WELCOME *To the*

2026 SYMPOSIUM

Challenges and Necessity driven Solutions in Providing Access Care in Asia-Pacific Countries

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APSDA

Asia Pacific Society of Dialysis Access

Founded: 2017 (DAS-Korea 2015 → DAS-Japan 2017 → APSDA) | 8 Annual Congresses held

Prof. Yong-Soo Kim/Prof Sato mooted the idea

Members: 17+ nations across Asia-Pacific

MOUs with: VAS (Europe), JSDA (Japan), GEMAV (Spain), VASA (USA), AVATAR (India)

Mission: Advance dialysis access education, research & clinical standards across Asia-Pacific region

Disclosures: None

One Region. Worlds Apart.

The Asia-Pacific is not a country — it is a continent of contrasts

HIGH-INCOME TIER

Japan · Taiwan · South Korea · Singapore · Australia · New Zealand

Dialysis prevalence: 2,700–3,500 pmp

Nephrologists: >15 per million

Free/fully insured KRT

Longest dialysis survival globally

MID-INCOME TIER

Malaysia · Thailand · Philippines · China · Indonesia

Dialysis prevalence: 400–1,200 pmp

Rapidly rising ESKD incidence

Mixed public-private models

Universal coverage expanding

LOW-INCOME TIER

India · Bangladesh · Pakistan · Nepal · Myanmar · Sri Lanka · Maldives

Dialysis prevalence: 100–400 pmp

>70% unplanned dialysis starts

Catheter-dominant access

Most ESKD patients never reach a nephrologist

Source: ISN-GKHA 2023 | USRDS 2024 | JSDT Registry 2022 | AVATAR Foundation Survey

The Burden Is Here

Asia-Pacific bears a disproportionate share of the world's CKD and ESKD burden

~60%	17.2%	523	3,500+
of global ESKD patients reside in Asia-Pacific	CKD prevalence in India (ISN-KDDC, 2016)	pmp ESKD incidence in Taiwan —highest	pmp dialysis prevalence in Japan & Taiwan

KEY TREND: Treated ESKD incidence is **FALLING** in the USA, Europe, Australia, Japan —

But is **RISING SHARPLY** in East and Southeast Asian LMICs (Thailand, Malaysia, Philippines, Indonesia) from 2003–2016 onward, driven by surging diabetes, hypertension and IgA nephropathy.

Source: ISN-GKHA 2023 | PMC8057343 | JSDT 2022 | Taiwan NHIRD

Unplanned Initiation…The Catheter Catastrophe

Worrisome Issue in Asia-Pacific LMICs: a state of emergency

AVATAR Foundation Survey — South & SE Asia

70%	unplanned dialysis starts in low-income Group 2 countries
70%	of incident HD patients start on non-tunneled catheters (LMIC)
8%	of prevalent HD patients in Group 2 countries are on AVF
68%	of prevalent HD patients in Group 1 countries are on AVF
43%	unplanned starts even in mid-income Group 1 countries

Why Does This Happen?

- Late referral to nephrology — most patients arrive in uremic emergency
- Acute unplanned dialysis start → temporary catheter is the only option
- Shortage of vascular surgeons trained in AVF creation outside capital cities
- In Nepal: 44 of 56 nephrologists work in Kathmandu alone
- In Bangladesh: only 84% of HD centers have an on-site doctor; most are medical officers without nephrology training
- No mandatory monitoring of water quality or access standards in many centers
- Patient vessel protection education absent in most LMICs

Source: AVATAR Foundation Survey (PMC7615897) | Global Dialysis Perspective: India (PMC8815477) | Nepal (PMC9337906) | Bangladesh (PMC10617799)

The Workforce Gap

Nephrologist density is the single strongest predictor of access to dialysis care

