Quest for Excellence Award Submission for Nebraska Hospital Association

Community Hospital's Cultures Resulting after Discharge Project

August 1, 2023

McCook Community Hospital

1301 East H Street, McCook, NE 69001

Molly Herzberg, MSN

VP Patient Care Services, CNO

mherzberg@chmccook.org

(308) 344-8543 office/ (308) 344-8358 fax

Leadership/Planning

The Mission of Community Hospital is "Leading our region to a healthier future," and the Vision is "Cultivating healthy communities through progressive and proactive care." Updated three years ago, this mission and vision reflect the healthcare industry's enlightened focus on population-health, wherein hospitals can no longer focus solely on what happens within their four walls. Accordingly, this new mission and vision aim to capture improved health, both within our hospital and throughout our region.

Achieving the Mission and Vision is driven by our Value-Centered Leadership System. Each employee exemplifies the core values of excellence, ownership, integrity and compassion. The Administrative Council (senior leaders) role model these behaviors as they guide hospital operations. The Leadership system also includes a Process-Based Management System which creates a systematic method of performance improvement thereby aiding in cultivating strategic plans into measureable results. From this PBM system that the Strategic Planning Committee develops the Mission, Vision, and Values (MVV) through tools such as environmental assessments, market analyses, business reviews, and Voice of the Customer (VOC) mapping. The Board of Directors then review and approve the Strategic Plan.

Community Hospital balances our strategic plan through four seeds that each aim to achieve the mission and vision of the organization. These seeds include People, Service, Quality, and Finance. Strategic goals in each seed combine to achieve a balanced focus on excellence to nourish the health needs of the region. The goal of the Quality Seed is to "achieve excellence in clinical quality and patient experiences with evidence based practices." For fiscal year 2020, two initiatives to help meet this goal included implementing antibiotic stewardship requirements and analyzing ways to improve safety, efficiency and effectiveness of patient care services. Through

the years, these initiatives have driven the hospital to build a robust Antimicrobial Stewardship program through the leadership of Pharmacy Director Anthony Rodewald.

The Antimicrobial Stewardship team is a subcommittee of Infection Control. The team meets quarterly and includes representation from our pharmacy, laboratory, infection-prevention, nursing, and quality departments, as well as the UNMC Stewardship Team. All hospital pharmacists are certified through Society of Infectious Disease Pharmacists (SIDP) on Antimicrobial Stewardship. This team has focused their time on prioritizing program gaps identified by internal and external gap analyses as well as creating an antibiogram, reviewing MDRO surveillance, investigating outliers such as ESBL or CDiff, reviewing prescriber interventions, and continuing to remain aligned with Best Practices

Process of Identifying Need

The Infection Control (IC) Committee initially identified Community Hospital lacked a process for ensuring that Culture & Sensitivities (C&S) that are identified post discharge were reviewed and acted upon as needed. During positive culture reviews in late 2018 and early 2019, the IC Committee found that Community Hospital had no process to ensure that the ordering provider was getting a copy of C&S results if they occurred post-discharge. The concern was some of these patients could be getting lost to follow-up, particularly if they had been seen in the ED and did not have a scheduled follow-up appointment with their provider. If follow-up was completed, these C&S results might have indicated a discontinuation of antibiotics or change to a more appropriate agent, a scenario that could help decrease morbidity, readmissions, and antibiotic resistance, reduce additional ED or clinic visits, and decrease healthcare costs. A quality risk assessment identified 'cultures resulting after discharge' as a top priority, having scored high in both the risk and benefit categories.

In 2019, we established a team to improve this crucial process. The team created a form for the purpose of documenting cultures that resulted post-discharge. It encompassed identification of patient information, original testing date, and location of test(s) ordered, as well as allergies and the ordering provider. At the time, the process had been completed in the emergency department, where many of the cultures were obtained and documentation was printed. The ED nurse was to check the results and share them with the ED provider, who then would order the appropriate therapy, as needed. The ED nurse then would call the patient and their retail pharmacy with the new orders.

Audits revealed that this was not a well-controlled process, with documented follow-up varying from 33% to 100% and averaging <75%. Given the nature of the ED setting, the team determined that achieving consistent follow-up with these results was unlikely to be successful. Accordingly, in 2022, the team reassembled to redesign the process and reassign ownership thereof.

