



# Implementing POCUS-guided cannulation

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Kathleen Rickert, Hamburg, Asklepios Klinik Barmbek



# Agenda

- 01 Why do we use POCUS?
- 02 When do we use it?
- 03 How do we use it?
- 04 How to learn and implement?
- 04 Personal experiences



GE VScanAir



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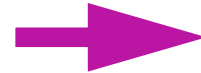
# Why do we use POCUS-guided cannulation?





# Introduction

- POCUS means Point-of-care Ultrasound
- **Revolution** for nurses and „**the Lifeline**“ of our patients
  - Complications made by „blind cannulation“ are not acceptable
- **Responsibility** to use the tools which promise the **best outcome** and **benefits** for our patients
  - Avoidance of vessel damage —> Decrease thrombosis and stenosis development
  - Avoidance of aborted dialysis sessions
  - Avoidance of insertion of CVC's
- Fear of cannulation failure, pain, appearance of haematoma, multiple needlings attempts and extravasation —> Dissatisfaction, lower quality of life until breaking up dialysis



Higher costs for the health care system!



Stress for our patients!

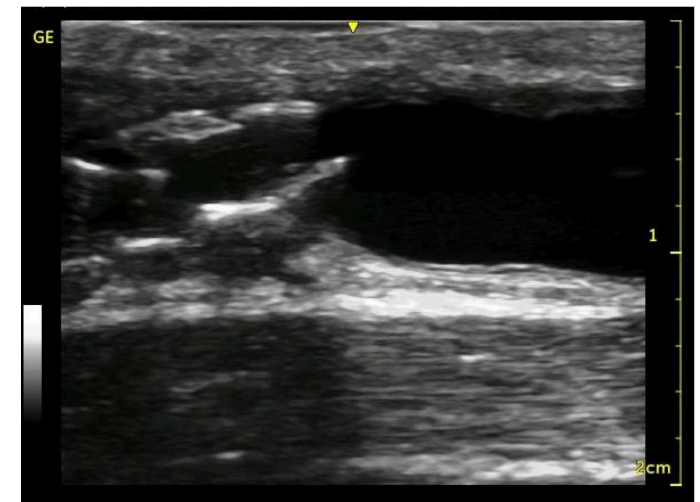
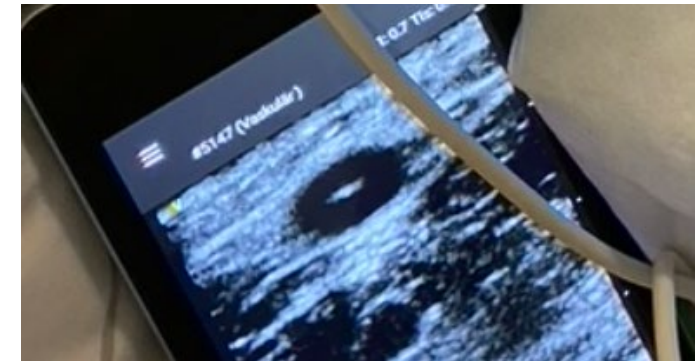
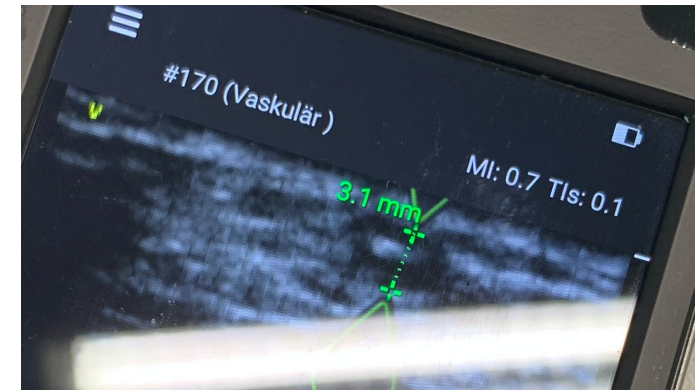


## Point-of-care ultrasound use for vascular access assessment and cannulation in hemodialysis: A scoping review

Monica Schoch,<sup>1</sup> Paul N. Bennett,<sup>1,2</sup> Judy Currey,<sup>3</sup> and Alison M. Hutchinson<sup>3,4</sup>

- First Cannulations
  - Earlier, atraumatic and safe („Roules of 6“ neglectable)
- Alternative cannulation sites → NO more area puncture!
- Significant reduce of complications
- Perfect positioning of the needle in the center of the vessel
- Successful cannulation with stents
- Patient self-cannulation training (assessment)

High satisfaction for patients and staff!