Country	Nephrologists per million	Dialysis Prevalence (pmp)	Key Access Challenge
South Korea	~15 pmp	~2,500+	KORDS registry since 1985. AVF 76%, AVG 16%, CVC 8%. 2nd fastest-rising diabetic ESKD globally. Korean Society of Dialysis Access established.
Japan	>50 pmp	2,781	Aging patients; AVF in >90% forearm — global benchmark
Taiwan	>40 pmp	3,500+	Highest ESKD prevalence globally; NHI full coverage
Singapore	~20 pmp	~1,200	Urban advantage; unplanned starts still 15%
India	~1.9 pmp	<400 (under-treated)	3,340 nephrologists for 1.4 billion people; AVF access rate poor
Bangladesh	<1 pmp	~200 (under-treated)	Most patients start on nTCC; no regular nephrologist access
Nepal	56 total (country)	~100	44 of 56 in capital; geographically inaccessible
Myanmar	<0.5 pmp	Unknown	No national registry; CKD data largely missing

Source: ISN-GKHA 2023 | AJKD Dialysis Care and Funding in Asia | Global Dialysis Perspective Series (CJASN)

Financing Dialysis: From Free to Bankruptcy

***How a country pays for dialysis determines who gets it — and what vascular** access they receive*

HIGH-INCOME: POLICY SUCCESSES

Japan

Fully free — government covers dialysis + complications. ~347,000 patients. No co-pay since 1991.

Taiwan

NHI: full coverage, no modality co-payment. Highest dialysis rate in world. Policy levers used to shift HD→PD (reimbursement differential).

Thailand

'PD-First' national policy (2008). All eligible patients offered PD; HD restricted to clinical indication or private pay. Transformed ESKD care access.

Hong Kong

PD-First for 4 decades. Highest PD penetration globally. Nocturnal home HD now being promoted.

LOW/MID-INCOME: STRUCTURAL DEFICITS

India

PMNDP (2016): free HD for BPL patients at district hospitals. Only 5,000 centers and ~3,340 nephrologists for 1.4 billion. 90% of facilities in urban India. Many patients travel >100 km.

Bangladesh

Government capacity minimal. NGOs (Kidney Foundation Bangladesh) provide 50% of PD. Twice-weekly HD common — inadequate dosing by global standards.

Nepal

Government subsidy exists but inconsistent. 56 nephrologists total. No national registry.

Myanmar / Maldives

Extremely limited data — largely outside national registry systems. Many patients forego treatment.

Source: AJKD Dialysis Care & Funding in Asia 2019 | ISN-GKHA 2023 | EY India Dialysis Whitepaper 2023 | JSDT 2022 Registry

APSDA in VASA

Asia Pacific Society of Dialysis Access

Key insight of today's presentation:

Problems aplenty. No easy solution.

Necessity driven innovations seem to lessen the burden of providing Access Care.

Bidirectional exchange — *Frugal innovations born from necessity in our region may be relevant to the developed world as well.*

Disclosures: None

Interventional Nephrology: Filling the Surgical Void

In Asia-Pacific LMICs, nephrologists are performing procedures out of necessity that elsewhere belong to surgeons or interventional radiologists

What Nephrologists Are Doing

- TCC & nTCC placement (100% of surveyed countries)
- PD catheter insertion (16 of 21 countries)
- AVF creation: Vietnam (30%), Bangladesh/India/Pakistan (5–10%)
- AVF salvage angioplasty: Korea, JapanIndia, & Malaysia, Singapore
- Kidney biopsy (93% of countries)

Training Ecosystem

- APSDA annual congress: skills-transfer central mission
- AVATAR India annual and quarterly hands-on workshops — open to all regional participants
- ISN flagship programs with APSN & national societies
- Fellowship Programs: Korea, India, Singapore
- Discussion Forums: INForm

The Paradox

- Group 2 (poor) countries: 90% of nephrologists do at least one IN procedure
- Group 1 (rich) countries: only 60% do IN procedures
- Necessity drives competence
- Advanced endovascular procedures still confined to <4% of nephrologists across region
- Fear of medico-legal risk and lack of formal training the biggest barriers

Source: AVATAR Foundation Survey — PMC7615897 | PMC7615839 | Vietnam AVF Study PMC10074789 | Indian IN Guidelines 2024

What Japan Teaches the World

The world's best outcomes — and lessons for everyone, including the USA

AVF Supremacy

Forearm fistula rate >93% — maintained for decades. Catheter preference: 1% (vs. 18% USA). DOPPS shows Japan's forearm-first culture produces lower infection and access-related mortality.

