Recycling of Single-Use Metal Instruments at the UVA Health Emergency Department

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Abstract

This pilot tests the feasibility and potential impact of recycling single-use metal instruments in a hospital setting, building on prior life cycle analyses of single-use and reusable surgical tools at UVA Health. Designed through stakeholder collaboration, research, and iterative development, the program aims to reduce global warming potential while realizing financial benefits. Although further refinement is needed to scale the initiative, initial data collected on physician sentiment, compliance, efficacy, and projected outcomes suggest that integrating recycling into hospital workflows can yield measurable environmental benefits and meaningful cost savings—advancing a broader shift toward a circular, sustainable healthcare system.

Keywords: Healthcare Sustainability, Medical Waste, Stainless Steel Surgical Instruments, Recycling

Introduction

Hospitals in the United States are one of the most waste intensive institutions in the country, producing over 6 million tons of waste annually, which amounts to around 34 pounds of waste from each patient[1]. Furthermore, emissions from the health industry account for 8.5 percent of the total US greenhouse gas emissions. These emissions are comparable to those of the entire aviation sector or the combined emissions of over 150 million cars[2]. A large portion of hospital waste comes from the widespread use of single-use instruments, especially in emergency departments like trauma, where speed and sterility are life or death factors. At University of Virginia Health, the Emergency Department (ED) mainly uses single-use instruments, many of which are made of recyclable stainless steel but are often discarded into sharps bins and landfilled versus being repurposed or properly recycled, wasting valuable material. The impact of this waste is not solely environmental, it is also economic. Hospitals can save money by switching from single-use instruments to disposable instruments, and recycling metal single-use instruments in a scrapyard which will provide a revenue stream back to the hospital. The adoption of a sterilization recycling system for these instruments would redirect high waste volumes, save costs, and keep endlessly recyclable metal in use.

A 2024 UVA Biomedical Engineering capstone project analyzed the environmental and financial costs of single-use metal instruments and found significant opportunities for hospital waste redirection and cost benefits through adopting reuse and recycling steps. Between 2021 and 2023, UVA Health discarded over 2,400 kg of stainless steel from just three single-use instrument types: Iris Scissors, Adson Forceps, and Mosquito Forceps (data may be underestimating total amount as the invoice only represents one brand from hospital procurement, while a multitude are used). If UVA Health were to switch from single use to reusables, they could reduce their global warming potential by over 1,500 kg CO2eq, cut energy use by 97%, while also saving around $15,000 in instrument costs[3]. However, while reusable instruments represent the most sustainable long-term solution, there are limitations, specifically around sterilization logistics, that are slowing this switch. Autoclaving, which uses high-pressure saturated steam to sterilize instruments, requires significant time, space, and personnel. In an interview conducted at UVA, sterilization congestion in the hospital has contributed to emergency room delays, and the current infrastructure is not able to accommodate the needs of the ED. As a result, an approachable solution is to implement a recycling program of single-use instruments. Recycling bypasses the need for intense sterilization, since only a wash cycle is needed for scrapping. And since the ED will always need some capacity of single-use instruments, if the department switches to reusable, a recycling system will still be useful. According to the OpenLCA database, the production of 1kg of stainless steel creates 4.84 kg CO2 equivalents, requires 12.83 MJ of energy, and consumes 30 liters of water, highlighting the environmental costs of production. Using recycled steel instead of virgin material can reduce global warming potential impact by 32%, energy use by approximately 56%, and water use by 40% (Table 1).

The loss of steel through landfilling has a costly environmental impact. The U.S. steel industry is currently experiencing a lengthy decline in steel production, from around 100 million metric tons in 2000 to around 70 million today. This is driven by high domestic production costs, outdated infrastructure, and an increased reliance on foreign imports[4]. This weakness has made the sector highly receptive to global market fluctuations and government policy. In response to growing foreign competition, the U.S. has created Section 232 tariffs, which impose a 25% tax on nearly all steel imports, which would include those used in healthcare manufacturing[5]. However, experts believe that these tariffs will do little to address the underlying issues like Chinese steel overproduction and global price manipulation, and instead put pressure on industries that depend on low-cost steel, like hospitals[6]. These rising costs are expected to significantly increase the price of medical tools made with steel, including single-use metal instruments that are one of the most commonly used tools in hospitals. With these increases, steel recycling presents a compelling solution. Not only is steel 100% recyclable, but it can be endlessly recycled without degradation of its properties, making it one of the most sustainable structural materials[7,8]. By creating systems to recycle single-use instruments, healthcare institutions can reduce procurement costs, support national recycling initiatives, and most importantly, reduce environmental harm. In doing this, they will address the demand for steel without relying exclusively

on raw materials or vulnerable supply chains. With these recycling programs, the healthcare system can help increase the percentage of steel recycled in the US each year from 69% to a much greater number, all while lowering the cost at which they purchase their instruments[7].

