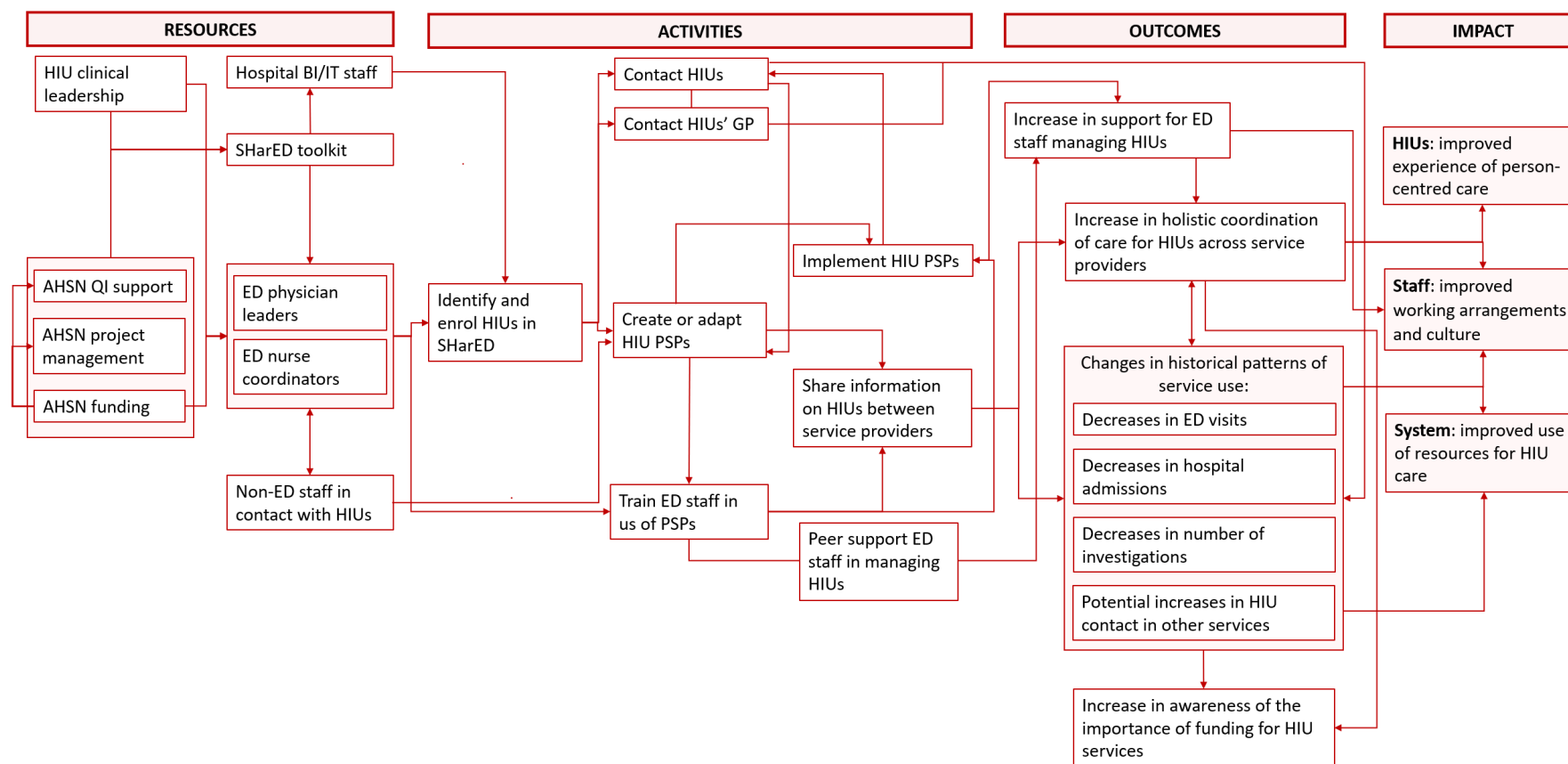


Figure S1. Supporting High impAct UseRs in Emergency Departments (SHarED)Theory of Change Diagram