HDF Innovation

50.5% of all Japanese dialysis patients receive hemodiafiltration (HDF). Online HDF — now the dominant modality. Pioneered high-volume HDF as a survival strategy before Western adoption.

Water Quality

Biological AND chemical water quality standards uniquely stringent. Near-universal compliance. Began survey in 1968 — the oldest continuous dialysis registry in the world.

Disaster Preparedness

After 2011 earthquake, formal earthquake-proofing protocols for ALL dialysis facilities. Data-driven disaster planning. A model for Pacific-rim countries exposed to natural disasters.

5-year ESKD survival: Japan 60% vs. USA 41% vs. Europe 48% — despite Japan's older, sicker patient demographic

Source: PMC8057343 | JSDT Registry 2019–2022 | DOPPS Phases 1–5 | Zhang et al. 2021

The Challenges — Summarized

For the VASA audience: what we battle in Asia-Pacific every single day

01

Late Referral & Unplanned Starts

70% of LMIC patients start dialysis in emergency on a temporary catheter. Vessel protection is impossible if the patient arrives in uremic emergency.

02

Surgeon & Interventionalist Shortage

Outside capital cities, no vascular surgeon exists. The nephrologist must learn to create fistulas — or the patient stays on a catheter indefinitely.

03

Financial Catastrophe

No PMNDP equivalent in most LMIC countries. Out-of-pocket dialysis costs push families into poverty or force patients off treatment.

04

Registry Gaps

Myanmar, Cambodia, Nepal, Maldives have no national dialysis registry. You cannot improve what you cannot measure.

05

Heterogeneity of Standards

The same 'dialysis' word covers online HDF in Tokyo and twice-weekly HD on a non-tunneled femoral catheter in rural Bangladesh.

06

Geography

Island nations (Maldives, Philippines, Indonesia), mountainous terrain (Nepal), and vast distances (Australia, China, India) make access to specialist care physically impossible for millions.

Reverse Innovation: The Developing World Teaches Back

Necessity is the mother of invention — and some of these innovations belong in your practice

Nephrologist-Performed AVF

Origin: Vietnam, India, Nepal, Bangladesh

Driven by vascular surgeon shortage, nephrologists learned to create and maintain fistulas. Vietnam data show 76–100% 3-month functional rates comparable to surgical series. This model — now gaining interest in the USA — was pioneered in Asia-Pacific LMICs a decade ago.

↩ **USA:** Increasing interest in interventional nephrology; nephrologist-performed AVF may address surgeon access gaps in rural America.

PD-First National Policy

Origin: Hong Kong (1985) → Thailand (2008)

Hong Kong has maintained PD as first-line for 40 years with excellent outcomes. Thailand's PD-first universal coverage model transformed access to ESKD care with lower infrastructure cost. ISN-APSN Affordable Dialysis Prize awarded to point-of-care PD fluid generation from tap water.

↩ **USA:** Rising interest in home dialysis; PD-first policies could contain unsustainable in-center HD costs.

Frugal Dialysis & Task-Shifting

Origin: India, Bangladesh, Indonesia

Training dialysis nurses and technicians to perform access surveillance and basic procedures in resource-scarce settings. Gonoshasthaya Hospital Bangladesh: non-profit model providing cost-effective HD to the urban poor. Public-private partnership dialysis delivery in India.

↩ **USA:** Community health worker and task-shifting models that reduce dependence on physician-only care are now being explored in the USA.