Recycling stainless steel is a viable solution to supplement variable chain issues and combat increasing costs while also providing major environmental and economic benefits. Contrasting the production of steel, which requires high energy use, mining capabilities, and raw materials, recycling significantly reduces waste, conserves energy and water, and produces fewer greenhouse gas emissions, according to the National Institutes of Health (NIH). Furthermore, this recycling benefits the economy, as landfilling 10,000 tons of waste creates 6 jobs whereas recycling the same amount of waste creates 36 jobs[9]. The Northeast Recycling Council reported that recycled steel alone can lead to a massive reduction in air and water pollution that is associated with the extraction and refining process of virgin ore[10]. To provide the environmental benefits of recycling, Table 1 below provides a percentage savings, specifically global warming potential (GWP), energy use, and water consumption, of recycling stainless steel versus producing from virgin material. By averaging values from multiple sources, this table shows the reductions that can be achieved through recycling.

Source	% GWP Savings	% Energy Savings	% Water Savings
Energy Benefit of Stainless Steel Recycling	32%	33%	
Benefits of Recycling (NIH Environmental Management System)		60%	40%
Advantages of Recycling Metals (Tampa Steel)		60%	40%
How Sustainable is Recycled Steel? (Logic Bespoke)		70%	
Average	**32%**	**~56%**	**40%**

Table 1: Percentage Savings of Recycling Steel Versus Virgin Ore Production[13,9,10,14]

Environmental Metric	Virgin Production / kg	Avg % Reduction	Recycled Steel / kg
GWP (kg CO2-eq)	4.84	32%	**1.55**
Energy Use (MJ)	12.83	~56%	**7.18**
Water Use (L)	80	40%	**32**

Table 2: Estimated Environmental Savings per kg from Recycling Stainless Steel Compared to Virgin Production

Table 2 shows reported environmental savings from production utilizing recycled stainless versus virgin production based on a review of four sustainability resources in Table 1. The average reduction in global warming potential (GWP) was 32%, energy use was approximately 56%, and water use was 40%. These percent averages when applied to the OpenLCA environmental impact steel production values, create an estimation for the sustainability savings generated by the recycling of steel. The use of recycled steel in production, compared to virgin steel, has a reduction of 1.55 kg CO2-eq, 7.18 MJ, and 32L per kg. These findings strengthen the environmental possibility of recycling programs, but realizing these benefits in real-world applications requires institutional commitment, in this context, hospitals need to be more willing to implement sustainability focused initiatives.

Even though there is growing awareness of these hospital inefficiencies, enacting changes to improve sustainability requires evidence of success. Hospital staff have acknowledged that excessive waste is a problem, yet actionable efforts are often hindered by systemic barriers and a lack of prior examples. In a multi-institute study conducted by UVA's Dr. Matthew J. Meyer, 90% agreed that OR waste of sterile items is an issue, and 95% reported their willingness to change their workflow to reduce waste. Yet, when asked about barriers to waste reduction, the top responses consisted of lack of awareness, concern, and time, showcasing a gap between staff member willingness to reduce waste and their view on the organization's commitment to sustainability2. This gap creates a scenario where staff members assume their peers are unconcerned or unwilling to prioritize waste reduction, discouraging open conversations and action, when in actuality there is just a lack of precedent and direct responsibility in solving these issues. The best path forward for change is incremental differences and sharing the results to inspire more action through established frameworks with plans of action. The institutional, operational, and behavioral barriers highlight the need for a strategy to make hospitals more environmentally focused. We aim to establish a recycling pilot for single use metal instruments in the UVA emergency department by connecting with ED staff, sterilization, and a local scrap yard to create a roadmap for other departments to implement material recovery processes.