Although the Patient Family Advisory Council (PFAC) was not in full effect due to the Covid-19 Pandemic, we still put our patients and families at the forefront of our decision making. We knew that without a well-controlled process, this could potentially lead to poor patient outcomes, increased readmissions, and patient dissatisfaction. We continued to monitor variances and patient concerns surrounding this.

Process Improvement Methods

Once the IC team identified this process gap, the ASP team (a subcommittee of IC) was assigned the task of establishing a process and measuring results. The ASP team retrospectively audited C&S results for January through March 2019, looking for documentation that the patient's provider was notified of these results. This audit revealed that the hospital could only

provide objective evidence that the C&S results were forwarded to the ordering provider for review and follow-up 85% of the time (92% in January, 69% in February, 93% in March).

An ad hoc committee was assembled to review the current process and failure points and included several ASP team members among other key stakeholders (Active Medical Staff, Pharmacy, Nursing, and Laboratory staff, Infection Prevention, VP of Ancillary Services, and VP of Patient Care Services and CNO). This committee met early in April 2019 and employed the process improvement methodology of PDCA (Plan, Do, Check, Act). It was during the planning phase that the team identified the gap in our lab's process for forwarding results, wherein results were being sent to the location from which they were ordered and not necessarily to the ordering provider.

These ordering locations were built into the hospital's Health Information System (HIS) to auto-print results and they could not be changed. If the ordering provider didn't set the patient up for a follow-up clinic visit or make a note to follow-up on post discharge C&S results, then nobody was reviewing the results and they'd simply get sent to Health Information Management to be filed. Additionally, since C&S results may take days to complete, there remained a chance that they still would not be reviewed in a timely manner, even if they were forwarded to the ordering provider- if, for example, the provider was out of office.

In the best interest of our patients, the committee determined that the development of a formal process for review of post-discharge C&S results was imperative. The team created a form called the "Post-Discharge Lab Result Notification Form" to document receipt of the results, notification of the responsible provider, and the responsive actions taken by the provider. The ED provider on duty on the day results became available was assigned the responsibility of addressing any results for inpatients and ED patients. The EMT was assigned the task of pulling

the form when results printed to the ED and placing both documents in the provider's inbox. If the provider's review of the results produced any new orders, the RN was identified as responsible for completing documentation of the form and sending it to HIM. As envisioned under this system, cultures ordered for patients at the Medical Specialist Center or outside facilities such as nursing homes would be forwarded to the Infection Control nurse to complete the form and ensure that the appropriate providers be notified, with the exception of cultures ordered from McCook Clinic patients which are sent back to that facility. The results still auto-print to the ordering locations, but the lab is responsible for pushing the results to the appropriate locations. Training on this new process was set for the end of April 2019.

The committee also continued to audit the process and assigned responsibility for the audit to the Infection Control nurse, who was to review the total positive cultures for the month and determine how many of these had documentation completed on the new form. The initial compliance goal was set at 90%, with the intention of increasing to 100% when that goal was met. These results would be reported to the ASP team and tracked on the internal pharmacy and ED dashboards.

Out of the gate, the process did not work smoothly or achieve the desired goal on a consistent basis. It wasn't until the fourth month after implementation (August 2019) that we hit our initial goal of 90%, but had difficulty maintaining it. We went through several additional cycles of PDCA, whereby we reinforced education and expectations and implemented redundancies in lab for the manual process required to push the results to the appropriate locations for review. By the first half of 2020, we were consistently reaching our 90% goal so we raised the goal to 100% documented review.

From that point on, however, we struggled to achieve goal. Much of this was directly attributable to COVID, which highlighted a fundamental flaw in the established process of assigning the responsibility to the ED provider. When the ED was busy, C&S review became a low priority. We would also get inconsistent results based on which provider was staffing the ED at the time because some did not make this a high priority. Time proved that the process we developed was not reliable or controlled. Little was done to address this for some time due to the impact of COVID on staffing and workload.