Hybrid Dialysis (HD+PD)

Origin: Japan — unique global model

Japan pioneered combined PD+HD (hybrid/combined modality) therapy, with ~20% of PD patients receiving supplemental HD. This preserves residual renal function while maintaining dialysis adequacy — a modality unique in its sophistication, showing that innovation flows both ways.

↩ **USA:** Incremental or combined dialysis modalities may allow gentler, patient-centered initiation and preservation of residual kidney function.

Source: PMC7615897 | AJKD 2019 | PMC11488833 | BMC Med Frugal Innovation 2016 | JSDT 2022

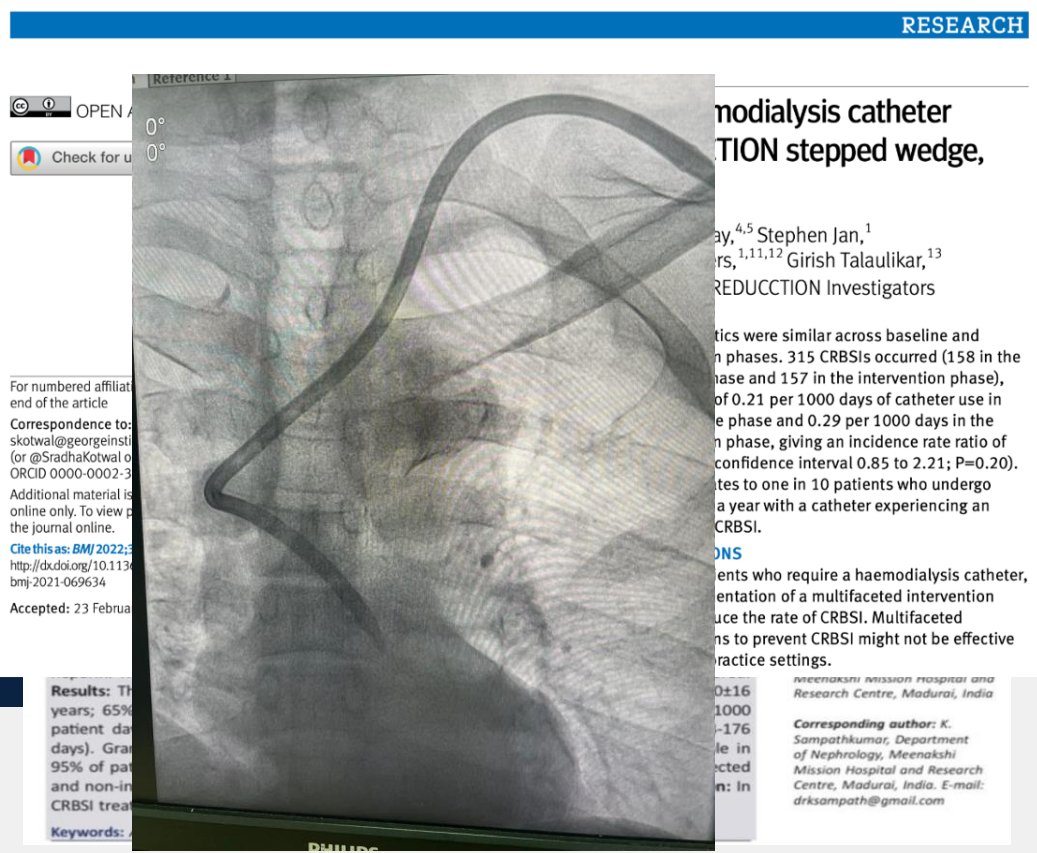
The Vascular Lifeline Must Reach Everyone

Innovations by t
Vas

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- Over-the-Wire Railroad T
- Alcohol Lock to fight CRB



- Multifaceted intervention
  trial.(Australia)
- SQ53 (Dorbimex) Multi-Compone
- TC placement in External jugular/S
- Sharp Recanalization of Central Ve