Materials and Methods

Pilot Research and Implementation

Despite strong demonstrated awareness and willingness to reduce waste, there is no clear path to a greener hospital. This is evident in the lack of precedent in research papers or guidelines from higher institutions for increased recycling and reuse in the healthcare sector. There are recent case studies of sustainable practices such as Recyclable hospital gowns at UCLA and a growing reprocessing industry for disposable devices, but these require a third-party company who takes in used devices and instruments, sanitizes and services them, and returns them to the consumer as opposed to landfilling. Implementing sustainable practices within UVA Health requires designing a new system largely from the ground up[11]. This process entails researching the current waste landscape and engaging with all relevant stakeholders to develop a solution that was both feasible and acceptable across clinical and operational lines.

The Emergency Department (ED) at UVA Health was identified as a high-value target for launching the pilot. As speed and availability of instruments is the greatest priority, the exclusive use of single-use metal instruments is greatly incentivized. These single-use metal instruments contribute to large volumes of waste as they are disposed of into general sharps bins. In an interview with an ED surgeon at UVA, the surgeon estimated that roughly 70% of sharps bin content in the ED is composed of metal instruments. Sharps bins, another single-use device, demonstrate a secondary manner in which these instruments contribute to excessive healthcare costs and waste. At around $7.02 per sharps bin disposal, the lack of recycling is creating costs in waste disposal[12]. With 70 beds total in the ED, each with a bin filling up at a rate of once per day based on surgeon testimony, around 70 bins are disposed of in a day. Based on these estimations, single-use metal instruments disposal costs in sharps bins are contributing $125,552.7 annually to the hospital (Interview with Ben).

The surgeon also discussed how the COVID-19 pandemic heightened concerns around and protocols for sterility. These concerns increased the reliance on single-use and eliminated a transition back to reusable instruments as a means of waste reduction–in addition to autoclave capacity limitations and potential workflow disruption. As a viable alternative, a recycling bin dedicated to single use metal instruments was proposed to lessen negative environmental impact and reduce sharps bin overuse. The importance of having buy-in from nursing leadership to support implementation was highlighted as a final note.

To this end, we engaged the ED's head nurse to identify optimal bin placement, signage design, and staff communication strategies. Her guidance led to the selection of a centralized location in the 100s wing and enabled dissemination of a detailed memo explaining the pilot's purpose and logistics. This early-stage collaboration was vital for embedding the program into the ED's workflow.

Sterilization logistics were addressed through conversations with a technician in UVA's Central Sterile department. Initially, autoclaving was considered the standard method. However, during facility walkthroughs and discussions with the sterilization team, the STERIS Washer Disinfector emerged as the preferred method. It provides storage-level sterility suitable for scrap metal while being less resource-intensive and more available

during off-peak hours—making it both operationally and environmentally efficient.

The final component of our workflow was confirmed through consultation with UVA Recycling and its scrap metal partner, Gerdau Metals Recycling. Gerdau accepts 304-grade stainless steel and compensates $1 per kilogram. This relationship established a practical outlet for material recovery and introduced a small revenue stream, marking a shift from landfill disposal to resource revalorization.

Overview of Recycling Pilot at the UVA Emergency Department (ED)

The pilot program aims to implement a structured, small-scale recycling program for single-use metal surgical instruments at UVA Health, beginning with a focused deployment in the Emergency Department (ED). The primary objective is to reduce medical waste by diverting recyclable metals—such as stainless-steel forceps, scissors, and scalpels—from landfills and redirecting them into a sustainable waste stream. By designing a workflow that integrates easily into existing hospital operations, this initiative serves as a foundational model for potential expansion across other clinical units at UVA Health. It also aligns with institutional sustainability goals by reducing environmental impact and improving resource recovery.

Collection

A clearly labeled recycling bin was placed in a central location in the ED, designated specifically for single-use metal instruments such as forceps, scissors, and scalpels. Signage detailed the types of acceptable materials, and communication was reinforced through a project memo shared to the ED department. The bin remained in place for approximately three days or until full. Nurses, who typically handle post-procedure instrument disposal, were central to this step's integration into existing routines.