In early 2022, the ASP team started taking another serious look at this process and discussing ways to improve it. From month to month, results were fluctuating anywhere from 53% to 90%, and we hadn't met goal for nearly a year. We didn't gather the original ad hoc team back together, but instead began discussions for improvement at our overall ASP team meetings. It became apparent that a complete revamp of the process was in order. We explored the possibility of having all culture results reviewed by the Pharmacy team. With the implementation of Sentri7 surveillance software in March of 2022, we were confident the Pharmacy team could effectively be notified of all positive culture results. Still, the team also believed it was imperative to validate the pharmacy's receipt of those results. They accomplished this by working with lab to develop a process for forwarding all culture results to the pharmacy via fax. This provided healthy redundancy, as well as a mechanism to audit and compare for validation.

Additionally, the ASP team (with the assistance of the UNMC ASP team) developed algorithms for the pharmacists to follow when reviewing these results. If the algorithm pathway warranted a change in therapy, the pharmacy team would notify the appropriate provider of the results and provide recommendations for treatment. The pharmacist would use the previously developed documentation form to document the notification and recommendations to the

provider. The pharmacist would also use the surveillance dashboard in Sentri7 to document review and keep track of the total number of positive cultures and the number reviewed. This new process was implemented in June 2022. Since then, we can demonstrate 100% follow-up on all positive cultures that result after discharge *(Figure 1).* We continue to have our laboratory manually fax the culture reports to pharmacy as a double-check to ensure the Sentri7 software is capturing all the reports.

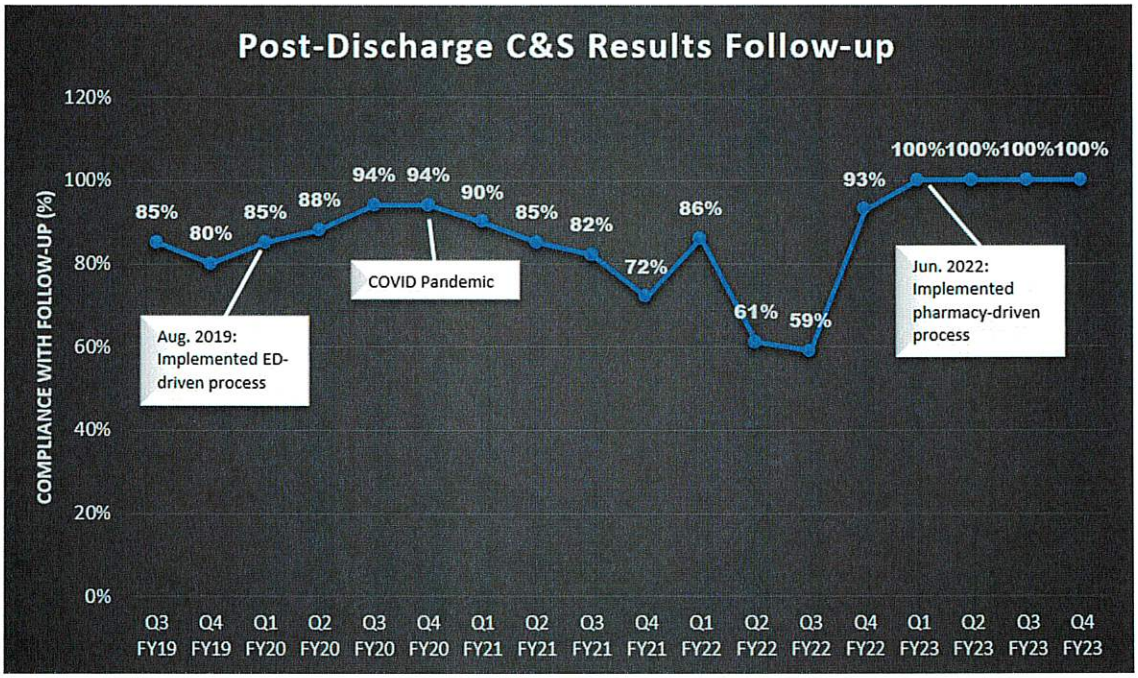


Figure 1: Compliance of follow-up on culture and sensitivities that result after discharge.

Results

In review of the results, it was determined that the pharmacy-driven process for follow-up of C&S that did not result prior to discharge led to higher compliance and more consistency when compared to the nurse-provider ED-driven process.