9 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7496621/>  
<http://www.bcrenal.ca/resource-gallery/Documents/US%20to%20support%20cannulation.pdf>



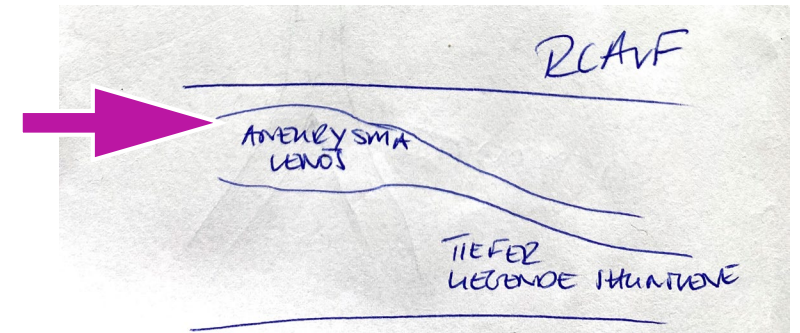
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# When do we use POCUS-guided cannulation?



# Application in our clinical routine

- After every operative or endovascular intervention (f.e. PTA, Thrombectomi, Aneurysm resection)
- (Early) first cannulations (sAVF, Endo-AVF, ecAVG)
- Difficult/complex cannulation situations
- Deep laying veins
- Correction after miscannulation
- To avoid SN-technique
- Searching for new cannulation sides
- Unknown fistula
- Extension of the cannulation range





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# How do we use POCUS-guided cannulation?

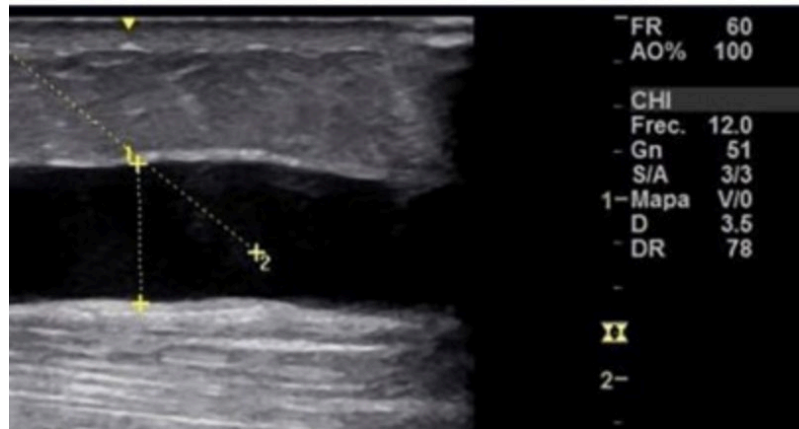
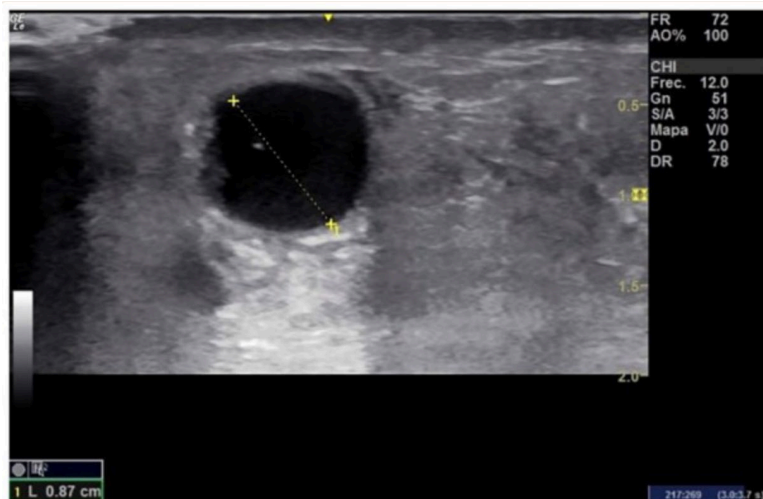




# 1. POCUS-Assessment and cannulation

US is not using for needling, but for assessing the best side to insert the needle