Sterilization

Upon collection, the instruments are safely transported to UVA's sterilization unit, in accordance with infection control. There, they are processed using the STERIS Washer Disinfector, selected for its efficiency and adequate sterility for recycling purposes. This method eliminates the reliance on highly demanded autoclaves while leveraging idle capacity during off-peak hours, thereby minimizing disruptions to standard surgical workflows.

Scrapping

Following sterilization, instruments are sorted by type and material to track consumption and impact. They are then transported to Gerdau Metals Recycling. A scale ticket is issued upon drop-off to record the weight of the material, which also determines the financial compensation. Although revenue is expected to be modest initially, the reduced cost of sharps bin disposal adds to the financial impact. The landfill diversion also marks an institutional shift from regulated waste expenditure to circular material recovery.

Staff Perception

To assess cultural feasibility and support program scaling, a brief IRB-approved staff survey was distributed through QR-code flyers and internal email. The survey evaluates waste awareness, ease of use, perceived environmental impact, and willingness to change disposal behaviors. This data will inform future iterations of the process and identify key levers for expanding the program hospital-wide.

Expected Outcome

While the logistical design and stakeholder collaboration were central to implementation, the motivation behind the recycling pilot is equally important and is rooted in three major outcomes: environmental benefit, financial opportunity, and employee satisfaction. Environmentally, single-use stainless steel instruments are high-value materials that are both durable and infinitely recyclable. By diverting even a fraction of the estimated 70% of sharps bin content that is metal, this program can reduce landfill volume and carbon footprint, key contributors to climate change. Financially, disposing of medical waste, especially from sharps containers, is expensive. By reducing sharps bin volume, the hospital could decrease the frequency and volume of costly regulated waste pickups and sharps bin usage. On an employee level, this process offers a visible, low-effort action with a sense of personal impact. Waste reduction efforts often fail not due to lack of concern, but due to a disconnect between intention and follow-through. Staff want to help, as made clear by previous survey work, but they need a set, simple pathway to do so without affecting patient care. By giving them a designated bin and a transparent process, we hope to show that small behavioral shifts can inspire system-wide impact.

$$438.6\ g\ Steel \times \frac{365\frac{days}{year}}{3\ days\ pilot} \times \frac{6\ ED\ pods}{1\ pod\ pilot} \times \frac{1\ kg}{1000\ g} = 320\ kg\ \frac{Steel}{year} \quad [1]$$

$$320\ kg\ UVA\ \frac{Steel}{year} \times \frac{139{,}781{,}000\ US\ ED\ \frac{Visits}{year}}{57{,}000\ UVA\ ED\ \frac{Visits}{year}} = 775{,}646\ kg\ US\ \frac{Steel}{year} \quad [2]$$

Results

UVA ED Single Use Metal Instrument Recycling Pilot

The pilot was conducted over a 3-day period, with a single recycling bin residing in a central location of one of 6 UVA Health ED pods, serving 12 of the 70 beds in the department (appendix map of ED). In addition to the bin, 5 signs were placed nearby existing sharps bins informing staff of the pilot and redirecting single-use metal instruments to be disposed of at the bins location.

Over the course of this initial pilot, 17 single-use metal instruments were collected (see Supplemental Information). The instruments collected were 8 Iris Scissors, 8 Mosquito Forceps, and 1 Adson Forcep. Within these broader instrument classes however, there was a range of type based on manufacturer, length, and curved vs uncurved. Following sterilization, the instruments were weighed individually on a Uline Precision Balance Scale, with a total weight of 438.60 g.

Instrument Type	Length	Avg Weight (g)	Count	Total Weight (g)
Iris Scissors	5.5"	33.81	4	135.25
Iris Scissors	4.6"	19.22	4	76.89
Mosquito Forceps	5.5"	28.54	5	142.70
Mosquito Forceps	5"	23.71	3	71.12
Adson Forceps	5.1"	12.64	1	12.64
Total				**438.60**

Table 3: UVA Emergency Department Pilot Collection Data

Scaling these values up to the entire UVA Health ED over the course of 1 year, 320.178 kg of stainless steel could be recycled each year at our pilot rate (Equation 1). From UVA procurement data, we estimate our pilot rate only captured ~40% of the total single use metal thrown away (320 of 800kg yearly from above).Based on a reimbursement rate of $1/kg from our scrapping partner, Gerdau Metals Recycling, this would result in a yearly scrap revenue of roughly $328 for UVA Health with an estimated ~$125,000 in sharps bin savings. In addition to financial impact, the environmental impact of our weight of steel recycled in producing from recycled steel vs original is included, this steel would save 2,298.9 MJ of energy, reduce water usage by 10,245.7 L and reduce GWP by 480.3 kg CO2 eq (Table 2).