Community Hospital completed a time study of the initial ED driven-process compared to the new pharmacy-driven process. The ED spent on average 30 minutes of nursing and provider time verses 10 minutes of Pharmacy time per reviewed culture resulting in 166 hours of

time saved over fifteen months *(Figure 2)*. Financially this resulted in $12,000 savings for Community Hospital. The future costs savings result in training costs of training fewer pharmacists in relation to the number of medical providers and nurses that work the Emergency Department.

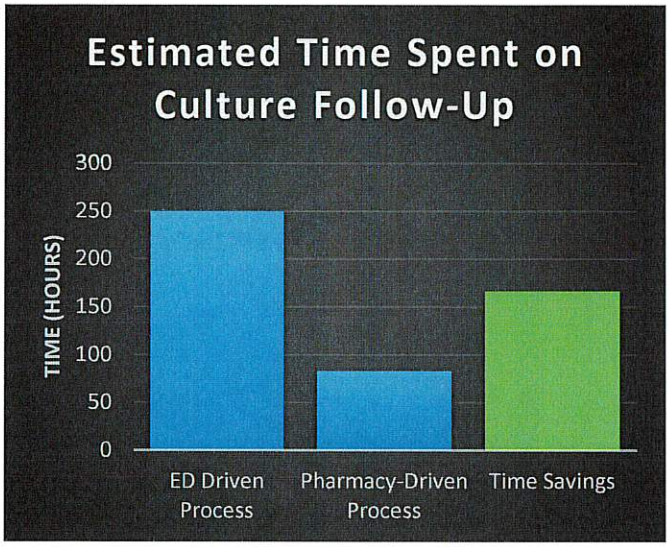


Figure 2: Estimated time spent on culture follow-up for a 15 month period and the potential cost savings.

While not tracked as part of this particular project, there are multiple other factors that should be impacted by this process improvement project. As failure to relay important information to outpatient health care professionals is a factor that is strongly associated with potentially preventable readmissions (Auerbach, et al., 2016), improving this communication should decrease the hospital readmission rate. Another factor that may be affected is ED provider satisfaction as the pharmacy-driven process allows these providers to focus on their current patients rather than spending time managing these results. More work duties can decrease provider perception of quality of care as less time is spent with individual patients (Friedberg, et al., 2014).

Community Hospital's innovation with this project was identifying the need for improving patient outcomes with proper antibiotic usage. Using the PDCA process cycle, the initial improvement didn't produce the outcomes that were expected so the process was re-evaluated and resources reassessed to align with successful outcomes. Uniquely, Community Hospital was the first Nebraska CAH to complete daily prospective antibiotic review in partnership with UNMC. This daily call with the expertise of UNMC provides the opportunity to review culture results and receive recommendations to pass on to providers. "Community Hospital is setting the standard for what small hospital antimicrobial stewardship should look like. Their program has been consistently forward thinking in their approach to appropriate antibiotic use. It is an example that other hospitals could learn from." Dr. Van Schooneveld Medical Director of the Antimicrobial Stewardship Program at UNMC.

Lessons Learned, Replicability, Sustainability

The team that focused on 'cultures resulting after discharge' learned several lessons from this project, affecting subjects including staffing, location, manual verses electronic data, communication, and duplication of processes for validation and documentation. The initial process in the Emergency Department demonstrated that not having dedicated staff and providers resulted in a lack of accountability for who was responsible to complete this daily. We also found that the Emergency Department was not the optimal location for this process because of the extensive variables resulting from daily staffing changes and volumes. The team determined that the optimal location would encompass a dedicated staff with practices that were conducive to merging this process into daily routine. With our Pharmacy Department having staff that could be dedicated to the process and the ability to see the reports in Sentri7, it made sense to shift the process to this location.

Collecting manual data verses electronic data can produce different outcomes, depending on who is executing the data collection. Thanks to the addition of Sentri7, electronic data improved time efficiency because Pharmacy staff could pull the reports that contain the necessary information. The form that formerly was being filled out was not always being completed, with some documentation being omitted from the form. The Pharmacy Department dashboard reported monthly compliance with the culture reports, was also monitored through the Quality Department, and provided the ability to trace any process breakdowns and make immediate adjustments. Success with this project was noted after continually achieving 100% monthly.