AHSN – Academic Health Science Network

BI – Business Intelligence

ED – Emergency Department

HIU – High Impact User

IT – Information Technology

PSP – Personal Support Plan

QI – Quality Improvement

Table S1. Staff survey questions

Domain	Statement/Question	Q
Staff confidence	I feel confident when assessing and treating High Impact Users in the department *	Q1
Well supported	I feel well supported by other staff when managing High Impact Users *	Q2
Negative impact	High Impact Users impact negatively on my mental wellbeing, either in the present or past *	Q7
HIU staff training	The department does a good job in training staff in how to manage High Impact Users *	Q6
Dignity & respect	High Impact Users are treated with the same level of dignity and respect as other patients in the Emergency Department *	Q3
Appropriate care	High Impact Users always receive appropriate assessment and treatment when they attend *	Q4
Timely care	High Impact Users always receive timely care when they attend in comparison to other patients *	Q5
Referral mechanisms	Can you describe the different mechanisms of referring patients to the High Impact User Service? **	Q8
Access PSP	Can you describe how/where the Personal Support Plans can be accessed in your department? **	Q9
Risk to the Staff	What do you feel are the greatest risks when managing High Impact Users to yourself? **	Q10
Risk to the patient	What do you feel are the greatest risks when managing High Impact Users to the patient? **	Q11
Additional Comments	Do you have any additional comments, questions, suggestions or concerns about any aspect of caring for High Impact Users? **	Q12

* response on scale 0-100: 0 = strongly disagree, 100 = strongly agree. ** response open text

Table S2. Bristol Royal Infirmary activity for Health Research Groups codes applicable to High-Impact Users, and National Cost Collection for the NHS 2021/2022

HRG code	Number	Cost*	Total cost
Abdominal Pain without Interventions	454	£562	£255,036
Acute Alcohol Intoxication with CC Score 0-2	194	£532	£103,161
Acute Alcohol Intoxication with CC Score 3+	28	£656	£18,366
Acute Combined Drug Intoxication	34	£533	£18,136
Acute Drug Intoxication	14	£521	£7,292
Tendency to Fall, Senility or Other Conditions Affecting Cognitive Functions, without Interventions, with CC Score 0-1	212	£656	£139,000
Environmental Effects	5	£601	£3,003
Hypothermia, Frostbite or Other Effects of Reduced Temperature, with CC Score 0-1	7	£564	£3,949
Hypothermia, Frostbite or Other Effects of Reduced Temperature, with CC Score 2+	6	£712	£4,275
Headache, Migraine or Cerebrospinal Fluid Leak, with CC Score 0-6	230	£527	£121,233
Behavioural Syndromes, treated by a Non-Specialist Mental Health Service Provider	16	£654	£10,463
Mental and Behavioural Disorders Due to Drug or Alcohol Use, treated by a Non-Specialist Mental Health Service Provider	240	£657	£157,652
Mood Affective Disorders, treated by a Non-Specialist Mental Health Service Provider	65	£506	£32,867
Neurotic, Stress-Related or Somatoform Disorders, treated by a Non-Specialist Mental Health Service Provider	92	£504	£46,411
Observation or Counselling, with CC Score 0	12	£438	£5,251
Observation or Counselling, with CC Score 1+	7	£558	£3,909
Other Mental Health Disorders, treated by a Non-Specialist Mental Health Service Provider	10	£698	£6,982
Admission Related to Social Factors with Interventions	1	£2,093	£2,093
Admission Related to Social Factors without Interventions, with CC Score 0	26	£669	£17,399
Admission Related to Social Factors without Interventions, with CC Score 1+	35	£676	£23,666
Signs or Symptoms, Involving Appearance or Behaviour, with CC Score 0-1	122	£488	£59,496
Signs or Symptoms, Involving Appearance or Behaviour, with CC Score 2+	59	£651	£38,431

*Cost for short stay length