From CDC data on annual ED Visits in the US compared to annual ED visits at UVA Health, the impact of a comparable recycling system in all EDs across the US is projected to be 775,646.5 kg of stainless steel diverted from landfills each year (Equation 2)[14,15]. This represents reimbursement revenue of $775,646.5 for hospitals, energy savings of 5,569,141.6 MJ, a 24,820,686.9 L reduction in water usage, and a reduction of 1,163,469.7 kg CO2 eq in GWP (Table 2).

Labor Cost Results

To assess the labor impact of the single-use metal instrument recycling program, each step of the process was analyzed by estimating the time burden per task. These estimates help quantify the operational effort and identify areas for efficiency.

The labor required of clinical staff to dispose of instruments into the designated recycling bin is minimal. Each instrument takes approximately 15 seconds to discard properly. Since instruments are typically discarded in small batches and already require disposal in existing sharps bins, the individual burden is negligible and can be absorbed naturally into existing workflows.

Once full, each recycling bin—holding up to 200 instruments—takes about 15 minutes to transport from the Emergency Department (ED) to the hospital's sterilization facility. Assuming two bins are filled per week, this would result in approximately 30 minutes of transport labor per week.

The sterilization process requires no active labor beyond loading the washer, which can be estimated at 5 minutes per cycle which has a 100 instrument capacity. The wash cycle itself lasts 30 minutes but runs automatically. With two bins processed per week, this adds up to 10 minutes of labor per week for washer loading, with minimal disruption to existing workflows.

Dropping off the sterilized instruments at Gerdau Recycling involves a 40-minute round trip, plus about 20 minutes total for loading and unloading. Assuming a weekly drop-off, this adds 1 hour of labor per week, which could be assigned to a facilities or custodial staff member, or absorbed into UVA recycling.

Hospital Sustainability Survey Results

To assess current thoughts and behaviors on medical waste management in the UVA ED, we created a Qualtrics survey that was sent to ED staff. This survey was approved through the Institutional Review Board for the Social and Behavioral Sciences (IRB-SBS) at the University of Virginia (Protocol #: 7339), with approval finalized on March 18, 2025, to make sure our data collection was ethical and anonymous. A total of 21 finished responses were recorded. These results gave meaningful feedback on hospital waste levels, support for sustainability initiatives, and the feasibility of executing future recycling programs. Reducing waste was a major priority among respondents, as 72% strongly agreed and 28% somewhat agreed that waste reduction should be a top priority, meaning all respondents were in agreement to some extent. When respondents were asked to rate how much waste their department creates on a scale from 1 to 10, the average score was 8, showcasing how evident waste generation is in the ED. Despite this awareness, 62% of respondents said they felt unequipped to reduce waste in their workplace. When asked about factors that are major contributors to ED waste, single-use instruments and packaging materials were recognized as major sources. It was estimated that patient interacting staff in the ED uses 5 single-use metal instruments per day, suggesting potential for sustainable intervention. Attitudes toward sustainability-focused initiatives were extremely supportive with 95% of respondents stating they would be willing to change their work habits to accommodate for a shift to reusable instruments if it improved the hospital's environmental impact. However, many cited concerns that reusables could lead to possible delays in instrument availability and an increased sterilization workload. Yet, 52% reported that they had never faced delays in patient care due to sterilization, implying a disconnect between perceived and actual barriers. Support for a single-use metal recycling program was very high as 95% of respondents indicated that they were likely or very likely to support a dedicated recycling program. When asked what would make this program possible, 76% identified hospital management support as a vital facilitator. Lastly, 77% of respondents had 1-5 years of UVA ED hospital experience or more, suggesting a sample that was composed of trained staff. Open-ended responses emphasized the need for clear protocols, proper training, better advertising of the recycling program, and easy disposal methods.

