringer's Lactate with Dextrose added(50% add 10ml adds 0.5%)

Pediatric Nephrology
https://doi.org/10.1007/s00467-022-05852-3

ORIGINAL ARTICLE

Gravity-assisted continuous flow peritoneal dialysis technique use in acute kidney injury in children: a randomized, crossover clinical trial

Peter Nourse[1] · Mignon McCulloch[1] · Ashton Coetzee[1] · Tim Bunchman[2] · Stefano Picca[3] · Jody Rusch[4] · Andre Brooks[5] · Hilton Heydenrych[6] · Brenda Morrow[7]



Special Series/Guidelines

PERITONEAL DIALYSIS INTERNATIONAL

Peritoneal Dialysis International
2021, Vol. 41(1) 15–31

DOI: 10.1177/0896860820970834
journals.sagepub.com/home/ptd

ISPD guidelines for peritoneal dialysis in acute kidney injury: 2020 update (adults)

Brett Cullis[1,2], Abdullah Al-Hwiesh[3], Kajiru Kilonzo[4], Mignon McCulloch[2], Abdou Niang[5], Peter Nourse[2], Watanyu Parapiboon[6], Daniela Ponce[7] and Fredric O Finkelstein[8]

Special Series/Guidelines

PERITONEAL DIALYSIS INTERNATIONAL

Peritoneal Dialysis International
2021, Vol. 41(2) 139–157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DOI: 10.1177/0896860820982120
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SAGE

ISPD guidelines for peritoneal dialysis in acute kidney injury: 2020 Update (paediatrics)

Peter Nourse[1], Brett Cullis[2], Fredrick Finkelstein[3], Alp Numanoglu[4], Bradley Warady[5], Sampson Antwi[6] and Mignon McCulloch[1]

Danielle Soranno
Team of Biomedical engineers

CROSSROADS
Pediatric Device Consortium

WELDON SCHOOL OF BIOMEDICAL ENGINEERING

COOK® MEDICAL

Innovation of a Neonatal Peritoneal Dialysis Catheter to Expand Dialysis Capabilities for Critically Ill Neonates in Low Resource Settings

Sergio Ruiz Vega[a,b,c], Carl Russel III[ad], Siting Zhang[a], Mignon McCulloch[e], Aaron Lottes[a], Hyowon Lee[a,b,c], Danielle E. Soranno[f,a]

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[b] Birck Nanotechnology Center, Purdue University, West Lafayette, IN, USA

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[d] Indiana University School of Medicine, Indianapolis, IN, USA

[e] Red Cross War Memorial Children's Hospital, University of Cape Town, Cape Town, South Africa

[f] Department of Pediatrics, Indiana University School of Medicine, Indianapolis, IN, USA

COSTS !

Cost Comparison between modalities # (Machine not included)	**KRT Carpe Diem**	**KRT Fresenius**	**Acute HD**	**Automated PD cycling**	**Manual PD Cook Catheter (Fresenius PD Paeds Set)**	**Manual PD Adult central venous catheter**
HD line	R 1500 (Arrow 5Fr, Gamcath 6.5Fr)	R1200 (Medcomp 7-9Fr)	R1200 (Medcomp 7-9Fr)	-	-	
PD catheter Bedside inserted (children > 10kg)				Peel away sheath and Tenckhoff catheter R2 530	-	CVP Line as PD Catheter R322
Cook pigtail catheter (Fuhrman) (smaller children <10kg)				-	R 1840	-
Fluid	R 370	R 1 110	R185	R 207	R 112	R112
Consumables	R 4 687	R 1 015	R 408	R 707		
Burettrol					R30	R30
Infusion set					R 473 manufactured Fresenius PD Paeds set	R24 manual improvised set
Sub total	R 6 557	R 3 325	R 1793	R 3 444	R 2479	R 488
PICU COST						
Labour		R 300	R 400	-	-	
Total	**R 6 857 (USD 370)**	**R 3 625 (USD 195)**	**R 2 193 (USD 120)**	**R 3 444 (USD 186)**	**R2 479 (USD 135)**	**R 488 (USD 26)**

Changes in my practice in Africa

3 Way taps can improvise anything

Burretrols

Never give up

- Detective work
- New developments
- Campaign for children

Take Home Message

- No patient with AKI should die without attempt of PD
  - Home-made fluid & improvised catheters
- Local solutions for Local problems
- You can make a difference
- Wherever you are!

Paediatric reading

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TEAMWORK

Abstracts open!

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CAPE TOWN, SOUTH AFRICA

FEB 19–23, 2025