Leverage Our Renal/Hepatic PK Study Experience & Expertise

Celerion understands the unique nature of renal and hepatic insufficiency patient populations and manages these specialized pharmacokinetic (PK) studies to efficiently and effectively complete your studies on time and with excellent quality data.

Renal and hepatic PK studies are typically required for small molecule drugs, especially if nonclinical or ADME results suggest significant elimination through these systems. Results from renal and hepatic impairment PK studies help inform the drug label with regard to dose adjustment or contraindication for patients with kidney and liver dysfunction, respectively.

Appropriate study design and suitable inclusion and exclusion criteria are integral for a successful renal/hepatic PK trials. A full or reduced study design depends on the degree of drug clearance, PK characteristics of a drug and potential impact of renal/hepatic dysfunction, as well as the therapeutic window of a drug.

Full Study: Explores the full spectrum of organ function with cohorts ranging from normal to severe (or kidney failure in the case of renal impairment).

Reduced Study: Examines both ends of organ function spectrum representing normal and the severe condition as the 'worst-case' scenario.

Celerion Differentiators for Renal/Hepatic Impairment PK Studies:

Experience:

- Experience with managing more than 45 Hepatic Insufficiency studies and 30 Renal Impairment studies over the past 10+ years
- Extensive site network and established working processes with renal and hepatic experts throughout the US and EU

Expertise:

- Early Principal Investigator input on study design for optimization of inclusion/exclusion criteria and protocol design
- Expert protocol writers and PK scientists in renal and hepatic impairment PK studies
- Experienced Project Managers and CRAs in close proximity to the site

Efficiencies:

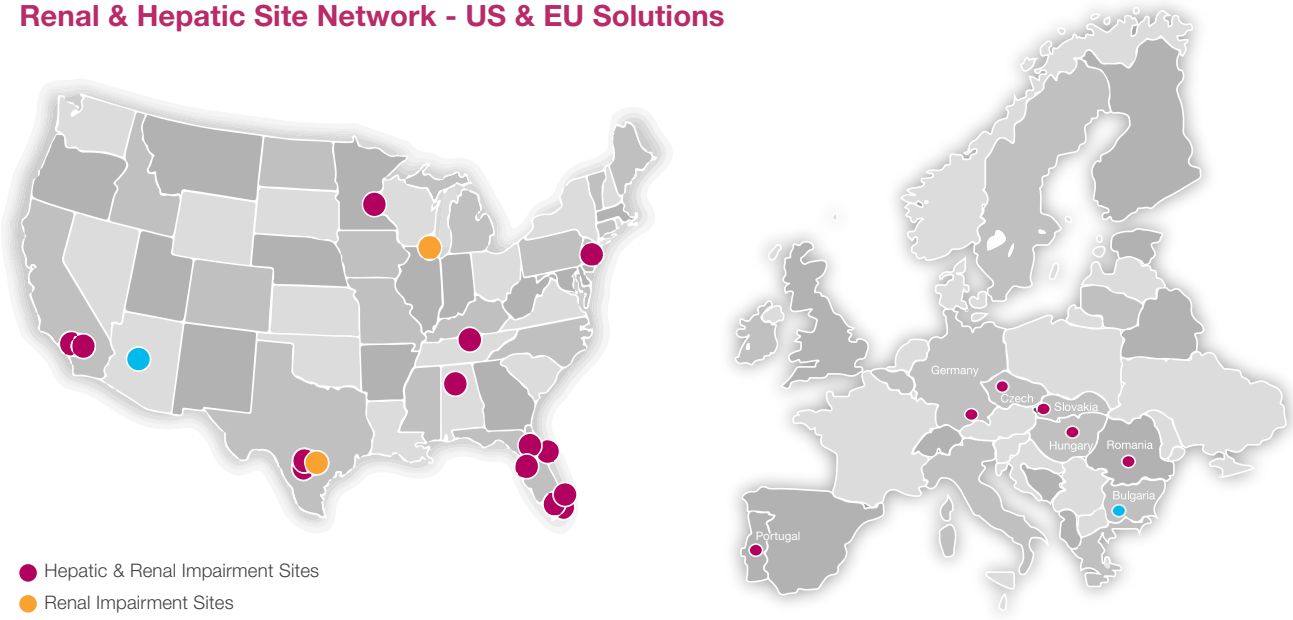
- Access to mild, moderate and severe renal and hepatic impairment patients as well as kidney failure patients on dialysis
- Priority access to subject population for on-time or expedited recruitment
- Streamlined process by working with one vendor from study set-up to final report
- Full service solutions include protocol development, site selection & training, project management clinical monitoring, bioanalytical laboratory services, data management, EDC study build and clinical study writing

Study Design Characteristics

Study Design Characteristic	Renal Impairment PK Study	Hepatic Impairment PK Study
Study Purpose	• To evaluate the impact of renal dysfunction on drug clearance and a potential need for dose adjustment in these patients	• To determine the effect of liver dysfunction on drug clearance and a potential need for dose adjustment in these patients
Study Type	• Open label • Healthy control-matched participants • Often multipart or adaptive study • Reduced or full study	
Patient Categorization	eGFR Values (ml/min) • Mild: 60-89 • Moderate: 30-59 • Severe: 15-29 • Kidney failure: < 15 or patients on dialysis during non-dialysis days Dialytic Therapy • During hemodialysis vs non-dialysis days	Childs-Pugh Classification • Mild: Class A (5-6 points) • Moderate: Class B (7-9 points) • Severe: Class C (10-15 points)
Healthy Controls	Key Matching Criteria • Age: ± 10 years • BMI: ± 20% kg/m^2 • Mean vs. Individual matching approach	
Sample size	• Powered study, sample size justification recommended	• Typically 6-8 patients per cohort
Sample Collection & Key PK Parameter	• Serum or plasma drug concentration and unbound drug concentration if plasma protein binding >80% • Urine excretion • AUC, CL/F, CL_R, C_{max}, $t_{1/2}$, V/F • CL_D for dialysis studies	• Serum or plasma drug concentration and unbound drug concentration if fraction unbound (f_U) <10% • Urine excretion • AUC, CL/F, CL_R, C_{max}, $t_{1/2}$, V/F

AUC, area-under-the curve; **BMI**, body mass index; **CLD**, dialysis clearance; **CL/F**, apparent clearance; **CL_R**, renal clearance; **C_{max}**, maximal concentration; **eGFR**, estimated glomerular filtration rate; **f_U**, fraction unbound; **$t_{1/2}$**, terminal half-life; **V/F**, apparent volume of distribution.

Renal & Hepatic Site Network - US & EU Solutions



- Hepatic & Renal Impairment Sites
- Renal Impairment Sites
- Hepatic Impairment Sites

View our renal/hepatic impairment resources.