Discussion

Survey Discussion: Inertia to Change

The results received from the UVA Emergency Department (ED) survey unveiled the following themes: staff perceive waste production by their work as an issue, staff want to reduce their waste even if it requires a change in behavior but does not feel equipped to do so, and that it would take leadership intervention to enable them to do so. While the survey responses exhibited eagerness to support recycling initiatives in the ED, the recycling pilot instrument collection revealed a gap between intentions and actual behavior. Despite willingness to practice sustainable methods, there was poor compliance with directing instrument flow to the designated recycling bin. This disconnect shows how workflow inertia and lack of feedback in this setting can lead to underwhelming results. It implies that enthusiasm alone is not enough, as full implementation and support requires better integration into daily routines and simplified processes to help overcome established behavioral patterns.

Inventory/Impact estimation improvement

From our estimate, only ~13% of total instruments used during the three-day pilot period were placed in the bin. From inventory procurement data, UVA purchased 2400 kg of single-use metals a three year period. However, this data only captured three specific aforementioned tools (forceps and scissors). Through conversations with procurement, we estimate that these instruments and manufacturing codes were only ~⅓ of the actual total number of discarded metals. In the case of 100% collection of instruments recycled annually, ~7200kg of steel recycled, would lead to 5.7 million MJ in energy saved as well as 2.1 million kg CO2 eq in global warming potential diverted. The energy and global warming potential saved when 100% of the instruments are placed in the bin is vastly higher than the estimate based on the pilot, showing the potential for even greater impact.

Improving collection rate

To improve the recycling program for future use, more bins will need to be placed in the emergency department. Ideally, there will be at least one recycling bin per pod in the UVA emergency department, to increase ease of use for surgeons and nurses. The bins will be placed in a central location within each pod, with clear signage showing the devices that should and should not go in. To further increase compliance, a training program will be created to fully integrate single-use metal recycling into the everyday work habits of the staff. After the training and getting normalized to the new protocol, the number of discarded metal instruments are expected to vastly increase, thus causing less metal to go to the landfill, and decreasing the hospital's carbon footprint.

A hurdle for our work was aggregating the regulatory information needed to set up a waste bin in the hospital. To allow for more recycling programs is to publish what we learned on infection prevention protocol and Occupational Safety and Health Administration (OSHA) compliance standards. First, the bin must be fully sealable on top and transferred through the hospital with a cart. New, bigger, and fully sealable bins for single use metal instrument recycling will be purchased and placed in the ED. The transportation of the bin from the ED to sterilization will also be handled by trained medical staff in the future, with the bins placed on carts and only taken in UVA staff elevators.

Reuse in Addition to Recycling

To further reduce single-use instrument waste in the future, UVA ED should begin switching to reusable instruments. According to a 2024 UVA capstone Life Cycle Assessment study, hospitals could save $2,468 by switching 500 single use instruments to reusable instruments and would reduce global warming potential by 146 kg CO_2-eq over the same use cycle[3]. Sterilization instrument capacity introduces a limit on sustainability transitions such as this. Autoclaving, which is a process of using high-pressure saturated steam to sterilize instruments, is vital to reusability, but UVA's current infrastructure is not scaled for the additional load from ED use of reusable instruments. Autoclave downtime could cause patient care delays in the ER due to insufficient instruments. If there is to be an increase of reusable instruments, it would require redesign of workflows and reliable sterilization logistics.

End Matter

Author Contributions and Notes

C.P.D., C.D.G., and N.T.P. contributed equally to the design, execution, analysis, and writing of this project. The authors declare no conflict of interest.