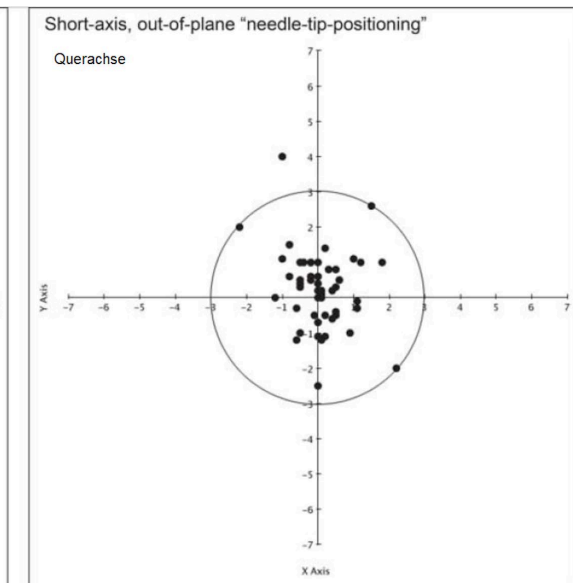
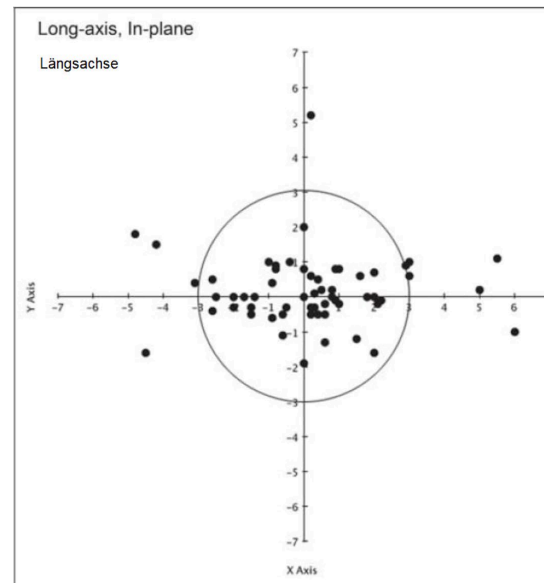
1. Investigate the vein (depth, diameter, flow)
2. Mark the cannulation site in Rope-ledder or Buttonhole-Technique with dermographic marker
3. Cannulation takes place „blind“



## 2. (Real-time) POCUS-guided cannulation

After the assessment, you cannulate the needle by US

1. Investigate the vein (depth, diameter, flow)
2. Find the cannulation sites per US
3. One hand at the probe, other hand the needle
4. Insertion in real-time transversal or longitudinal (it's possible to re-direct)
5. Check the position (transversal, longitudinal)



# Example of Transversal POCUS- guided cannulation



1. Positioning the vein in the middle of the picture
2. Puncture the needle through the skin and stop
3. Look at the US-Device, find the tip of the needle and penetrate the vessel wall
4. See the tip inside of the vessel
5. Move the probe cranial until you cannot see the needle tip, Stop!
6. Move the needle until you see the tip in the center of the vessel, Stop!
5. ...
6. ...
7. Until the needle is completely punctured

Lead the needle always in the center of the vessel!



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# How do we learn and implement the POCUS-guided cannulation?





As long as we have no guidelines which recommend using POCUS:

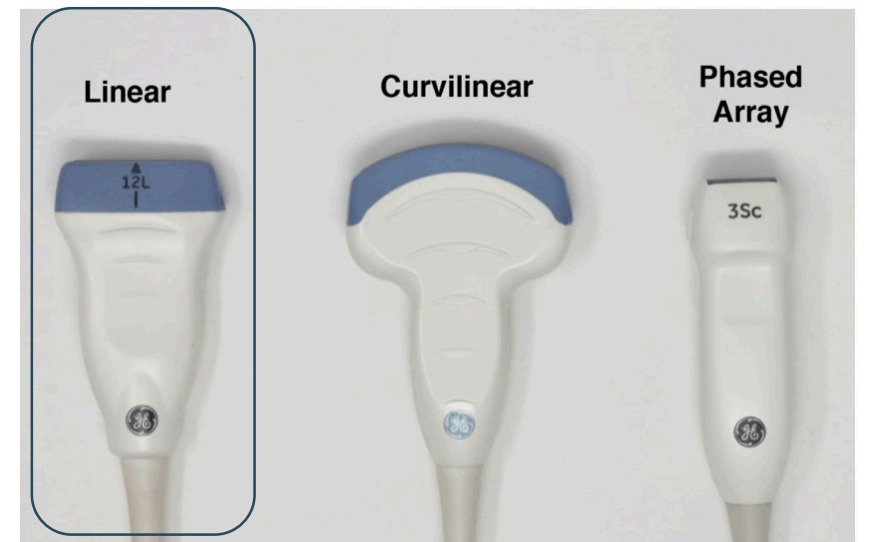
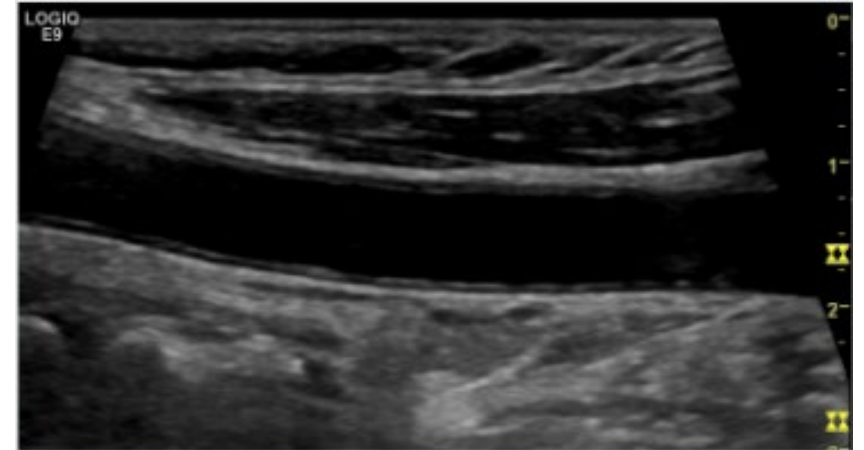
You need...