RESEARCH

OPEN A

Check for u

modialysis catheter
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ay,[4,5] Stephen Jan,[1]
rs,[1,11,12] Girish Talaulikar,[13]
REDUCCTION Investigators

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e phase and 0.29 per 1000 days in the
n phase, giving an incidence rate ratio of
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ONS

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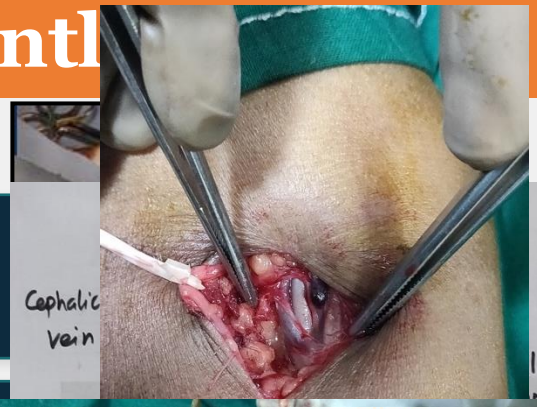
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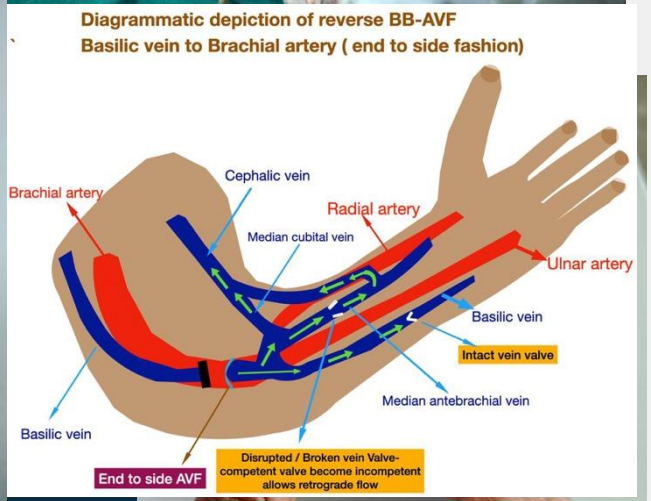
What do we do differentl

- Transposition of cephalic vein and ulnocephalic AVF (Kadir)
- Forearm basilic vein AVF (Ulnobasilic & Radiobasilic AVF)



- Brachiobasilic AVF construction with
- Brachiobrachial AVF





- Retrograde Fore arm AVF flow in abse
- Flow Diversion Through Forearm Coll

- 1st interdigital space AVF (Hitchhiker'
- Hybrid Declot Technique for thrombo

Fistuloplasty/ Thrombolysis and An



- Radial artery approac
- Pre-emptive fistulogr
- Increasing use of USG

- Native interposition v
- Double balloon for ve
- Hybrid technique of t

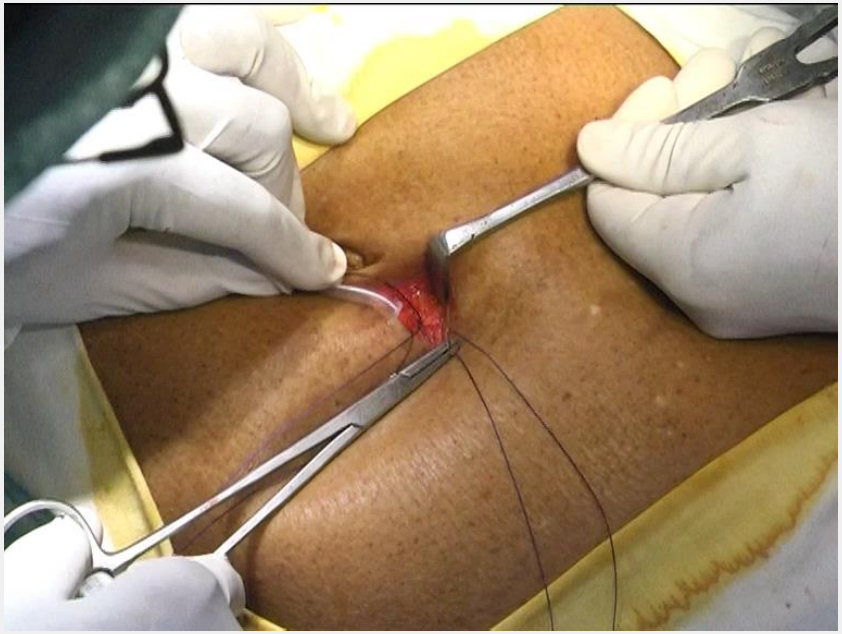
- Use of snare loops for
- Use of pigtail cathete
- Clot retrieval from Atr