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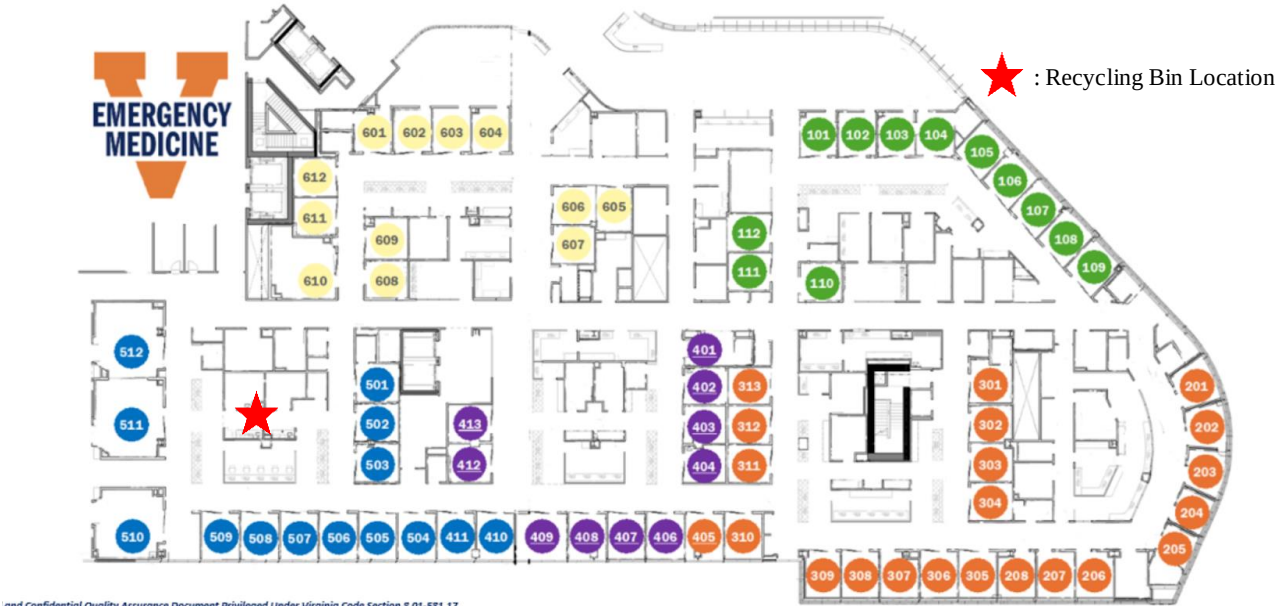
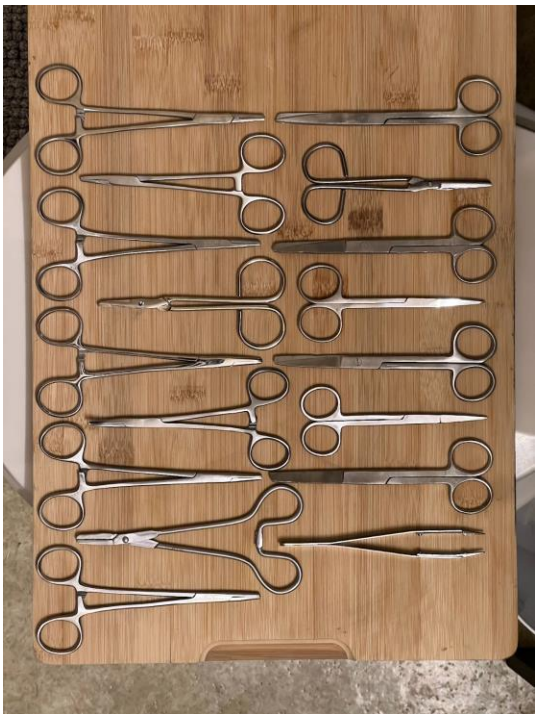
Supplemental Information

Map of Emergency Department at UVA Health



Instruments Collected During Pilot



Memo Sent to Emergency Department Staff

To: UVA Health Staff
From: UVA Health Recycling Pilot Team
Subject: New Metal Instrument Recycling Bin — Pilot Launch

Dear UVA ED Staff,

We are excited to announce the launch of a pilot aimed at reducing single-use metal instrument waste. On Wednesday 9am 4.9.2025, you will notice a new Orange + Blue Recycling bin in the 100s pod (outside 106, map below), designated for recycling single-use metal instruments only. This is a temporary pilot, with hopes to continue in the future.

Purpose of the Pilot:

- Reduce landfill waste by diverting recyclable stainless steel instruments from sharps bin.
- Lower sharps bin overuse and associated disposal costs.
- Generate measurable environmental impact data and demonstrate operational feasibility.

How it Works:

- After use, place single-use metal instruments into the clearly labeled recycling bin (not in sharps containers).
- Our team will collect these instruments, transport them for washing in the sterilization department, and track weight and instrument type data.
- Cleaned instruments will be responsibly scrapped at Gerdau Recycling, contributing to hospital sustainability efforts.