Cultures resulting after discharge affects healthcare facilities that have outpatient settings including ED's and Specialty Clinics. Other facilities can replicate this process by working through the PDCA cycle, making sure that the location of ownership works for their facility, having data that is easy to access, and real time focus on data so discrepancies can be dealt with immediately to tighten the process.

Hardwiring and sustainability occur by daily oversight on this process. The Pharmacy Department having the autonomy to make changes to improve the process as needed and daily communication with the medical providers to continue quality care for our patients provides real time feedback. In conclusion, once employees are empowered to make decisions surrounding patient focused care, teams take pride in making great proactive patient and organizational focused changes.

Attachment 1: References:

Auerbach AD, Kripalani S, Vasilevskis EE, Sehgal N, Lindenauer PK, Metlay JP, Fletcher G, Ruhnke GW, Flanders SA, Kim C, Williams MV, Thomas L, Giang V, Herzig SJ, Patel K, Boscardin WJ, Robinson EJ, Schnipper JL. Preventability and Causes of Readmissions in a National Cohort of General Medicine Patients. *JAMA Intern Med.* 2016 Apr;176(4):484-93.

Friedberg MW, Chen PG, Van Busum KR, Aunon F, Pham C, Caloyeras J, Mattke S, Pitchforth E, Quigley DD, Brook RH, Crosson FJ, Tutty M. Factors Affecting Physician Professional Satisfaction and Their Implications for Patient Care, Health Systems, and Health Policy. *Rand Health Q.* 2014 Dec 1;3(4):1.

Attachment 2: ED-Driven Process Form

COMMUNITY HOSPITAL
Advanced care. Always there.

Patient Identification Sticker Goes Here

Name: _____ DOB: _____ Visit # _____ Date of Original Test: _____

Location Test Obtained: ☐ ER ☐ Hospital Stay ☐ Other: _____ Initial Ordering Provider: _____

Test(s): _____

Other cultures obtained: _____

Pertinent Allergies: _____

Pertinent information/notes: _____

New section for each new result received.

Date/time of notification/release: _____

Result(s): _____

_____

☐ Preliminary result ☐ Final result ☐ Physician notification value- Provider notified @ _____

Current Rx treatment if known: _____

Orders (also use scheduling form if indicated):

_____

_____

_____

☐ Meds called to pharmacy by nurse ☐ E-Prescribe Pharmacy name: _____

☐ Patient/Other notified: _____ Date/time of notification: _____

Provider signature: _____ Date/time: _____

Nurse signature: _____ Date/time: _____

Signatures indicate finalization of orders & communication finished.

New section for each new result received.

Date/time of notification/release: _____

Result(s): _____

_____

☐ Preliminary result ☐ Final result ☐ Physician notification value - Provider notified @ _____

Current Rx treatment if known: _____

Orders (also use scheduling form if indicated):

_____

_____

_____

☐ Meds called to pharmacy by nurse ☐ E-Prescribe Pharmacy name: _____

☐ Patient/Other notified: _____ Date/time of notification: _____

Provider signature: _____ Date/time: _____

Nurse signature: _____ Date/time: _____

Signatures indicate finalization of orders & communication finished.

**For neonatal bilirubin result, use bilirubin form.

Page _____ of _____

Attach additional forms as needed until results finalized.
After results finalized, send to HIM and fax a copy to McCook Clinic Lab @ 344-8797 Initials____ Date Time_____

Form Number: PO28 Revision Date: 12/15/2022 Page 1 of 1	Post-Discharge Lab Result Notification Form	1PO

Attachment 3: Excerpt from hospital policy on cultures that finalize after discharge

(RX.13.05) ANTIMICROBIAL UTILIZATION AND CULTURE AND SENSITIVITY MONITORING

6.6 **Cultures that final after patient discharge:**

6.6.1 Laboratory will direct all culture and sensitivity (C&S) results that finalize after a patient has been discharged from the ED or from the inpatient floor, except STD results, to the pharmacy department. Positive blood cultures are a physician notification value and laboratory must directly notify the ordering provider as well and STD results are also directed to the ordering clinic provider.