PD -What do we do differently ?





Diagnostic Innovation

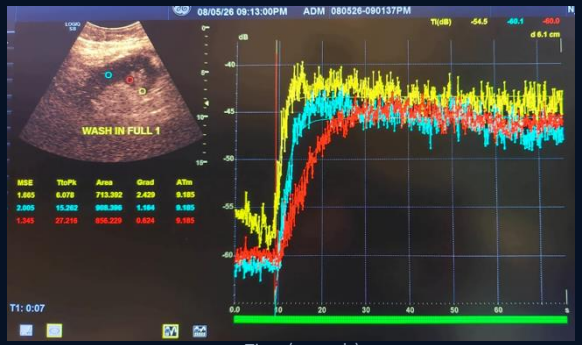
A Nephrologist's New Eye Into Microvascular Perfusion

J.Balasubramaniam
Kidney Care Centre, India

THE DIAGNOSTIC GAP

- ✗ Creatinine rises LATE — 50% nephron loss before detection
- ✗ Doppler RI non-specific — cannot differentiate ATN vs Rejection vs Obstruction
- ✗ Angiography shows anatomy — not functional significance
- ✗ Biopsy: invasive, delayed, sampling error

DUAL-ROI CEUS METHOD



Cortical signal ÷ Arterial signal = **DIAGNOSIS**

No nephrotoxic contrast • No radiation • Bedside • Performed by nephrologist

8 DIAGNOSES DISTINGUISHED

- **NORMAL GRAFT**
  Bell curve • Artery dominant
- **ATN / TOXIC INJURY**
  Flat plateau • Cortex trapped
- **OBSTRUCTION**
  Both equally impaired
- **REJECTION (ABMR/TCMR)**
  Cortex peaks before artery
- **PYELONEPHRITIS**
  9s transit delay • Abscess map
- **RENAL ARTERY STENOSIS**
  Autoregulation exhausted
- **CHRONIC NEPHROPATHY**
  Longest transit delay (+3s)
- **RECOVERING ATN**
  AUC ratio >1 — hyperaemic

CEUSG of the Kidney

Pilot Series — 9 Cases
8 Diagnostic Categories
Kidney Care Centre, Tirunelveli

What Can VASA Do?

We are seeking encouragement, partnership, guidance…

Delegate & Faculty Exchange

Send VASA experts to APSDA. Receive APSDA faculty at VASA. The bilateral learning is real — your catheter-last strategy informs us; our nephrologist-performed fistula experience informs you.

Shared Research & Registry

Support Asia-Pacific countries in building national vascular access registries. Share VASA outcome data with regional partners. Multicentre Asian dialysis access trials need Western methodological support.

Training & Simulation

Support hands-on training workshops across the region. One VASA expert at an AVATAR workshop trains 30 nephrologists who serve millions.

Advocacy for Equitable Access

Dialysis is not a luxury. VASA's voice carries weight with device industry and global policy. Help us argue for affordable, accessible vascular access technology for the 3.5 billion people in Asia-Pacific.

Thank you VASA

| APSDA: www.theapsda.com | Secretary General: Dr. J. Balasubramaniam