Why This Matters:

- Nearly 70% of sharps bin content in hospital settings is recyclable stainless steel.
- Tariffs on Steel imports put pressure on adopting long-term circular economy practices.
- This effort supports UVA Health's environmental goals while reducing costs and raising staff awareness around sustainable practices.

Please Fill Out This 3 Minute Survey to Support our Research (This survey collects ED Staff opinions on waste in the hospital)

Questions or Feedback:
Please feel free to reach out to our team at any time. Your participation and feedback are critical in helping us build a scalable solution for the broader UVA Health system.

Thank you for supporting this important pilot initiative!

Sincerely,
UVA Health Recycling Pilot Team
Connor Dodd, Nick Porter, Charlie Gorelick, and Zack Landsman
Contact Information:
Connor - xtd6ud@virginia.edu Nick - yse2qa@virginia.edu Charlie - svu9dh@virginia.edu

Survey QR

Redirection Flyer

Sustainability Pilot Ongoing

Divert Single-Use Metal Waste to Dedicated Sharps Bin

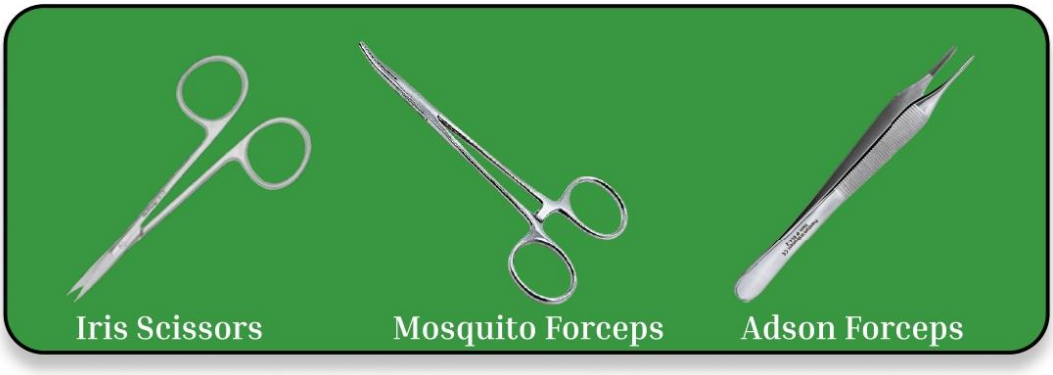
[*Iris Scissors, Adson & Mosquito Forceps*]

Bin Signage

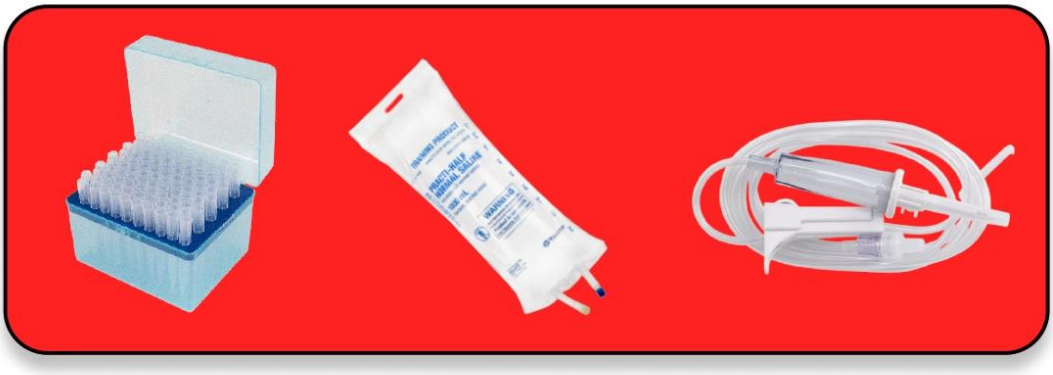
UNIVERSITY of VIRGINIA
BIOMEDICAL ENGINEERING

Single-Use Steel Instruments Only!

Yes



NO plastics, paper, cardboard, cans, or glass. Just steel instruments!



Instruments are brought to sterlization to be washed before being sold as scrap to Gerdau recycling. Profits are returned to support MERCi program.

Contact Us: svu9dh@virginia.edu, yse2qa@virginia.edu, xtd6ud@virginia.edu