6.6.2 The pharmacist will utilize the appropriate treatment algorithm for follow-up. Treatment algorithms are approved for skin and soft tissue infections (SSTI) and urinary tract infections (UTI). If there is a question concerning the treatment algorithm/plan, the pharmacist is to consult the UNMC ASP team.

6.6.3 If the culture type is one which pharmacy doesn't have an approved algorithm for (e.g. sputum), the pharmacist will consult the UNMC ASP team for recommendations.

6.6.4 If the C&S results indicate that a therapy change is warranted and acceptable alternatives have been identified (either through use of the appropriate algorithm or consult with UNMC ASP), the pharmacist will first attempt to contact the ordering provider to notify them of the positive culture result along with treatment recommendations. If the ordering provider cannot be contacted, the pharmacist will then attempt to contact the patient's primary care provider. If the primary care provider cannot be contacted, the pharmacist will then contact the on-call provider.

6.6.5 All documentation will be completed on the *Post-Discharge Lab Result Notification Form* (PO28) and forwarded to Health Information Management.

6.6.6 See appendices for treatment algorithms.

Cultures Resulting After Discharge

Community Hospital, McCook, NE

COMMUNITY HOSPITAL
Advanced care. Always there.

Background

- Community Hospital is a 25-bed Critical Access Hospital
- Due to the time required for cultures to grow, there are a significant number of bacterial cultures that result after patient discharge.
- Historically, the responsibility for following up on these cultures that resulted after patient discharge had been assigned to the ED provider(s) working the day the culture resulted.
- Audits revealed this was not a well controlled process with documented follow-up varying from 33% to 100% depending on the month, with the average < 75%

Aims

Reduce delays and ensure appropriate treatment related to cultures resulting after discharge from hospital.

Plan

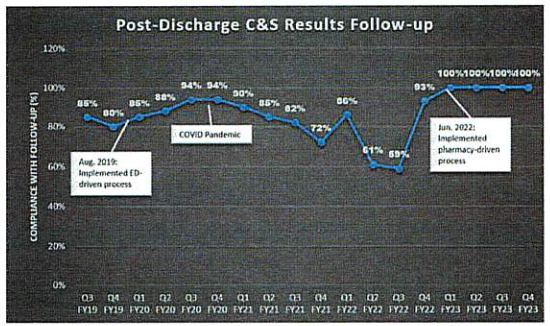
- Determined that, given the nature of the ED setting, it was unlikely that we would be able to achieve consistent follow-up with these results unless the process was entirely re-designed and responsibility was assigned elsewhere.
- It was decided that our CH pharmacists would take over the responsibility for assuring the ordering provider is notified of these results in a timely manner.
- Pharmacy worked with the IT team and with Sentri7 support to make sure all culture results are routed to the pharmacy team for review.
- The pharmacist reviews the culture reports that drop into the Sentri7 surveillance software and then notifies the ordering provider of the results along with appropriate antibiotic recommendations if warranted.
- The pharmacist then uses the Sentri7 surveillance software for documenting this follow-up.
- New process went live in May of 2022 (Q4 FY22).

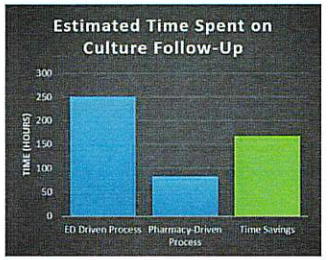
Measure

- Numerator - # of culture and sensitivity reports that had documented follow-up completed.
- Denominator - # of final positive culture and sensitivity reports.

Results

	Q3 FY22	Q4 FY22	Q1 FY23	Q2 FY23
Numerator	41	62	113	89
Denominator	70	67	113	89
% Compliance	59%	93%	100%	100%





Next Steps

- Continue to monitor compliance with documented follow-ups for all culture and sensitivity reports that finalized and report this out on the pharmacy QA dashboard.
- Provide feedback accordingly if goal of 100% isn't met.

Team

Walter Eskildsen, MD, Anthony Rodewald, Chase Crawford, Lori Ryland, Julie Wilhelmson, Janelle Carter, Brad Hays, Ashley Vontz, Kimberly Holliday, Lindsey Dame, Brandi Renner, Chelsey Hartwell