**1 Person who is convinced and wants to learn the technique!**

**That person will inspire one employee after the other while talking about cases!**

# Hands-on Workshop (In-house or at a conferences)

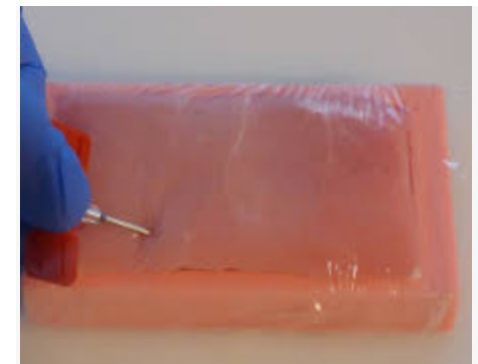
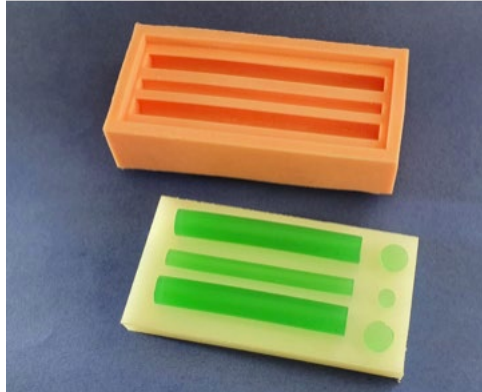
- Presentation of the basics of ultrasound-technique
  - Interpretation of the B-Mode, Artifacts
  - Transversal and longitudinal projection
  - Which probe and why
- Preparing the set-up before cannulation
- Hygienic requirements



Most Common Ultrasound Probes Side by Side

# Hands-on Workshop (In-house or at a conferences)

- Preparing the Phantoms
  - base plate, Gel-phantoms, pork escalope
  - wrapped in transparent film
- Practical exercises
  - Handling the probe
  - Assessment of the phantom
  - Cannulation in- and out of plane
  - Y-Cannulation for endoAVF
  - Eye-Hand-Coordination





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# Personal Experiences

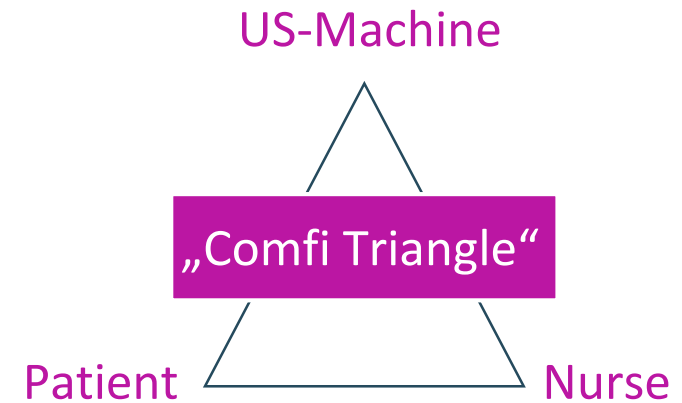






# Practice in your praxis

- Start cannulating on „easy fistulas“
- Always create a comfortable workspace
- Train the Eye-hand-coordination
- Feel how the needle pass through the vessel wall (You will feel and see it!)
- Push the needle mm by mm (slowly)
- The learning curve needs some time, you will become faster
  
- After you become an advanced, you start teaching your colleagues
  - Small groups of 2, max. 4 people
  - US-Basics and Training on the phantoms
  - Go into praxis and train them as long as they need help
  
- Make it part of the introduction for every new colleague



Relaxing atmosphere!  
No worries, no fear!  
Safety and efficacy!



# My Take-Home-Message

Our patients deserve the best care, we can offer them. They trust us and they are dependent of us!

POCUS-guided cannulation is a **MUST HAVE** in the daily routine of every nurse working with people who need HD over an AVF or AVG!

Safety and satisfaction will increase for all involved persons day by day using it!

Do it! Feel it! Spread it!

**Thanks for your attention!!!**